Appendix K

LSRP Clean Fill Approvals

Schindler, Jason

From: Mark Fisher <MFisher@elminc.com>
Sent: Wednesday, March 6, 2019 4:43 PM
To: Schindler, Jason
Cc: Devorak, Coleen; Shah, Kinjal; German, Joseph
Subject: RE: 1215 Woodbridge Submittal 013 - I8 Stone sand

**** External Email ****
Jason – this material is acceptable. Thanks, Mark

From: Schindler, Jason <Jason.Schindler@WestonSolutions.com>
Sent: Wednesday, March 6, 2019 11:09 AM
To: Mark Fisher <MFisher@elminc.com>
Cc: Devorak, Coleen <Coleen.Devorak@WestonSolutions.com>; Shah, Kinjal <Kinjal.Shah@WestonSolutions.com>; German, Joseph <Joe.German@WestonSolutions.com>
Subject: FW: 1215 Woodbridge Submittal 013 - I8 Stone sand

Mark,
Attached please find the analytical report for material proposed for the temporary staging area and backfill where needed to restore the pond bottom during the Woodbridge Pond remediation. The data package is from April 2018. It shows one exceedance of the IGWSSL for manganese. Let me know if this is acceptable to you.
Thanks,
Jason

Jason Schindler
Principal Project Manager
Weston Solutions, Inc.
205 Campus Drive
Edison, NJ 08837
Tel: 732-417-5804
Cell: 732-740-5529
Fax: 732-417-5801
www.westonsolutions.com

From: Czachorowski, Joel [mailto:JCzachorowski@sevenson.com]
Sent: Monday, March 4, 2019 1:54 PM
To: Schindler, Jason <Jason.Schindler@WestonSolutions.com>; German, Joseph <Joe.German@WestonSolutions.com>; Shah, Kinjal <Kinjal.Shah@WestonSolutions.com>; Devorak, Coleen <Coleen.Devorak@WestonSolutions.com>
Cc: Czachorowski, Joel <JCzachorowski@sevenson.com>; Kostuk, Wayne <Wkostuk@sevenson.com>; Reynolds, Douglas <DReynolds@sevenson.com>; Shaw, Steve C <SCShaw@sevenson.com>; Tavelaris, Sam <STavelaris@sevenson.com>; Marrone, Mike <MMarrone@sevenson.com>
Subject: 1215 Woodbridge Submittal 013 - I8 Stone sand

**** External Email ****
Good Afternoon-

Attached is Submittal 013 I8 Soil Aggregate Materials from Tilcon's Mt. Hope Quarry

Proposed materials for backfill of Bulkhead area and then for re-use as backfill in Access Channel. Quarry's "Clean Fill" Certification and I8 materials specification sheet and preliminary analytical for source for review/approval. Formal material sample to be collected for analysis and verification prior to any material delivery. A copy of the revised Submittal Register is attached as well.

If you have any questions, please let me know.

Joel Czachorowski
Project Manager, PMP

Sevenson Environmental Services, Inc.

Weston Hatco/Woodbridge Pond Project
Mac Lane & Riverside Drive
Woodbridge Twsp.-Keasby, NJ 08832

Honeywell SA-7 Droyers Cove Project
575 State Route 440
Jersey City, NJ 07305

Horseshoe Road/ARC Superfund Site
400 Horseshoe Road
Sayreville, NJ 08872

Syncon Resins Superfund Site
77 Jacobus Avenue
South Kearny, NJ 07032

Mobile: (973) 204-0902

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McGahan, Andrea

From: McGahan, Andrea
Sent: Friday, December 6, 2019 3:31 PM
To: Schindler, Jason; Devorak, Coleen
Subject: RE: 1215 Woodbridge Submittal 018 - Clean Sand Backfill & Vegetative Cover

Yes – thank you!

From: Schindler, Jason
Sent: Friday, December 6, 2019 3:30 PM
To: McGahan, Andrea <Andrea.McGahan@WestonSolutions.com>; Devorak, Coleen <Coleen.Devorak@WestonSolutions.com>
Subject: FW: 1215 Woodbridge Submittal 018 - Clean Sand Backfill & Vegetative Cover

Is this what you are looking for?

From: Schindler, Jason
Sent: Monday, March 25, 2019 7:47 AM
To: Mark Fisher <MFisher@elminc.com>
Cc: Devorak, Coleen <Coleen.Devorak@WestonSolutions.com>; Shah, Kinjal <Kinjal.Shah@WestonSolutions.com>; German, Joseph <Joe.German@WestonSolutions.com>; Woodham, Richard <R.Woodham@westonsolutions.com>
Subject: RE: 1215 Woodbridge Submittal 018 - Clean Sand Backfill & Vegetative Cover

Thanks

From: Mark Fisher [mailto:MFisher@elminc.com]
Sent: Sunday, March 24, 2019 5:33 PM
To: Schindler, Jason <Jason.Schindler@WestonSolutions.com>
Cc: Devorak, Coleen <Coleen.Devorak@WestonSolutions.com>; Shah, Kinjal <Kinjal.Shah@WestonSolutions.com>; German, Joseph <Joe.German@WestonSolutions.com>; Woodham, Richard <R.Woodham@westonsolutions.com>
Subject: RE: 1215 Woodbridge Submittal 018 - Clean Sand Backfill & Vegetative Cover

**** External Email ****
Jason – my review also indicates that this material is acceptable. Thanks, Mark

---

From: Schindler, Jason <Jason.Schindler@WestonSolutions.com>
Sent: Wednesday, March 20, 2019 1:23 PM
To: Mark Fisher <MFisher@elminc.com>
Cc: Devorak, Coleen <Coleen.Devorak@WestonSolutions.com>; Shah, Kinjal <Kinjal.Shah@WestonSolutions.com>; German, Joseph <Joe.German@WestonSolutions.com>; Woodham, Richard <R.Woodham@westonsolutions.com>
Subject: FW: 1215 Woodbridge Submittal 018 - Clean Sand Backfill & Vegetative Cover

Mark,
Attached is the proposed clean sand backfill and vegetative cover for the Hatco Woodbridge Pond remediation. Weston reviewed the data and found no exceedances. Please let me know if this material is acceptable to you for use on the project.
Thanks,
Jason

From: Czachorowski, Joel [mailto:JCzachorowski@sevenson.com]
Sent: Thursday, March 14, 2019 8:24 AM
To: Schindler, Jason <Jason.Schindler@WestonSolutions.com>; German, Joseph <Joe.German@WestonSolutions.com>; Shah, Kinjal <Kinjal.Shah@WestonSolutions.com>; Devorak, Coleen <Coleen.Devorak@WestonSolutions.com>
Cc: Czachorowski, Joel <JCzachorowski@sevenson.com>; Kostuk, Wayne <Wkostuk@sevenson.com>; Reynolds, Douglas <DReynolds@sevenson.com>; Shaw, Steve C <SCShaw@sevenson.com>; Tavelaris, Sam <STavelaris@sevenson.com>; Marrone, Mike <MMarrone@sevenson.com>; Dragonette, Dan <DDragonette@sevenson.com>
Subject: 1215 Woodbridge Submittal 018 - Clean Sand Backfill & Vegetative Cover

**** External Email ****
Good Morning-

Attached is Submittal 018 – Clean Sand Backfill and Vegetative Cover materials from E.M.E.'s New Egypt, NJ Borrow Source.

Source of proposed materials for Wetlands Restoration activities. Borrow Source's "Clean Fill" Certification and Fine Sand Fill materials specification sheet and preliminary analytical for source for review/approval. Materials are to be custom blended to achieve specified requirements. Formal material sample to be collected for analysis and verification prior to any material delivery if required. A copy of the revised Submittal Register is attached as well.

If you have any questions, please let me know.

Joel Czachorowski
Project Manager, PMP

Sevenson Environmental Services, Inc.

Weston Hatco/Woodbridge Pond Project
Mac Lane & Riverside Drive
Woodbridge Twsp.-Keasby, NJ 08832

Honeywell SA-7 Droyers Cove Project
575 State Route 440
Jersey City, NJ 07305

Horseshoe Road/ARC Superfund Site
400 Horseshoe Road
Sayreville, NJ 08872

Syncon Resins Superfund Site
77 Jacobus Avenue
South Kearny, NJ 07032

Mobile: (973) 204-0902

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S & S ENVIRONMENTAL SCIENCES, INC.

Environmental Engineering, Testing and Consultation

98 Sand Park Road, Cedar Grove, NJ 07009
Tel (973) 857-7188 Fax (973) 239-8380

Kamil Sor, Ph.D.
Orhun Sor, P.E.
Atilla Sencar, P.E.

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Client:	Tilcon New York, Inc.				
Project:	Mt. Hope Quarry, Wharton, NJ				
Subject:	Laboratory Analysis of Aggregate Sample-NJ				
Job No.:	07E34	**Report Number:**	18-E-82	**Date:**	4/25/18

We present herewith the laboratory test results of an aggregate sample delivered to our laboratory on April 16, 2018. As requested, the aggregate sample was analyzed for the U.S. EPA Target Compound List (TCL)+30/Target Analyte List (TAL) including NJDEP Soil Remediation Standards parameters, Extractable Petroleum Hydrocarbons (EPH), pH, and Hexavalent Chromium. The analyses were performed by Integrated Analytical Laboratories, LLC (IAL) (NJDEP Lab ID No. 14751). The copies of the IAL/S&S sample chain-of-custody forms, the preliminary IAL laboratory summary report and NJDEP-SRS comparison tables are attached.

Review of the laboratory data and comparison of the sample test results to the NJDEP Residential Direct Contact Soil Remediation Standards (RDC-SRS) indicated that the sample meets NJDEP-RDC-SRS parameters.

A comparison of the sample test results to the NJDEP Default Impact to Ground Water Soil Screening Levels (IGWSSL) indicated that Manganese concentration was above the default IGWSSL. Further testing via SPLP (Synthetic Precipitation Leaching Procedure) is not needed because the Ground Water Quality Standard for this metal is secondary and non-health based due to being present naturally and not a discharge.

If there are any questions or if we can be of further assistance in this matter, please contact us.

Very truly yours,
S & S ENVIRONMENTAL SCIENCES, INC.

Kamil Sor, Ph.D.
President

KS/tm
Attachments:
(1) Laboratory Summary Report, Sample Chain-of-Custody Forms, and NJDEP-SRS Comparison Tables

cc: (1) Client Attn: Steve O'Reilly email: soreilly@tilconny.com

S&S ENVIRONMENTAL SCIENCES, INC.

Environmental Engineering, Testing and Consultation

98 Sand Park Rad, Cedar Grove, NJ 07009
Tel (973) 857-7188 Fax (973) 239-8380

SAMPLE CHAIN OF CUSTODY

CLIENT:	TILCON M/Hope	DATE:	4-16-18
ADDRESS:			
CONTACT:		TEL. #:	
PROJECT:		PROJECT LAB ID #:	18-047

SAMPLE NUMBER	SAMPLING DATE	SAMPLING TIME	SAMPLE TYPE	NO. OF BOTTLES	ANALYSES REQUESTED
1	4/16/18	10 AM	SOL	2	NY & NJ Cleanfill

Comments:

Field Measurements: pH= _____ Temp.= _____ Flow Rate= _____

Sample Preservation: Cooled at 4° C _____ H_2SO_4 _____ NaOH _____

HNO_3 _____ HCl _____ Sodium Thiosulfate _____ Other _____

Sampled By: [signature]

RELINQUISHED BY:	RECEIVED BY:	DATE AND TIME:
[signature]	[signature]	4/16/18 14:00

IAL
Integrated Analytical Laboratories LLC
Integrated Analytical Labs
273 Franklin Road
Randolph, NJ 07869

Chain of Custody Record

Contact Us: 973-361-4252
Fax: 973-989-5288
Web: www.ialonline.com

Customer Information

Company: SoS Env. Sci.
Address:
Telephone #: 973-239-6001
Fax #:
Project Manager: A. Gurhan
EMAIL Address:
Project Name: Mt Hope - AGG
Project Location (State): NJ
Bottle Order #:
☒ "Report to"/"Invoice To" same as above
Sampled by: SoR

Reporting Information

REPORT TO:
Address:
Attn:
FAX #
INVOICE TO:
Address:
Attn:
PO # 1B-047
Quote #

**Rush TAT Charge

24 hr - 100%....
48 hr - 75%....
72 hr - 50%....
96 hr - 35%....
5 day - 25%....
6-9 day - 10%

Deliverables

NJ, CT, PA	NY
☐ Results Only	☐ ASP Category A
☒ Reduced	☐ ASP Category B*
☐ Regulatory/ Full*	

EDDs

☐ NJ SRP
☐ NYSDEC EQuIS
☐ lab approved custom EDD
☐ NO EDD REQ'D

Concentrations Expected:

Low Med High

These samples have been previously analyzed by IAL
☐ YES ☐ NO

Turn-Around Time (TAT)

Standard (10 business days) Verbal
Rush/date needed (only if pre-approved)**
Hard Copy: Std 3 week — Other - call for price

Petroleum Hydrocarbons - Selection is REQUIRED

☐ NJ EPH-DRO - Category 1
☒ NJ EPH-C40 - Category 2
☐ NJ EPH-Fractionated - Cat 2
TAT for PHC (if other than 2 weeks):
☐ DRO-8015

Regulatory Requirement

New Jersey	New York
☐ GWQS	☐ AWQS (TOGS Table 1)
☒ IGW	☐ GWEL (TOGS Table 5)
☐ SRS	☐ Part 375-6.8(a) - Unrestricted
☐ Ecological	☒ Part 375-6.8(b) - Restricted
☐ DW	☐ CP-51 Table 2 or 3 (selection required)
☐ SPLP	OTHER Reg. Req. (specify)

Sample Matrix

DW - Drinking Water
WW - Waste Water
GW - Groundwater
SW - Surface Water
LIQ - Liquid (Specify)
OI - Oil
S - Soil
SOL - Solid
SL - Sludge
W - Wipe
B - Biphasic

COMPLETED BY IAL:
____ Field Sampling ____ Equipment Rental

SAMPLE INFORMATION

ANALYTICAL PARAMETERS (please note if contingent)

Client ID	Depth (ft only)	Sampling Date	Sampling Time	Matrix	# containers	IAL #	TAL+TCL+30 (NJDEP-SRP)	EPH	pH	Chromium Hexavalent	(*)					Sample Specific Notes:
1B-047		4-16-18	10:00	SOL	8		✓	✓	✓	✓	✓					11072 / 11005 / 11014

Known Hazard: YES / NO
Describe:

Preservative (use code): 1, 4, 7 | 1 | 1 | 1 | 1
Container Type (use code): D, T | D | D | D | D

Please print legibly and fill out completely. Samples cannot be processed and the turnaround time (TAT) will not start until any ambiguities have been resolved. TAT starts the following day if samples rec'd at lab > 5PM. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY IAL'S TERMS & CONDITIONS (found on rear of pink copy).

Preservative Code:
1 = None
2 = HCl
3 = HNO3
4 = MeOH
5 = NaOH
6 = H2SO4
7 = Other

Container Code:
A = Amber Glass
B = Plastic
C = Vial
D = Glass
E = EnCore
T = Terracore

Carrier (check one :
☐ IAL Courier
☐ Client Courier
☐ FedEx/UPS***
***Tracking #:

Special Instructions/QC Requirements & Comments:
(*) Herbs, Aniline, 3' Methyphenol, Benzoic Acid
Please provide Disk 1, Disk 2 for NJ and NY.

Relinquished by (Signature and Company)	Date	Time	Received by (Signature and Company)	Date	Time
[illegible]	4/16/18	15:00	[illegible]	4/16/18	[illegible]
[illegible]	4/16/18	15:48	[illegible]	4/16/18	15:48

FOR LAB USE ONLY
SDG #:
Cooler Temp: ____ °C

IAL Rev 2/2014
LAB COPIES - WHITE & YELLOW; CLIENT COPY - PINK

Certification IDs: TNI (TNI01284); CT (PH-0699); NJ (14751); NY (11402); PA (68-00773).

PAGE: 1 of 1

INTEGRATED ANALYTICAL LABORATORIES, LLC.

SUMMARY REPORT
Client: S & S Environmental
Project: MT HOPE - AGG
Lab Case No.: E18-02832

Lab ID:	**02832-001**		
Client ID:	**18-047**		
Matrix:	**Solid**		
Sampled Date	**4/16/18**		
PARAMETER(Units)	Conc	Q	MDL
Volatiles (Units)	*(mg/Kg)*		
Trichlorofluoromethane	0.015		0.000177
Toluene	0.00289		0.000304
TOTAL VO's:	0.018		
TOTAL TIC's:	ND		
TOTAL VO's & TIC's:	0.018		
Semivolatiles - Special BNA (Units)	*(mg/Kg)*		
N-Nitrosodimethylamine	ND		0.028
Benzaldehyde	ND		0.031
Phenol	ND		0.029
Aniline	ND		0.030
Bis(2-chloroethyl) ether	ND		0.029
2-Chlorophenol	ND		0.024
2-Methylphenol	ND		0.029
2,2'-Oxybis(1-Chloropropane)	ND		0.027
4-Methylphenol **	ND		0.026
N-Nitrosodi-n-propylamine	ND		0.024
Acetophenone	ND		0.030
3-Methylphenol	ND		0.022
Hexachloroethane	ND		0.027
Nitrobenzene	ND		0.025
Isophorone	ND		0.027
2-Nitrophenol	ND		0.027
2,4-Dimethylphenol	ND		0.023
Bis(2-chloroethoxy) methane	ND		0.029
Benzoic acid	ND		0.032
2,4-Dichlorophenol	ND		0.028
Naphthalene	ND		0.028
4-Chloroaniline	ND		0.021
Hexachlorobutadiene	ND		0.029
Caprolactam	ND		0.021
4-Chloro-3-methylphenol	ND		0.027
2-Methylnaphthalene	ND		0.022
Hexachlorocyclopentadiene	ND		0.028
2,4,6-Trichlorophenol	ND		0.027
2,4,5-Trichlorophenol	ND		0.027
1,1'-Biphenyl	ND		0.030
2-Chloronaphthalene	ND		0.026
2-Nitroaniline	ND		0.022
Dimethyl phthalate	ND		0.029
2,6-Dinitrotoluene	ND		0.024
Acenaphthylene	ND		0.026
3-Nitroaniline	ND		0.025
Acenaphthene	ND		0.028

ND = Analyzed for but Not Detected at the MDL

Continued on next page.

INTEGRATED ANALYTICAL LABORATORIES, LLC.

SUMMARY REPORT
Client: S & S Environmental
Project: MT HOPE - AGG
Lab Case No.: E18-02832

Lab ID:	**02832-001**		
Client ID:	**18-047**		
Matrix:	**Solid**		
Sampled Date	**4/16/18**		
PARAMETER(Units)	Conc	Q	MDL
Semivolatiles - Special BNA (Units)	*(mg/Kg)*		
2,4-Dinitrophenol	ND		0.019
4-Nitrophenol	ND		0.028
2,4-Dinitrotoluene	ND		0.029
Dibenzofuran	ND		0.027
Diethyl phthalate	ND		0.031
Fluorene	ND		0.029
4-Chlorophenyl phenyl ether	ND		0.030
4-Nitroaniline	ND		0.024
1,2,4,5-Tetrachlorobenzene	ND		0.028
2,3,4,6-Tetrachlorophenol	ND		0.022
4,6-Dinitro-2-methylphenol	ND		0.019
N-Nitrosodiphenylamine	ND		0.028
1,2-Diphenylhydrazine	ND		0.032
4-Bromophenyl phenyl ether	ND		0.027
Hexachlorobenzene	ND		0.029
Atrazine	ND		0.028
Pentachlorophenol	ND		0.019
Phenanthrene	ND		0.029
Anthracene	ND		0.028
Carbazole	ND		0.025
Di-n-butyl phthalate	ND		0.024
Fluoranthene	ND		0.027
Benzidine	ND		0.019
Pyrene	ND		0.026
Butyl benzyl phthalate	ND		0.029
3,3'-Dichlorobenzidine	ND		0.023
Benzo[a]anthracene	ND		0.027
Chrysene	ND		0.027
Bis(2-ethylhexyl) phthalate	ND		0.020
Di-n-octyl phthalate	ND		0.028
Benzo[b]fluoranthene	ND		0.026
Benzo[k]fluoranthene	ND		0.027
Benzo[a]pyrene	ND		0.026
Indeno[1,2,3-cd]pyrene	ND		0.026
Dibenz[a,h]anthracene	ND		0.031
Benzo[g,h,i]perylene	ND		0.029
Dinitrotoluene (2,4- and 2,6-)	ND		0.029
TOTAL BNA'S:	ND		
TOTAL TIC's:	ND		
TOTAL BNA'S & TIC's:	ND		

ND = Analyzed for but Not Detected at the MDL

INTEGRATED ANALYTICAL LABORATORIES, LLC.

SUMMARY REPORT
Client: S & S Environmental
Project: MT HOPE - AGG
Lab Case No.: E18-02832

Lab ID:	**02832-001**		
Client ID:	**18-047**		
Matrix:	**Solid**		
Sampled Date	**4/16/18**		
PARAMETER(Units)	Conc	Q	MDL
PCB's (Units)	*(mg/Kg)*		
Aroclor-1016	ND		0.000656
Aroclor-1221	ND		0.000656
Aroclor-1232	ND		0.000656
Aroclor-1242	ND		0.000656
Aroclor-1248	ND		0.000656
Aroclor-1254	ND		0.000656
Aroclor-1260	ND		0.000656
Aroclor-1262	ND		0.000656
Aroclor-1268	ND		0.000656
PCBs	ND		0.000656
Pesticides (Units)	*(mg/Kg)*		
alpha-BHC	ND		0.000164
beta-BHC	ND		0.000164
gamma-BHC (Lindane)	ND		0.000164
delta-BHC	ND		0.000164
Heptachlor	ND		0.000164
Aldrin	ND		0.000164
Heptachlor epoxide	ND		0.000164
Endosulfan I	ND		0.000164
4,4'-DDE	ND		0.000164
Dieldrin	ND		0.000164
Endrin	ND		0.000164
Endosulfan II	ND		0.000164
4,4'-DDD	ND		0.000164
Endrin aldehyde	ND		0.000164
Endosulfan sulfate	ND		0.000164
4,4'-DDT	ND		0.000164
Endrin ketone	ND		0.000164
Methoxychlor	ND		0.000164
alpha-Chlordane	ND		0.000164
gamma-Chlordane	ND		0.000164
Toxaphene	ND		0.00197
Endosulfan (I and II)	ND		0.000164
Chlordane (alpha and gamma)	ND		0.000164
Herbicides (Units)	*(mg/Kg)*		
Dalapon	ND		0.00666
Dicamba	ND		0.00666
2,4-D	ND		0.00666
2,4,5-TP (Silvex)	ND		0.00666
2,4,5-T	ND		0.00666
2,4-DB	ND		0.00666
Dinoseb	ND		0.00666

ND = Analyzed for but Not Detected at the MDL

INTEGRATED ANALYTICAL LABORATORIES, LLC.

SUMMARY REPORT
Client: S & S Environmental
Project: MT HOPE - AGG
Lab Case No.: E18-02832

Lab ID:	**02832-001**		
Client ID:	**18-047**		
Matrix:	**Solid**		
Sampled Date	**4/16/18**		
PARAMETER(Units)	Conc	Q	MDL
NJ-EPH-C40 (Units)	*(mg/Kg)*		
C9-C40	ND		18.8
Alcohols (Units)	*(mg/Kg)*		
Methanol	ND		2.00
Metals (Units)	*(mg/Kg)*		
Aluminum	2680		4.90
Antimony	ND		0.490
Arsenic	0.465	J	0.368
Barium	14.0		0.613
Beryllium	ND		0.368
Cadmium	ND		0.735
Calcium	4140		36.8
Chromium	16.9		0.613
Cobalt	5.25		0.368
Copper	12.8		0.858
Iron	18100		36.8
Lead	ND		0.613
Magnesium	3010		36.8
Manganese	94.0		0.858
Mercury	ND		0.0094
Nickel	4.29		0.858
Potassium	1710		49.0
Selenium	ND		3.68
Silver	ND		0.735
Sodium	140		49.0
Thallium	ND		0.613
Vanadium	21.6		0.613
Zinc	11.4	J	2.45
General Analytical (Units)			
Hexavalent Chromium(mg/Kg)	ND		0.378
Cyanide, Total(mg/Kg)	ND		0.500
pH/Corrosivity(SU)	8.43		NA
Trivalent (III) Chromium(mg/Kg)	16.9		0.613

ND = Analyzed for but Not Detected at the MDL

J = Concentration detected at a value below the RL and above the MDL for target compounds. For non-target compounds (i.e. TICs), qualifier indicates estimated concentrations.

S S Environmental
Project Name: MT HOPE - AGG
IAL SDG No:E18-02832

Sample #:		NJDEP SOIL REMEDIATION STANDARDS			18-047			
Field ID:								
Lab ID:		Residential	Non-Res	Default IGW	02832-001			
Date Sampled:		SRS	SRS	Screening	04/16/2018			
Depth(ft):				Level				
	CAS	(mg/Kg)	(mg/Kg)	(mg/Kg)				
Volatiles (mg/Kg)					Conc	Q	RL	MDL
Dichlorodifluoromethane	75-71-8	490	230000	39	ND		0.00094	0.000221
Chloromethane	74-87-3	4	12	NS	ND		0.00094	0.000174
Vinyl chloride	75-01-4	0.7	2	0.005	ND		0.00094	0.000174
Bromomethane	74-83-9	25	59	0.04	ND		0.00094	0.00028
Chloroethane	75-00-3	220	1100	NS	ND		0.00094	0.000249
Trichlorofluoromethane	75-69-4	23000	340000	34	0.015		0.00094	0.000177
Acrolein	107-02-8	0.5	1	0.5	ND		0.019	0.00244
1,1-Dichloroethene	75-35-4	11	150	0.008	ND		0.00094	0.000354
Acetone	67-64-1	70000	NS	19	ND		0.0094	0.00092
Carbon disulfide	75-15-0	7800	110000	6	ND		0.00094	0.000291
Methylene chloride	75-09-2	46	230	0.01	ND		0.00188	0.00187
Acrylonitrile	107-13-1	0.9	3	0.5	ND		0.019	0.00383
tert-Butyl alcohol (TBA)	75-65-0	1400	11000	0.3	ND		0.00188	0.000901
trans-1,2-Dichloroethene	156-60-5	300	720	0.6	ND		0.00094	0.000273
Methyl tert-butyl ether (MTBE)	1634-04-4	110	320	0.2	ND		0.00094	0.000181
1,1-Dichloroethane	75-34-3	8	24	0.2	ND		0.00094	0.000182
cis-1,2-Dichloroethene	156-59-2	230	560	0.3	ND		0.00094	0.0002
2-Butanone (MEK)	78-93-3	3100	44000	0.9	ND		0.00188	0.000462
Bromochloromethane	74-97-5	NS	NS	NS	ND		0.00094	0.000261
Chloroform	67-66-3	0.6	2	0.4	ND		0.00094	0.000197
1,1,1-Trichloroethane	71-55-6	160000	NS	0.3	ND		0.00094	0.000222
Carbon tetrachloride	56-23-5	2	4	0.005	ND		0.00094	0.000151
1,2-Dichloroethane (EDC)	107-06-2	0.9	3	0.005	ND		0.00094	0.000248
Benzene	71-43-2	2	5	0.005	ND		0.00094	0.000245
Trichloroethene	79-01-6	3	10	0.01	ND		0.00094	0.000263
1,2-Dichloropropane	78-87-5	2	5	0.005	ND		0.00094	0.000159
1,4-Dioxane	123-91-1	NS	NS	NS	ND		0.188	0.034
Bromodichloromethane	75-27-4	1	3	0.005	ND		0.00094	0.000219
cis-1,3-Dichloropropene	10061-01-5	NS	NS	NS	ND		0.00094	0.000193
4-Methyl-2-pentanone (MIBK)	108-10-1	NS	NS	NS	ND		0.00188	0.000544
Toluene	108-88-3	6300	91000	7	0.00289		0.00094	0.000304
trans-1,3-Dichloropropene	10061-02-6	NS	NS	NS	ND		0.00094	0.000217
1,1,2-Trichloroethane	79-00-5	2	6	0.02	ND		0.00094	0.000254
Tetrachloroethene	127-18-4	43	1500	0.005	ND		0.00094	0.000241
2-Hexanone	591-78-6	NS	NS	NS	ND		0.00188	0.000979
Dibromochloromethane	124-48-1	3	8	0.005	ND		0.00094	0.000176
1,2-Dibromoethane (EDB)	106-93-4	0.008	0.04	0.005	ND		0.00094	0.000166
Chlorobenzene	108-90-7	510	7400	0.6	ND		0.00094	0.000212

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Ethylbenzene	100-41-4	**7800**	**110000**	**13**	ND		0.00094	0.000229
Total Xylenes	1330-20-7	**12000**	**170000**	**19**	ND		0.00188	0.000407
Styrene	100-42-5	**90**	**260**	**3**	ND		0.00094	0.000194
Bromoform	75-25-2	**81**	**280**	**0.03**	ND		0.00094	0.00027
Isopropylbenzene	98-82-8	**NS**	**NS**	**NS**	ND		0.00094	0.000186
1,1,2,2-Tetrachloroethane	79-34-5	**1**	**3**	**0.007**	ND		0.00094	0.000253
1,3-Dichlorobenzene	541-73-1	**5300**	**59000**	**19**	ND		0.00094	0.000181
1,4-Dichlorobenzene	106-46-7	**5**	**13**	**2**	ND		0.00094	0.000161
1,2-Dichlorobenzene	95-50-1	**5300**	**59000**	**17**	ND		0.00094	0.000163
1,2-Dibromo-3-chloropropane	96-12-8	**0.08**	**0.2**	**0.005**	ND		0.00188	0.000254
1,2,4-Trichlorobenzene	120-82-1	**73**	**820**	**0.7**	ND		0.00094	0.000414
1,2,3-Trichlorobenzene	87-61-6	**NS**	**NS**	**NS**	ND		0.00094	0.000452
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	**NS**	**NS**	**NS**	ND		0.00094	0.000341
Methyl acetate	79-20-9	**78000**	**NS**	**22**	ND		0.00094	0.000439
Cyclohexane	110-82-7	**NS**	**NS**	**NS**	ND		0.00094	0.000171
Methylcyclohexane	108-87-2	**NS**	**NS**	**NS**	ND		0.00094	0.000196
1,3-Dichloropropene (cis- and trans-)	542-75-6	**2**	**7**	**0.005**	ND		0.00094	0.000217
TOTAL VO's:		**NS**	**NS**	**NS**	0.018			NA
TOTAL TIC's:		**NS**	**NS**	**NS**	ND			NA
TOTAL VO's & TIC's:		**NS**	**NS**	**NS**	0.018			NA

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Semivolatiles - Special BNA (mg/Kg)					Conc	Q	RL	MDL
N-Nitrosodimethylamine	62-75-9	0.7	0.7	0.7	ND		0.032	0.028
Benzaldehyde	100-52-7	6100	68000	NS	ND		0.032	0.031
Phenol	108-95-2	18000	210000	8	ND		0.032	0.029
Aniline	62-53-3	NS	NS	NS	ND		0.032	0.030
Bis(2-chloroethyl) ether	111-44-4	0.4	2	0.2	ND		0.032	0.029
2-Chlorophenol	95-57-8	310	2200	0.8	ND		0.032	0.024
2-Methylphenol	95-48-7	310	3400	NS	ND		0.032	0.029
2,2'-Oxybis(1-Chloropropane)	108-60-1	23	67	5	ND		0.032	0.027
4-Methylphenol **	106-44-5	31	340	NS	ND		0.032	0.026
N-Nitrosodi-n-propylamine	621-64-7	0.2	0.3	0.2	ND		0.032	0.024
Acetophenone	98-86-2	2	5	3	ND		0.032	0.030
3-Methylphenol	108-39-4	NS	NS	NS	ND		0.032	0.022
Hexachloroethane	67-72-1	12	48	0.2	ND		0.032	0.027
Nitrobenzene	98-95-3	5	14	0.2	ND		0.032	0.025
Isophorone	78-59-1	510	2000	0.2	ND		0.032	0.027
2-Nitrophenol	88-75-5	NS	NS	NS	ND		0.032	0.027
2,4-Dimethylphenol	105-67-9	1200	14000	1	ND		0.032	0.023
Bis(2-chloroethoxy) methane	111-91-1	NS	NS	NS	ND		0.032	0.029
Benzoic acid	65-85-0	NS	NS	NS	ND		0.032	0.032
2,4-Dichlorophenol	120-83-2	180	2100	0.2	ND		0.032	0.028
Naphthalene	91-20-3	6	17	25	ND		0.032	0.028
4-Chloroaniline	106-47-8	NS	NS	NS	ND		0.032	0.021
Hexachlorobutadiene	87-68-3	6	25	0.9	ND		0.032	0.029
Caprolactam	105-60-2	31000	340000	12	ND		0.032	0.021
4-Chloro-3-methylphenol	59-50-7	NS	NS	NS	ND		0.032	0.027
2-Methylnaphthalene	91-57-6	230	2400	8	ND		0.032	0.022
Hexachlorocyclopentadiene	77-47-4	45	110	320	ND		0.032	0.028
2,4,6-Trichlorophenol	88-06-2	19	74	0.2	ND		0.032	0.027
2,4,5-Trichlorophenol	95-95-4	6100	68000	68	ND		0.032	0.027
1,1'-Biphenyl	92-52-4	61	240	140	ND		0.032	0.030
2-Chloronaphthalene	91-58-7	NS	NS	NS	ND		0.032	0.026
2-Nitroaniline	88-74-4	39	23000	NS	ND		0.032	0.022
Dimethyl phthalate	131-11-3	NS	NS	NS	ND		0.032	0.029
2,6-Dinitrotoluene	606-20-2	0.7	3	NS	ND		0.032	0.024
Acenaphthylene	208-96-8	NS	300000	NS	ND		0.032	0.026
3-Nitroaniline	99-09-2	NS	NS	NS	ND		0.032	0.025
Acenaphthene	83-32-9	3400	37000	110	ND		0.032	0.028
2,4-Dinitrophenol	51-28-5	120	1400	0.3	ND		0.032	0.019
4-Nitrophenol	100-02-7	NS	NS	NS	ND		0.032	0.028
2,4-Dinitrotoluene	121-14-2	0.7	3	NS	ND		0.032	0.029
Dibenzofuran	132-64-9	NS	NS	NS	ND		0.032	0.027
Diethyl phthalate	84-66-2	49000	550000	88	ND		0.032	0.031
Fluorene	86-73-7	2300	24000	170	ND		0.032	0.029
4-Chlorophenyl phenyl ether	7005-72-3	NS	NS	NS	ND		0.032	0.030
4-Nitroaniline	100-01-6	NS	NS	NS	ND		0.032	0.024

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1,2,4,5-Tetrachlorobenzene	95-94-3	**NS**	**NS**	**NS**	ND	0.032	0.028
2,3,4,6-Tetrachlorophenol	58-90-2	**NS**	**NS**	**NS**	ND	0.032	0.022
4,6-Dinitro-2-methylphenol	534-52-1	**6**	**68**	**0.3**	ND	0.032	0.019
N-Nitrosodiphenylamine	86-30-6	**99**	**390**	**0.4**	ND	0.032	0.028
1,2-Diphenylhydrazine	122-66-7	**0.7**	**2**	**0.7**	ND	0.032	0.032
4-Bromophenyl phenyl ether	101-55-3	**NS**	**NS**	**NS**	ND	0.032	0.027
Hexachlorobenzene	118-74-1	**0.3**	**1**	**0.2**	ND	0.032	0.029
Atrazine	1912-24-9	**210**	**2400**	**0.2**	ND	0.032	0.028
Pentachlorophenol	87-86-5	**0.9**	**3**	**0.3**	ND	0.032	0.019
Phenanthrene	85-01-8	**NS**	**300000**	**NS**	ND	0.032	0.029
Anthracene	120-12-7	**17000**	**30000**	**2400**	ND	0.032	0.028
Carbazole	86-74-8	**24**	**96**	**NS**	ND	0.032	0.025
Di-n-butyl phthalate	84-74-2	**6100**	**68000**	**760**	ND	0.032	0.024
Fluoranthene	206-44-0	**2300**	**24000**	**1300**	ND	0.032	0.027
Benzidine	92-87-5	**0.7**	**0.7**	**0.7**	ND	0.032	0.019
Pyrene	129-00-0	**1700**	**18000**	**840**	ND	0.032	0.026
Butyl benzyl phthalate	85-68-7	**1200**	**14000**	**230**	ND	0.032	0.029
3,3'-Dichlorobenzidine	91-94-1	**1**	**4**	**0.2**	ND	0.032	0.023
Benzo[a]anthracene	56-55-3	**5**	**17**	**0.8**	ND	0.032	0.027
Chrysene	218-01-9	**450**	**1700**	**80**	ND	0.032	0.027
Bis(2-ethylhexyl) phthalate	117-81-7	**35**	**140**	**1200**	ND	0.032	0.020
Di-n-octyl phthalate	117-84-0	**2400**	**27000**	**3300**	ND	0.032	0.028
Benzo[b]fluoranthene	205-99-2	**5**	**17**	**2**	ND	0.032	0.026
Benzo[k]fluoranthene	207-08-9	**45**	**170**	**25**	ND	0.032	0.027
Benzo[a]pyrene	50-32-8	**0.5**	**2**	**0.2**	ND	0.032	0.026
Indeno[1,2,3-cd]pyrene	193-39-5	**5**	**17**	**7**	ND	0.032	0.026
Dibenz[a,h]anthracene	53-70-3	**0.5**	**2**	**0.8**	ND	0.032	0.031
Benzo[g,h,i]perylene	191-24-2	**380000**	**30000**	**NS**	ND	0.032	0.029
Dinitrotoluene (2,4- and 2,6-)	25321-14-6	**0.7**	**3**	**0.2**	ND	0.032	0.029
TOTAL BNA'S:		**NS**	**NS**	**NS**	ND		NA
TOTAL TIC's:		**NS**	**NS**	**NS**	ND		NA
TOTAL BNA'S & TIC's:		**NS**	**NS**	**NS**	ND		NA

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PCB's (mg/Kg)					Conc	Q	RL	MDL
Aroclor-1016	12674-11-2	NS	NS	NS	ND		0.00164	0.000656
Aroclor-1221	11104-28-2	NS	NS	NS	ND		0.00164	0.000656
Aroclor-1232	11141-16-5	NS	NS	NS	ND		0.00164	0.000656
Aroclor-1242	53469-21-9	NS	NS	NS	ND		0.00164	0.000656
Aroclor-1248	12672-29-6	NS	NS	NS	ND		0.00164	0.000656
Aroclor-1254	11097-69-1	NS	NS	NS	ND		0.00164	0.000656
Aroclor-1260	11096-82-5	NS	NS	NS	ND		0.00164	0.000656
Aroclor-1262	37324-23-5	NS	NS	NS	ND		0.00164	0.000656
Aroclor-1268	11100-14-4	NS	NS	NS	ND		0.00164	0.000656
PCBs	1336-36-3	0.2	1	0.2	ND		0.00164	0.000656

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Pesticides (mg/Kg)					Conc	Q	RL	MDL
alpha-BHC	319-84-6	**0.1**	**0.5**	**0.002**	ND		0.000328	0.000164
beta-BHC	319-85-7	**0.4**	**2**	**0.002**	ND		0.000328	0.000164
gamma-BHC (Lindane)	58-89-9	**0.4**	**2**	**0.002**	ND		0.000328	0.000164
delta-BHC	319-86-8	**NS**	**NS**	**NS**	ND		0.000328	0.000164
Heptachlor	76-44-8	**0.1**	**0.7**	**0.5**	ND		0.000328	0.000164
Aldrin	309-00-2	**0.04**	**0.2**	**0.2**	ND		0.000328	0.000164
Heptachlor epoxide	1024-57-3	**0.07**	**0.3**	**0.01**	ND		0.000328	0.000164
Endosulfan I	959-98-8	**NS**	**NS**	**NS**	ND		0.000328	0.000164
4,4'-DDE	72-55-9	**2**	**9**	**18**	ND		0.000328	0.000164
Dieldrin	60-57-1	**0.04**	**0.2**	**0.003**	ND		0.000328	0.000164
Endrin	72-20-8	**23**	**340**	**1**	ND		0.000328	0.000164
Endosulfan II	33213-65-9	**NS**	**NS**	**NS**	ND		0.000328	0.000164
4,4'-DDD	72-54-8	**3**	**13**	**4**	ND		0.000328	0.000164
Endrin aldehyde	7421-93-4	**NS**	**NS**	**NS**	ND		0.000328	0.000164
Endosulfan sulfate	1031-07-8	**470**	**6800**	**2**	ND		0.000328	0.000164
4,4'-DDT	50-29-3	**2**	**8**	**11**	ND		0.000328	0.000164
Endrin ketone	53494-70-5	**NS**	**NS**	**NS**	ND		0.000328	0.000164
Methoxychlor	72-43-5	**390**	**5700**	**160**	ND		0.000328	0.000164
alpha-Chlordane	5103-71-9	**NS**	**NS**	**NS**	ND		0.000328	0.000164
gamma-Chlordane	5103-74-2	**NS**	**NS**	**NS**	ND		0.000328	0.000164
Toxaphene	8001-35-2	**0.6**	**3**	**0.3**	ND		0.0041	0.00197
Endosulfan (I and II)	115-29-7	**470**	**6800**	**4**	ND		0.000328	0.000164
Chlordane (alpha and gamma)	57-74-9	**0.2**	**1**	**0.05**	ND		0.000328	0.000164

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Herbicides (mg/Kg)					Conc	Q	RL	MDL
Dalapon	75-99-0	NS	NS	NS	ND		0.017	0.00666
Dicamba	1918-00-9	NS	NS	NS	ND		0.017	0.00666
2,4-D	94-75-7	NS	NS	NS	ND		0.017	0.00666
2,4,5-TP (Silvex)	93-72-1	NS	NS	NS	ND		0.017	0.00666
2,4,5-T	93-76-5	NS	NS	NS	ND		0.017	0.00666
2,4-DB	94-82-6	NS	NS	NS	ND		0.017	0.00666
Dinoseb	88-85-7	NS	NS	NS	ND		0.017	0.00666

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NJ-EPH-C40 (mg/Kg)					Conc	Q	RL	MDL
C9-C40	IALC9C40	NS	NS	NS	ND		46.9	18.8

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Alcohols (mg/Kg)					Conc	Q	RL	MDL
Methanol	67-56-1	NS	NS	NS	ND		2.00	2.00

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Metals (mg/Kg)					Conc	Q	RL	MDL
Aluminum	7429-90-5	78000	NS	6000	2680		12.3	4.90
Antimony	7440-36-0	31	450	6	ND		1.23	0.490
Arsenic	7440-38-2	19	19	19	0.465	J	1.23	0.368
Barium	7440-39-3	16000	59000	2100	14.0		1.23	0.613
Beryllium	7440-41-7	16	140	0.7	ND		**1.23**	0.368
Cadmium	7440-43-9	78	78	2	ND		1.23	0.735
Calcium	7440-70-2	NS	NS	NS	4140		123	36.8
Chromium	7440-47-3	NS	NS	NS	16.9		1.23	0.613
Cobalt	7440-48-4	1600	590	90	5.25		1.23	0.368
Copper	7440-50-8	3100	45000	11000	12.8		1.23	0.858
Iron	7439-89-6	NS	NS	NS	18100		123	36.8
Lead	7439-92-1	400	800	90	ND		1.23	0.613
Magnesium	7439-95-4	NS	NS	NS	3010		123	36.8
Manganese	7439-96-5	11000	5900	65	**94.0**		1.23	0.858
Mercury	7439-97-6	23	65	0.1	ND		0.024	0.0094
Nickel	7440-02-0	1600	23000	48	4.29		1.23	0.858
Potassium	7440-09-7'	NS	NS	NS	1710		123	49.0
Selenium	7782-49-2	390	5700	11	ND		8.58	3.68
Silver	7440-22-4	390	5700	1	ND		**1.23**	0.735
Sodium	7440-23-5	NS	NS	NS	140		123	49.0
Thallium	7440-28-0	withdrawn	withdrawn	3	ND		1.23	0.613
Vanadium	7440-62-2	78	1100	NS	21.6		1.23	0.613
Zinc	7440-66-6	23000	110000	930	11.4	J	12.3	2.45

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General Analytical					Conc	Q	RL	MDL
Hexavalent Chromium-mg/Kg	18540-29-9	**240**	**20**	**NS**	ND		1.00	0.378
Cyanide, Total-mg/Kg	57-12-5	**47**	**680**	**20**	ND		1.00	0.500
pH/Corrosivity-SU	SRP 6	**NS**	**NS**	**NS**	8.43		NA	NA
Trivalent (III) Chromium-mg/Kg	16065-83-1	**120000**	**NS**	**NS**	16.9		1.23	0.613

NJDEP Soil Remediation Standards: Remediation Standards N.J.A.C. 7:26D, May 2012; Amended Sept 2017

BOLD Conc	Indicates a concentration that exceeds applicable criteria.
BOLD RL	Indicates RL that exceeds applicable criteria.
BOLD MDL	Indicates MDL that exceeds applicable criteria.

NS = No Standard Available
ND = Analyzed for but Not Detected at the MDL
J = Concentration detected at a value below the RL and above the MDL for target compounds. For non-target compounds (i.e. TICs), qualifier indicates estimated concentrations.

Standards are based upon published regulatory information.
Users are encouraged to consult appropriate regulatory sources for current values and updates.
IAL assumes no responsibility for the accuracy of these values.

EDD created on 4/24/18

TILCON NEW YORK INC.

PHONE: 973-366-7741 9 ENTIN ROAD, PARSIPPANY , New Jersey 07054

2019 Clean Fill Material Certification- *NJ Locations Only*

Tilcon NY Inc. New Jersey Division confirms to the best of our knowledge that the aggregates produced at the locations below are virgin stone products, contain no hazards or contamination prior to shipment of materials and conform to section 901 of the *2007 New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction*, The material is identified on the job with Tilcon NJ delivery tickets. The quarries are listed in the Quality List (QPL) of the NJDOT website

http://www.state.nj.us/transportation/eng/materials/qualified/QPRDB.shtm

Pompton Lakes Quarry- Granite Gneiss, 84 Borough of Pompton Lakes, Passaic County Blocks No(s) 105- Lot(s) 84. NJDOT approved crushed stone and certified fill products.

Mt. Hope Quarry- Granite Gneiss, 625 Mt Hope Road, Wharton Borough, Morris County NJ, Block No 20001 Lot(s) 5.01,5.02,7; Block 70001 Lot No 2;Block No 20101 Lot No 6. Mt Hope quarry contains NJDOT approved crushed stone, washed products and certified fill products.

Tilcon NY Inc. has had Pompton Lakes and Mt Hope quarries analyzed under the EPA Target Compound List as required by the LSRP program- *NJDEP Residential Direct Contact Soil Remediation Standards/Clean Fill Criteria*. A copy of the report is available upon request. To the best of our knowledge, the materials produced at the above quarries comply with Section 7 of the Fill Material Guidance for SRP Sites.

Riverdale Quarry- Granite Gneiss, 125 Hamburg Turnpike, Riverdale, Morris County NJ, Block No9s0 25, 26, 27, 29 Lot No 3. Riverdale Quarry NJDOT approved crushed stone, washed products and certified fill materials.

Oxford Quarry- Granite Gneiss and Limestone , Quarry and Mt Pisgah Avenue, White Township , Warren County Block 32- Lots 15,16 Block 33- Lots 22,23 Block 34 Lots 19,20 Block 25- Lots 3,5,9,90.1 NJDOT approved crushed stone ,washed products and certified materials .

Tilcon New York, INC Quality Control 973-659-3790

An Equal Opportunity Employer

SUBMITTAL FOR ACCEPTANCE

Date submitted:	Project Name and Contract No.	Location	Submittal No.
3/13/19	**Hatco Corporation Site Woodbridge Pond Remediation** Project No.: 1215	Woodbridge, NJ	017a

Weston Solutions, Inc. 205 Campus Drive Edison, NJ 08837 Attn: Kinjal Shah	**Sevenson Environmental Services, Inc.** 2749 Lockport Road Niagara Falls, New York 14305
Attn: John Pyle	Contractor/Vendor Job No.:

Spec. Sect. No.	Item No.	Full Description (Name, Type, Size, Capacity Use)	Manufacturer/ Designer	Date Submittal Return Required:	Action Code*
02150	1.3; A	Tilcon Materials – Mt. Hope, NJ Quarry Source – Clean Fill Certification			1
02300	1.3; A	Tilcon Materials – 2.5" materials Sieve Analysis and Chemical Analysis of source			1

Special Instructions or Variances by Contractor/Vendor:

Comments (or see attached sheet if needed):

Alternate source for 2.5" materials proposed for Construction Access at Bulkhead area – Same source as I-8 materials, would allow for a single borrow source for all stone materials.

Checked by Contractor for Project Conformance
Name:/Title: Joel Czachorowski/ Project Manager/QC

***Acceptance Action Codes and Explanation:**

1. No exceptions taken
2. Make corrections noted
3. Amend and resubmit
4. Rejected - see comments on this page or see attached.

- Installation shall proceed only when acceptance code is #1 or #2.
- Acceptance does not relieve Contractor from responsibility of compliance with all requirements of the Subcontract documents.
- Acceptance coded 3 or 4 shall be resubmitted unless otherwise indicated.

Date Returned: 3/25/19

By: Jason Schindler

Shop Drawing and Vendor Submittal Review

Discipline	Individual	Initial	Date	Comments

ADR DATA ASSESSMENT

Laboratory Report Number: R0948 / 20161016

Laboratory: Eurofins – Spectrum Analytical / ESC Lab Sciences

Project: Horseshoe Road – Backfill / Topsoil

Automated Data Review (ADR) has been applied to the laboratory data. All data were found to be valid and acceptable. Data validation qualifiers, if any, were applied as summarized on the attached Sample Qualification Reports. Quality control problems, if any, are summarized on the attached Outlier Reports.

Reviewer's Name: Sidney C. Tyrrell

Reviewer's Signature: Sidney C. Tyrrell

Project Chemist's Name: James B. Hyzy PhD.

Project Chemist's Signature: J. B. Hyzy, PhD

Date: 11-8-16

NOTE: *The NJDEP EPH results were not reviewed using ADR. These results were manually validated by the above data reviewer and are acceptable as reported by the laboratory. Because of positive detections, calculator sheet showing passing EPH is included.* SCT 11-8-16

COMPOSITION-SPECIFIC EXTRACTABLE PETROLEUM HYDROCARBON (EPH) SOIL REMEDIATION CRITERION (SRC) CALCULATOR FOR NON-#2 FUEL OIL/DIESEL OIL PETROLEUM HYDRCARBON MIXTURES (Version 2.0, August 9, 2010)

DATA ENTRY CELLS

ENTER ALL CONCENTRATIONS AS MILLIGRAMS/KILOGRAM (mg/kg)
FOR NON DETECT VALUES, ENTER "0" or "ND" (without the quotation marks)
REMEMBER TO ENTER ACTUAL SAMPLE IDENTIFICATION IN PLACE OF "SAMPLE 1", ETC.
REMEMBER TO INDICATE WHETHER THE SAMPLE IS "RESIDENTIAL" (R) OR "NON-RESIDENTIAL" (N) [OR USE DROP-DOWN LIST]
ALL DATA MUST BE ENTERED FOR EACH SAMPLE FOR THE EPH CRITERION TO BE CALCULATED
CLICK ON THE "CALCULATE EPH SRC" BUTTON TO CALCULATE THE SAMPLE-SPECIFIC EPH SOIL REMEDIATION CRITERION
IF YOU CHANGE ANY INPUT DATA, YOU MUST CLICK ON "CALCULATE EPH SRC" AGAIN TO RECALCULATE THE SOIL REMEDIATION CRITERION
IF THE RESULTS FROM THE GC ANALYSIS INDICATE AN EPH CONCENTRATION LESS THAN 1,700 mg/kg, IT IS NOT NECESSARY TO USE THIS CALCULATOR

EC* RANGE / SAMPLE ID		HSR-BF-11-101416	SAMPLE 2	SAMPLE 3	SAMPLE 4	SAMPLE 5
Enter Residential or Non-Residential		Residential				
ALIPHATICS	EC9-EC12	0.0				
	EC12-EC16	20.5				
	EC16-EC21	3.4				
	EC21-EC40	17.2				
AROMATICS	EC10-EC12	0.0				
	EC12-EC16	0.0				
	EC16-EC21	6.2				
	EC21-EC36	0.0				
Total Concentration (mg/kg)		47.3				

Calculated EPH SRC# (mg/kg)	6,600				
Allowable% EPH SRC (mg/kg)	6,600				
ABOVE/BELOW ALLOWABLE EPH SRC (i.e., PASS or FAIL)	BELOW (PASS)				

* = Equivalent Carbon
\# = Soil Remediation Criterion
% = Accounts for residual product
17,000^ = Default maximum value for all non-#2 fuel oil/diesel oil petroleum hydrocarbon mixtures

11-8-16

Calculate EPH SRC | Print Results | Intro Message

Reset Data | Instructions | Run Date = 11/02/2016

Backfill / Topsoil Sampling
Horseshoe Road and Atlantic Resources Corporation
Superfund Site (OU3)
Sayreville, NJ

Eurofins / ESC
Sample Delivery Group: R0948 / 20161016

Backfill / Topsoil Samples

HSR-BF-11-101416

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:

☑ Standard TAT - 7 to 10 business days

☐ Rush TAT - Date Needed: _____

All TATs subject to laboratory approval
Min. 24-hr notification needed for rushes
Samples disposed after 60 days unless otherwise instructed.

Report To: Joel Italian
Sevenson Environmental Services
400 Horsehoe Road
Sayreville, NJ 08872
Telephone #:
Project Mgr: Joel Czachorowski

Invoice To: Sevenson Environmental Services
2749 Lockport Road
Niagra Falls NY 14305
P.O No.: G2849030 Quote/RQN:

Project No: G284
Site Name: Horse Shoe Road OU-3
Location: Sayreville State: NJ
Sampler(s): Joel Italian

F=Field Filtered 1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH3OH 8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= 12=

List Preservative Code below:

DW=Dinking Water GW=Groundwater SW=Surface Water WW=Waste Water
O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas
X1= X2= X3=

G= Grab C=Compsite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Encore	Total Metals & Hg	SVOA	Pest & PCBs	Cyanide	NJ EPH	VOC	Radium 226/228		Check if chlorinated	QA/QC Reporting Notes: * additional charges may appply
R0948-01	HSR-BF-11-101416	10/14/2016	10:45 AM	C	SO		5		1	3	x	x	x	x	x	x	x		☐	EME Pit
																			☐	Wetland Topsoil to 10K Cy
																			☐	
																			☐	
																			☐	
																			☐	Fed Ex Tracking # 777472433779
																			☐	
																			☐	
																			☐	
																			☐	

MA DEP MCP CAM Report? ☐ Yes ☐ No
CT DPH RCP Report? ☐ Yes ☐ No
☐ Standard ☐ No QC
☐ DQA*
☐ ASP A* ☐ ASP B*
☐ NJ Reduced* ☐ NJ Full*
☐ Tier II* ☐ Tier IV*
☐ Other:
State-specific reporting standards:

Relinquished by:	Received by:	Date:	Time:	Temp °C
10-14-16 1540		10/15/16	9:30 Am	Observed 4.3°C
				Correction Factor 0
				Corrected 4.3°C
				IR ID # MT-74

☑ EDD format: datareview@sevenson.com
☑ E-mail to: Jitalian@sevenson.com
jczachorowski@sevenson.com

Condition upon receipt: Custody Seals: ☑ Present ☑ Intact ☐ Broken
☐ Ambient ☑ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

Eurofins Spectrum Analytical, Inc. -- ESAI-RI

Received By: SB	Page 01 of 00
Reviewed By: AC	Log-in Date 10/15/2016
Work Order: R0948	Client Name: Sevenson Environmental Services Inc.
Project Name/Event: Horseshoe Road Site	

Remarks: (1/2) Please see associated sample/extract transfer logbook pages submitted with this data package.

1. Custody Seal(s)	Present / Absent
	Intact / Broken
2. Custody Seal Nos.	N/A
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists	Present / Absent
4. Airbill	AirBill / Sticker Present / Absent
5. Airbill No.	FedEx 7774 7243 3779
6. Sample Tags	Present / Absent
Sample Tag Numbers	Listed / Not Listed on Chain-of-Custody
7. Sample Condition	Intact / Broken/ Leaking
8. Cooler Temperature Indicator Bottle	Present / Absent
9. Cooler Temperature	4.3 °C
10. Does information on TR/COCs and sample tags agree?	Yes / No
11. Date Received at Laboratory	10/15/2016
12. Time Received	09:30

Sample Transfer

Fraction (1) TVOA/VOA	Fraction (2) SVOA/PEST/ARO
Area #	Area #
By	By
On	On

Lab Sample ID	Preservation (pH) HNO3	H2SO4	HCl	NaOH	H3PO4	VOA Matrix	Soil HeadSpace or Air Bubble > or equal to 1/4"
R0948-01						E	

IR Temp Gun ID:MT-74

CoolantCondition: ICE

Preservative Name/Lot No:

VOA Matrix Key:

US = Unpreserved Soil	A= Air
UA = Unpreserved Aqueous	H = HCl
M = MeOH	E = Encore
N = NaHSO4	F = Freeze

See Sample Condition Notification/Corrective Action Form Yes / No

eurofins | Spectrum Analytical

CHAIN-OF-CUSTODY RECORD

WorkOrder : R0948
Project: Horseshoe Road Site
Report Type : LEVEL 4
Purchase Order : R0948

Due Date : 10/27/2016
FAX Due Date : 10/24/2016
Report To : Agnes R Huntley

EDD Types :
Please generate a Little PEL EDD

Subcontractor:
ESC Lab Sciences Company
311 N Aspen Ave.
Broken Arrow, OK 74012

Phone: (918) 251-2525

Invoice To:
Eurofins Spectrum Analytical, Inc.
2425 New Holland Pike
Lancaster, PA 17601
Attention: Accounts Payable
AccountsPayable@EurofinsUS.com

EQuISFacilityCode: N/A

Please e-mail results in electronic format (PDF and/or EDD) to ESAI_RI_LabResults@EurofinsUS.com.

Requested Test

Client Sample ID	Collection Date	#	Matrix	DUP/MS/MSD	Mitkem Sample ID	RADIUM_226_S
HSR-BF-11-101416	10/14/2016 10:45	1	Soil		R0948-01G	X

Please send notice immediatley and prior to the start of sample preparation and/or analysis if certification is not held for the requested analyses. Notice should be emailed to ESAI_RI_ClientServices

1) RADIUM_226_S, RADIUM 226 (SOLID)

Use 'Client Sample IDs' when reporting data. If needed, truncate 'Client Sample IDs' to fit on reports. Use full 'Client Sample ID' when generating EDD. # = number of containers

Comments:

C866742
20161016

		Date/Time			Date/Time
Relinquished by:	Agnes R Huntley		Received by:		10/18/16 1405
Relinquished by:			Received by:		

10/17/2016
Page 1 of 1

Date Received: 10/18/2016 2:40:0

Lab Number: 20161016

Due: 10/25/2016

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20161016-01 B	HSR-BF-11-10/14/16	SCM	10/14/16	Plastic	16 oz (C1)	None		Yes	Yes
20161016-01 A	HSR-BF-11-10/14/16	SCM	10/14/16	Plastic	Lg Zip Bag	None		Yes	Yes
Gamma Spec (NORM)			DOE Ga-01-R*						

CONTAINER INSPECTION

Coolers 0 of 1 Custody Seals Broken Ø Temperature: Amb C Ice Radiation Survey: <300 cpm

SAMPLE INSPECTION

Sample Seal Broken Ø Chain of Custody Record ✓ Labels in Tact ✓ Radiation Survey Complete ✓

Anomalies

SN: 47747
4/28/17

Inspected By: [signature] DATE 10/18/16

QA or Designee Review: Raymond Thomas DATE 10/18/16

Sample Custodian Review: [signature] DATE 10/18/16

Project Notes:

EDD Summary Report by Analysis Method

Lab Reporting Batch ID: R0948 **Laboratory: MITKEM**

Client Sample ID	Lab Sample ID	Analysis Type	Preparation Method	Matrix	Collection Date	Preparation Date	Analysis Date
Method: 6010C							
HSR-BF-11-101416	R0948-01B	RES/TOT(TOT)	SW3050	SO	10/14/2016 10:45	10/21/2016 10:00	10/24/2016 08:39
Method: 7471B							
HSR-BF-11-101416	R0948-01B	RES/TOT(TOT)	SW7471B	SO	10/14/2016 10:45	10/23/2016 10:40	10/24/2016 12:03
Method: 8081B							
HSR-BF-11-101416	R0948-01B	RES	SW3550	SO	10/14/2016 10:45	10/20/2016 12:35	10/25/2016 01:58
Method: 8082A							
HSR-BF-11-101416	R0948-01B	RES	SW3550	SO	10/14/2016 10:45	10/20/2016 12:25	10/22/2016 03:59
Method: 8260B							
HSR-BF-11-101416	R0948-01E	RES	SW5035	SO	10/14/2016 10:45	10/21/2016 21:46	10/22/2016 02:05
Method: 8270D							
HSR-BF-11-101416	R0948-01B	RES	SW3550	SO	10/14/2016 10:45	10/20/2016 12:32	10/21/2016 20:41
Method: 9012B							
HSR-BF-11-101416	R0948-01D	RES	Micro-distillation	SO	10/14/2016 10:45	10/20/2016 07:36	10/20/2016 09:11

EDD Summary Report by Analysis Method

Lab Reporting Batch ID: GS1669 **Laboratory: OLBA**

Client Sample ID	Lab Sample ID	Analysis Type	Preparation Method	Matrix	Collection Date	Preparation Date	Analysis Date
Method: DOE Ga-01-R*							
HSR-BF-11-101416	HSR-BF-11-101416	INITIAL(TOT)	GEN PREP	SO	10/14/2016 10:45	10/18/2016 0:00	10/18/2016 0:00
20160910-21	20160910-21	INITIAL(TOT)	GEN PREP	SO	10/14/2016 10:45	10/18/2016 0:00	10/18/2016 0:00

Data Qualifier Summary

Lab Reporting Batch ID: R0948 **Laboratory: MITKEM**

EDD Filename: R0948_A_a **eQAPP Name: HR_Backfill_Spectrum(042415)**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: HSR-BF-11-101416 *Collected:* 10/14/2016 10:45:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	0.51	BN	0.37	IDL	0.97	PQL	mg/Kg	UJ	Ms, Mb
CALCIUM	7360	*	5.9	IDL	39	PQL	mg/Kg	J	Ld
COPPER	14.7	*	0.11	IDL	1.5	PQL	mg/Kg	J	Ld
MAGNESIUM	1550	*E	0.61	IDL	24	PQL	mg/Kg	J	Ld
NICKEL	9.7	*E	0.042	IDL	2.4	PQL	mg/Kg	J	Ld
SODIUM	114	*	1.1	IDL	49	PQL	mg/Kg	J	Ld
IRON	20700	*E	1.5	IDL	9.7	PQL	mg/Kg	J	Ld

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: HSR-BF-11-101416 *Collected:* 10/14/2016 10:45:00 AM *Analysis Type:* RES/TOT *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.026	B	0.0029	IDL	0.046	PQL	mg/Kg	J	RI, Ld

Method Category: SVOA

Method: 8081B **Matrix: SO**

Sample ID: HSR-BF-11-101416 *Collected:* 10/14/2016 10:45:00 AM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,4'-DDD	4.4	U	0.29	MDL	4.4	PQL	ug/Kg	UJ	Surr
4,4'-DDE	4.4	U	0.33	MDL	4.4	PQL	ug/Kg	UJ	Surr
4,4'-DDT	4.4	U	0.44	MDL	4.4	PQL	ug/Kg	UJ	Surr
ALDRIN	2.3	U	0.15	MDL	2.3	PQL	ug/Kg	UJ	Surr
ALPHA-BHC	2.3	U	0.074	MDL	2.3	PQL	ug/Kg	UJ	Surr
ALPHA-CHLORDANE	2.3	U	0.12	MDL	2.3	PQL	ug/Kg	UJ	Surr
BETA-BHC	2.3	U	0.083	MDL	2.3	PQL	ug/Kg	UJ	Surr
DELTA-BHC	2.3	U	0.16	MDL	2.3	PQL	ug/Kg	UJ	Surr
DIELDRIN	4.4	JU	0.21	MDL	4.4	PQL	ug/Kg	UJ	Surr
ENDOSULFAN I	2.3	U	0.079	MDL	2.3	PQL	ug/Kg	UJ	Surr
ENDOSULFAN II	4.4	U	0.20	MDL	4.4	PQL	ug/Kg	UJ	Surr
ENDOSULFAN SULFATE	4.4	U	0.17	MDL	4.4	PQL	ug/Kg	UJ	Surr

* denotes a non-reportable result

Project Name and Number: Horseshoe Road G284 - HSR Backfill/Topsoil

Data Qualifier Summary

Lab Reporting Batch ID: R0948 **Laboratory: MITKEM**

EDD Filename: R0948_A_a **eQAPP Name: HR_Backfill_Spectrum(042415)**

Method Category: SVOA
Method: 8081B **Matrix:** SO

Sample ID: HSR-BF-11-101416 *Collected:* 10/14/2016 10:45:00 AM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ENDRIN	4.4	U	0.19	MDL	4.4	PQL	ug/Kg	UJ	Surr
ENDRIN ALDEHYDE	4.4	U	0.30	MDL	4.4	PQL	ug/Kg	UJ	Surr
ENDRIN KETONE	4.4	U	0.16	MDL	4.4	PQL	ug/Kg	UJ	Surr
GAMMA-BHC	2.3	U	0.073	MDL	2.3	PQL	ug/Kg	UJ	Surr
GAMMA-CHLORDANE	2.3	U	0.28	MDL	2.3	PQL	ug/Kg	UJ	Surr
HEPTACHLOR	2.3	U	0.095	MDL	2.3	PQL	ug/Kg	UJ	Surr
HEPTACHLOR EPOXIDE	2.3	U	0.21	MDL	2.3	PQL	ug/Kg	UJ	Surr
METHOXYCHLOR	23	U	1.2	MDL	23	PQL	ug/Kg	UJ	Surr
TOXAPHENE	230	U	12	MDL	230	PQL	ug/Kg	UJ	Surr

Method Category: SVOA
Method: 8082A **Matrix:** SO

Sample ID: HSR-BF-11-101416 *Collected:* 10/14/2016 10:45:00 AM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1016	44	U	3.3	MDL	44	PQL	ug/Kg	UJ	Surr
AROCLOR 1221	44	U	5.8	MDL	44	PQL	ug/Kg	UJ	Surr
AROCLOR 1232	44	U	3.2	MDL	44	PQL	ug/Kg	UJ	Surr
AROCLOR 1242	44	U	3.3	MDL	44	PQL	ug/Kg	UJ	Surr
AROCLOR 1248	44	U	5.0	MDL	44	PQL	ug/Kg	UJ	Surr
AROCLOR 1254	44	U	5.8	MDL	44	PQL	ug/Kg	UJ	Surr
AROCLOR 1260	44	U	2.4	MDL	44	PQL	ug/Kg	UJ	Lcs, Surr

Method Category: SVOA
Method: 8270D **Matrix:** SO

Sample ID: HSR-BF-11-101416 *Collected:* 10/14/2016 10:45:00 AM *Analysis Type:* RES-ACID *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PENTACHLOROPHENOL	440	U	93	MDL	440	PQL	ug/Kg	R	Lcs, Lcs

* denotes a non-reportable result

Project Name and Number: Horseshoe Road G284 - HSR Backfill/Topsoil

Data Qualifier Summary

Lab Reporting Batch ID: R0948 **Laboratory: MITKEM**

EDD Filename: R0948_A_a **eQAPP Name: HR_Backfill_Spectrum(042415)**

Method Category: **SVOA**

Method: **8270D** ***Matrix:*** **SO**

Sample ID: **HSR-BF-11-101416** ***Collected:*** **10/14/2016 10:45:00 AM** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DI-N-BUTYL PHTHALATE	160	J	19	MDL	220	PQL	ug/Kg	J	RI

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **SO**

Sample ID: **HSR-BF-11-101416** ***Collected:*** **10/14/2016 10:45:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-BUTANONE	8.1	U	3.2	MDL	8.1	PQL	ug/Kg	UJ	Lcs, Lcs
ACETONE	8.1	U	2.6	MDL	8.1	PQL	ug/Kg	UJ	Lcs

* denotes a non-reportable result

Project Name and Number: Horseshoe Road G284 - HSR Backfill/Topsoil

Data Qualifier Summary

Lab Reporting Batch ID: R0948

Laboratory: MITKEM

EDD Filename: R0948_A_a

eQAPP Name: HR_Backfill_Spectrum(042415)

Reason Code Legend

Reason Code	*Description*
Lcs	Laboratory Control Precision
Lcs	Laboratory Control Spike Lower Estimation
Lcs	Laboratory Control Spike Lower Rejection
Ld	Laboratory Duplicate Precision
Mb	Method Blank Contamination
Ms	Matrix Spike Lower Estimation
RI	Reporting Limit Trace Value
Surr	Surrogate/Tracer Recovery Lower Estimation

* denotes a non-reportable result

Project Name and Number: Horseshoe Road G284 - HSR Backfill/Topsoil

Data Qualifier Summary

Lab Reporting Batch ID: GS1669 **Laboratory: OLBA**

EDD Filename: 20161016 **eQAPP Name: HR_Backfill_Spectrum(042415)**

Method Category: **RADCHEM**

Method: **DOE Ga-01-R*** ***Matrix:*** **SO**

Sample ID: **20160910-21** ***Collected:*** **10/14/2016 10:45:00 AM** ***Analysis Type:*** **INITIAL** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
Ra-226	0.608		0.062	MDA	0.3	CRQL	pCi/g	J	ProfJudg

* denotes a non-reportable result

Project Name and Number: Horseshoe Road G284 - HSR Backfill/Topsoil

Data Qualifier Summary

Lab Reporting Batch ID: GS1669 **Laboratory: OLBA**

EDD Filename: 20161016 **eQAPP Name: HR_Backfill_Spectrum(042415)**

Reason Code Legend

Reason Code	*Description*
Mb	Method Blank Contamination
ProfJudg	Professional Judgment

* denotes a non-reportable result

Project Name and Number: Horseshoe Road G284 - HSR Backfill/Topsoil

Backfill / Topsoil Sampling
Horseshoe Road and Atlantic Resources Corporation
Superfund Site (OU3)
Sayreville, NJ

Eurofins / ESC
Sample Delivery Group: R0948 / 20161016

Outlier Reports

EDD Warning Log

Lab Reporting Batch ID: R0948

eQAPP: HR_Backfill_Spectrum(042415) **Laboratory: MITKEM**

Table	Line #	Column	Value	Warning	Description
Analytical Results	123	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	124	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	125	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	126	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	127	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	129	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	130	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	132	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	133	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	134	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	135	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	137	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	138	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	139	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	144	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	146	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				

EDD Warning Log

Lab Reporting Batch ID: R0948

eQAPP: HR_Backfill_Spectrum(042415) **Laboratory: MITKEM**

Table	Line #	Column	Value	Warning	Description
Analytical Results	147	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	148	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	152	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	155	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	156	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	157	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	158	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	160	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	162	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	164	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	165	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	167	ReportingLimit	8.1	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	170	ReportingLimit	84.00	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	189	ReportingLimit	330.0	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results	191	ReportingLimit	0.0520	8	This reporting limit exceeds the allowable project reporting limit (corrected for %moisture and dilution).
Lab Comments:	The reporting limit exceeds the allowable project reporting limit. Data is reported down to the listed MDL and if detected between the RL and MDL it would be reported with a J qualifier.				
Analytical Results				14	POTASSIUM (7440-09-7) is a required SPK compound for Method: '6010C', Matrix: 'SO' and QCType: 'MS', but is not reported for sample HSR-BF-11-101416MS.
Lab Comments:	This analyte is not part of the spiking mix used for the MS.				

EDD Warning Log

Lab Reporting Batch ID: R0948

eQAPP: HR_Backfill_Spectrum(042415) **Laboratory: MITKEM**

Table	Line #	Column	Value	Warning	Description
Analytical Results				14	SODIUM (7440-23-5) is a required SPK compound for Method: '6010C', Matrix: 'SO' and QCType: 'MS', but is not reported for sample HSR-BF-11-101416MS.
Lab Comments: This analyte is not part of the spiking mix used for the MS.					
Analytical Results				14	CALCIUM (7440-70-2) is a required SPK compound for Method: '6010C', Matrix: 'SO' and QCType: 'MS', but is not reported for sample HSR-BF-11-101416MS.
Lab Comments: This analyte is not part of the spiking mix used for the MS.					
Analytical Results				14	IRON (7439-89-6) is a required SPK compound for Method: '6010C', Matrix: 'SO' and QCType: 'MS', but is not reported for sample HSR-BF-11-101416MS.
Lab Comments: This analyte is not part of the spiking mix used for the MS.					
Analytical Results				14	MAGNESIUM (7439-95-4) is a required SPK compound for Method: '6010C', Matrix: 'SO' and QCType: 'MS', but is not reported for sample HSR-BF-11-101416MS.
Lab Comments: This analyte is not part of the spiking mix used for the MS.					
Analytical Results				14	ALUMINUM (7429-90-5) is a required SPK compound for Method: '6010C', Matrix: 'SO' and QCType: 'MS', but is not reported for sample HSR-BF-11-101416MS.
Lab Comments: This analyte is not part of the spiking mix used for the MS.					
Analytical Results				14	MANGANESE (7439-96-5) is a required SPK compound for Method: '6010C', Matrix: 'SO' and QCType: 'MS', but is not reported for sample HSR-BF-11-101416MS.
Lab Comments: This analyte is not part of the spiking mix used for the MS.					
Sample Analysis				38	MethodBatch '85704' is missing a sample of QCType 'MSD' for LabAnalysisRefMethodID '7471B'
Lab Comments: No QC type MSD was reported for this method batch.					
Sample Analysis				38	MethodBatch '85686' is missing a sample of QCType 'MS' for LabAnalysisRefMethodID '8081B'
Lab Comments: No QC type MS/MSD was reported for this method batch.					
Sample Analysis				38	MethodBatch '85686' is missing a sample of QCType 'MSD' for LabAnalysisRefMethodID '8081B'
Lab Comments: No QC type MS/MSD was reported for this method batch.					
Sample Analysis				38	MethodBatch '85684' is missing a sample of QCType 'MS' for LabAnalysisRefMethodID '8082A'
Lab Comments: No QC type MS/MSD was reported for this method batch.					
Sample Analysis				38	MethodBatch '85684' is missing a sample of QCType 'MSD' for LabAnalysisRefMethodID '8082A'
Lab Comments: No QC type MS/MSD was reported for this method batch.					
Sample Analysis				38	MethodBatch '85685' is missing a sample of QCType 'MS' for LabAnalysisRefMethodID '8270D'
Lab Comments: No QC type MS/MSD was reported for this method batch.					
Sample Analysis				38	MethodBatch '85685' is missing a sample of QCType 'MSD' for LabAnalysisRefMethodID '8270D'
Lab Comments: No QC type MS/MSD was reported for this method batch.					
Sample Analysis				38	MethodBatch '85715' is missing a sample of QCType 'MS' for LabAnalysisRefMethodID '8260B'
Lab Comments: No QC type MS/MSD was reported for this method batch.					
Sample Analysis				38	MethodBatch '85715' is missing a sample of QCType 'MSD' for LabAnalysisRefMethodID '8260B'
Lab Comments: No QC type MS/MSD was reported for this method batch.					

EDD Warning Log

Lab Reporting Batch ID: GS1669

eQAPP: HR_Backfill_Spectrum(042415) **Laboratory: OLBA**

Table	Line #	Column	Value	Warning	Description
Analytical Results	1	ReportingLimit	0.3	33	The Detection limit exceeds the Reporting limit.
Lab Comments:	The detection limit exceeds the reporting limit. The result is significantly less than the project action limit, therefore no effect on data quality.				
Analytical Results				10	Cs-137 (10045-97-3) is a required target analyte for Method: 'DOE Ga-01-R*' and Matrix: 'SO', but is not reported for sample 20160910-21.
Lab Comments:	This analyte is not a required target analyte but is analyzed as a LCS to validate the analyses				
Analytical Results				10	Am-241 (86954-36-1) is a required target analyte for Method: 'DOE Ga-01-R*' and Matrix: 'SO', but is not reported for sample 20160910-21.
Lab Comments:	This analyte is not a required target analyte but is analyzed as a LCS to validate the analyses				
Analytical Results				10	Co-60 (9067-26-9) is a required target analyte for Method: 'DOE Ga-01-R*' and Matrix: 'SO', but is not reported for sample 20160910-21.
Lab Comments:	This analyte is not a required target analyte but is analyzed as a LCS to validate the analyses				
Analytical Results				10	Cs-137 (10045-97-3) is a required target analyte for Method: 'DOE Ga-01-R*' and Matrix: 'SO', but is not reported for sample HSR-BF-11-101416.
Lab Comments:	This analyte is not a required target analyte but is analyzed as a LCS to validate the analyses				
Analytical Results				10	Am-241 (86954-36-1) is a required target analyte for Method: 'DOE Ga-01-R*' and Matrix: 'SO', but is not reported for sample HSR-BF-11-101416.
Lab Comments:	This analyte is not a required target analyte but is analyzed as a LCS to validate the analyses				
Analytical Results				10	Co-60 (9067-26-9) is a required target analyte for Method: 'DOE Ga-01-R*' and Matrix: 'SO', but is not reported for sample HSR-BF-11-101416.
Lab Comments:	This analyte is not a required target analyte but is analyzed as a LCS to validate the analyses				

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: R0948 **Laboratory: MITKEM**

EDD Filename: R0948_A_a **eQAPP Name: HR_Backfill_Spectrum(042415)**

Method: **6010C**
Matrix: **SO**

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
HSR-BF-11-101416MS (TOT) (HSR-BF-11-101416)	ANTIMONY	39	-	75.00-125.00	-	ANTIMONY	J (all detects) UJ (all non-detects)

Project Name and Number: Horseshoe Road G284 - HSR Backfill/Topsoil

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: R0948 **Laboratory: MITKEM**

EDD Filename: R0948_A_a **eQAPP Name: HR_Backfill_Spectrum(042415)**

Method: 8082A
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCSD-85684 (HSR-BF-11-101416)	AROCLOR 1260	-	-	60.00-130.00	38 (30.00)	AROCLOR 1260	J (all detects) UJ (all non-detects)

Method: 8270D
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCS-85685 LCSD-85685 (HSR-BF-11-101416)	PENTACHLOROPHENOL	0	-	25.00-120.00	200 (40.00)	PENTACHLOROPHENOL	J(all detects) R(all non-detects)

Method: 8260B
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCSD-85715 (HSR-BF-11-101416)	2-BUTANONE	-	60	70.00-130.00	52 (30.00)	2-BUTANONE	J(all detects)
	ACETONE	-	-	70.00-130.00	43 (30.00)	ACETONE	UJ(all non-detects)

Project Name and Number: Horseshoe Road G284 - HSR Backfill/Topsoil

Surrogate Outlier Report

Lab Reporting Batch ID: R0948 **Laboratory: MITKEM**

EDD Filename: R0948_A_a **eQAPP Name: HR_Backfill_Spectrum(042415)**

Method: 8081B
Matrix: SO

Sample ID (Analysis Type)	Surrogate	Sample % Recovery	% Recovery Limits	Affected Compounds	Flag
HSR-BF-11-101416	DECACHLOROBIPHENYL	48	55.00-130.00	All Target Analytes	J (all detects) UJ (all non-detects)

Method: 8082A
Matrix: SO

Sample ID (Analysis Type)	Surrogate	Sample % Recovery	% Recovery Limits	Affected Compounds	Flag
HSR-BF-11-101416	DECACHLOROBIPHENYL	50	60.00-125.00	All Target Analytes	J(all detects) UJ(all non-detects)

Project Name and Number: Horseshoe Road G284 - HSR Backfill/Topsoil

Lab Duplicate Outlier Report

Lab Reporting Batch ID: R0948 **Laboratory: MITKEM**

EDD Filename: R0948_A_a **eQAPP Name: HR_Backfill_Spectrum(042415)**

Method: 6010C
Matrix: SO

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
HSR-BF-11-101416DUP (TOT) (HSR-BF-11-101416)	CALCIUM	113.8	20.00	
	COPPER	21.7	20.00	
	IRON	26.6	20.00	J (all detects)
	MAGNESIUM	20.5	20.00	UJ (all non-detects)
	NICKEL	34.1	20.00	
	SODIUM	41.2	20.00	

Method: 7471B
Matrix: SO

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
HSR-BF-11-101416DUP (TOT) (HSR-BF-11-101416)	MERCURY	25.1	20.00	J(all detects) UJ(all non-detects)

Project Name and Number: Horseshoe Road G284 - HSR Backfill/Topsoil

Method Blank Outlier Report

Lab Reporting Batch ID: R0948 **Laboratory: MITKEM**

EDD Filename: R0948_A_a **eQAPP Name: HR_Backfill_Spectrum(042415)**

Method: **6010C**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB-85693	10/24/2016 8:32:00 AM	ANTIMONY BERYLLIUM SILVER	0.816 mg/Kg 0.006 mg/Kg 0.101 mg/Kg	HSR-BF-11-101416

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
HSR-BF-11-101416(RES/TOT)	ANTIMONY	0.51 mg/Kg	0.51U mg/Kg

Reporting Limit Outliers

Lab Reporting Batch ID: R0948 **Laboratory: MITKEM**

EDD Filename: R0948_A_a **eQAPP Name: HR_Backfill_Spectrum(042415)**

Method: 6010C
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
HSR-BF-11-101416	ANTIMONY	BN	0.51	0.97	PQL	mg/Kg	J (all detects)

Method: 7471B
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
HSR-BF-11-101416	MERCURY	B	0.026	0.046	PQL	mg/Kg	J (all detects)

Method: 8270D
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
HSR-BF-11-101416	DI-N-BUTYL PHTHALATE	J	160	220	PQL	ug/Kg	J (all detects)

History of Manual Changes to Automated Data Review Qualifiers

Changed by: Sid Tyrrell

Analyte	Method	Analysis Type	Result	Unit	Reason Code	Original Value	New Value	Edit Time
Field Sample ID: 20160910-21								
Ra-226	DOE Ga-01-R*	INITIAL	0.608	pCi/g	Professional Judgment		J	11/7/2016 13:08

Reason for change: A Professional Judgment qualifier (J) has been assigned to samples with a method blank NAD < 2.58.

eurofins | Spectrum Analytical

- [x] Final Report
- [ ] Re-Issued Report
- [ ] Revised Report

Report Date:
04-Nov-16 09:51

Laboratory Report

Sevenson Environmental Services Inc.
400 Horseshoe Road
Sayreville, NJ 08872

Work Order: R0948
Project : Horseshoe Road Site
Project #:

Attn: Joel Czachorowski

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
R0948-01	HSR-BF-11-101416	Soil	14-Oct-16 10:45	15-Oct-16 09:30

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. The results relate only to the samples(s) as received. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

All applicable NELAC or USEPA CLP requirements have been met.

Use of the NELAP logo does not insure that Eurofins Spectrum Analytical is currently accredited for the specific test method or analyte. Please refer to our Quality page of our web site at www.EurofinsUS.com for the current list of certifications and fields of accreditation.

Please contact the Laboratory or Technical Director at 401-732-3400 with any questions regarding the data contained in the laboratory report.

Certification List:

Connecticut	PH-0153
Florida	E87664
Massachusetts	M-RI907
New Hampshire	2060
New Jersey	RI001
New York	11522
Rhode Island	LAI00349
USDA	P330-16-00031
USEPA - ISM	EP-W-14-032
USEPA - SOM	EP-W-14-032
Dod ELAP	L2247

NELAP ACCREDITED TNI LABORATORY

LABORATORY ACCREDITATION BUREAU ACCREDITED
Certificate # L2247 Testing

Authorized by:

Dawn E Wojcik

Dawn Wojcik
Laboratory Director

* Data Summary Pack *

646 Camp Ave · North Kingstown, RI 02852-4008 · 401-732-3400 · FAX 401-732-3499
www.spectrum-analytical.com

Eurofins Spectrum Analytical, Inc. -- ESAI-RI

WorkOrder: R0948

R0948

Client ID: SEVENSON_SAYREVILLE
Project: Horseshoe Road Site
WO Name: Horseshoe Road Site
Location: SEVENSON_HRS_BF,
Comments: Reports to Show 2 (MDL/PQL)

Case:
SDG:
PO: G2849030

HC Due: 10/27/2016
Fax Due: 10/24/2016
Fax Report: ☑

Report Level: LEVEL 4
Special Program:
EDD: ADAPT_LDC
ADR

Lab Samp ID	Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Samp / Lab Test Comments	HF	HT	MS	SEL	Storage
R0948-01A	HSR-BF-11-101416	10/14/2016 10:45	10/15/2016	Soil	PMoist	/					P3
R0948-01B	HSR-BF-11-101416	10/14/2016 10:45	10/15/2016	Soil	SW6010_S	/ TAL				Y	P3
R0948-01B	HSR-BF-11-101416	10/14/2016 10:45	10/15/2016	Soil	SW7471	/ TAL					P3
R0948-01B	HSR-BF-11-101416	10/14/2016 10:45	10/15/2016	Soil	SW8081_S	/					P3
R0948-01B	HSR-BF-11-101416	10/14/2016 10:45	10/15/2016	Soil	SW8082_S	/					P3
R0948-01B	HSR-BF-11-101416	10/14/2016 10:45	10/15/2016	Soil	SW8270_S	/ use 5ppb low standard				Y	P3
R0948-01C	HSR-BF-11-101416	10/14/2016 10:45	10/15/2016	Soil	NJEPH_S	/ SPECTRUM--					SUB
R0948-01D	HSR-BF-11-101416	10/14/2016 10:45	10/15/2016	Soil	SW9012_S	/					P3
R0948-01E	HSR-BF-11-101416	10/14/2016 10:45	10/15/2016	Soil	SW8260_LOW_S	/				Y	VOA
R0948-01F	HSR-BF-11-101416	10/14/2016 10:45	10/15/2016	Soil	SW8260_MED_S	/		Y		Y	VOA
R0948-01G	HSR-BF-11-101416	10/14/2016 10:45	10/15/2016	Soil	RADIUM_226_S	/ ESC_OK--Sub to Outreach					SUB

HF = Fraction logged in but all tests have been placed on hold

HT = Test logged in but has been placed on hold

10/17/2016 09:59

Lab Client Rep: Agnes R Huntley

* Volatiles *

REPORT NARRATIVE

Eurofins Spectrum Analytical, Inc.

Client : Sevenson Environmental Services Inc.

Project: Horseshoe Road Site

Laboratory Workorder / SDG #: R0948

SW846 8260C, VOC by GC-MS (Low)

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code: SW846 8260C

IV. PREPARATION

Soil Samples were prepared following procedures in laboratory test code: SW5035

V. INSTRUMENTATION

The following instrumentation was used

Instrument Code: V6
Instrument Type: GCMS-VOA
Description: HP6890 / HP5973
Manufacturer: Hewlett-Packard
Model: 6890 / 5973

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Surrogates:

Surrogate standard percent recoveries were within the QC limits.

D. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for lab control samples were within the QC limits with the following exceptions. Please note that most test procedures allow for several compounds outside of the QC limits for the LCS, although this may indicate a bias for this specific compound.

2. Matrix Spike / Matrix Spike Duplicate (MS/MSD):

No client-requested MS/MSD analyses were included in this SDG.

E. Internal Standards:

Internal standard peak areas were within the QC limits.

F. Dilutions:

No sample in this SDG required analysis at dilution.

G. Samples:

No other unusual occurrences were noted during sample analysis.

H. Manual Integration

No manual integrations were performed on any sample or standard.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Eurofins Spectrum Analytical, Inc. RI, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed: Dawn E Wojcik

Date: 10/26/16

Data Flag/Qualifiers (Page 1 of 2):

U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).

J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
- estimated concentration for Tentatively Identified Compound

B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a "trace" concentration below the reporting limit and equal to or above the detection limit.

D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis

E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.

P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.

A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.

Data Flag/Qualifiers (Page 2 of 2):

N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.

* For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.

Q Qualified Results. This compound has an associated Continuing Calibration Verification (CCV) with a %Difference or %Drift above the control limit.

Sample ID Suffixes

DL Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution

RE Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.

RA Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.

RX Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.

MS Matrix Spike.

MSD Matrix Spike Duplicate

DUP Duplicate analysis

SD Serial Dilution

PS Post-digestion or Post-distillation spike. For metals or inorganic analyses

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

HSR-BF-11-101416

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: R0948-01E

Sample wt/vol: 4.10 (g/mL) G Lab File ID: V6I8192.D

Level: (TRACE/LOW/MED) LOW Date Received: 10/15/2016

% Moisture: not dec. 25 Date Analyzed: 10/22/2016

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
75-71-8	Dichlorodifluoromethane	8.1	U	1.6	8.1
74-87-3	Chloromethane	8.1	U	1.3	8.1
75-01-4	Vinyl chloride	8.1	U	1.0	8.1
74-83-9	Bromomethane	8.1	U	1.8	8.1
75-00-3	Chloroethane	8.1	U	1.6	8.1
75-69-4	Trichlorofluoromethane	8.1	U	0.68	8.1
75-35-4	1,1-Dichloroethene	8.1	U	1.5	8.1
67-64-1	Acetone	8.1	UJ	2.6	8.1
75-15-0	Carbon disulfide	8.1	U	0.49	8.1
75-09-2	Methylene chloride	8.1	U	2.1	8.1
156-60-5	trans-1,2-Dichloroethene	8.1	U	0.86	8.1
1634-04-4	Methyl tert-butyl ether	8.1	U	0.99	8.1
75-34-3	1,1-Dichloroethane	8.1	U	1.1	8.1
78-93-3	2-Butanone	8.1	UJ	3.2	8.1
156-59-2	cis-1,2-Dichloroethene	8.1	U	1.2	8.1
67-66-3	Chloroform	8.1	U	1.0	8.1
71-55-6	1,1,1-Trichloroethane	8.1	U	0.86	8.1
56-23-5	Carbon tetrachloride	8.1	U	0.54	8.1
107-06-2	1,2-Dichloroethane	8.1	U	0.88	8.1
71-43-2	Benzene	8.1	U	0.99	8.1
79-01-6	Trichloroethene	8.1	U	1.0	8.1
78-87-5	1,2-Dichloropropane	8.1	U	1.1	8.1
75-27-4	Bromodichloromethane	8.1	U	1.6	8.1
10061-01-5	cis-1,3-Dichloropropene	8.1	U	1.1	8.1
108-88-3	Toluene	8.1	U	0.76	8.1
10061-02-6	trans-1,3-Dichloropropene	8.1	U	1.1	8.1
79-00-5	1,1,2-Trichloroethane	8.1	U	0.78	8.1
127-18-4	Tetrachloroethene	8.1	U	1.0	8.1
124-48-1	Dibromochloromethane	8.1	U	1.1	8.1
106-93-4	1,2-Dibromoethane	8.1	U	1.2	8.1
108-90-7	Chlorobenzene	8.1	U	0.83	8.1
100-41-4	Ethylbenzene	8.1	U	0.81	8.1
179601-23-1	m,p-Xylene	8.1	U	2.6	8.1
1330-20-7	Xylene (Total)	8.1	U	0.76	8.1
100-42-5	Styrene	8.1	U	0.84	8.1

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

HSR-BF-11-101416

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: R0948-01E

Sample wt/vol: 4.10 (g/mL) G Lab File ID: V6I8192.D

Level: (TRACE/LOW/MED) LOW Date Received: 10/15/2016

% Moisture: not dec. 25 Date Analyzed: 10/22/2016

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
75-25-2	Bromoform	8.1	U	3.2	8.1
79-34-5	1,1,2,2-Tetrachloroethane	8.1	U	1.1	8.1
96-12-8	1,2-Dibromo-3-chloropropane	8.1	U	2.1	8.1
107-02-8	Acrolein	41	U	8.3	41
107-13-1	Acrylonitrile	8.1	U	1.9	8.1
79-20-9	Methyl acetate	8.1	U	2.3	8.1
75-65-0	tert-Butyl Alcohol	16	U	8.1	16

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MB-85715

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: MB-85715

Sample wt/vol: 5.00 (g/mL) G Lab File ID: V6I8191.D

Level: (TRACE/LOW/MED) LOW Date Received:

% Moisture: not dec. 0.0 Date Analyzed: 10/22/2016

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
75-71-8	Dichlorodifluoromethane	5.0	U	0.98	5.0
74-87-3	Chloromethane	5.0	U	0.80	5.0
75-01-4	Vinyl chloride	5.0	U	0.63	5.0
74-83-9	Bromomethane	5.0	U	1.1	5.0
75-00-3	Chloroethane	5.0	U	1.0	5.0
75-69-4	Trichlorofluoromethane	5.0	U	0.42	5.0
75-35-4	1,1-Dichloroethene	5.0	U	0.95	5.0
67-64-1	Acetone	5.0	U	1.6	5.0
75-15-0	Carbon disulfide	5.0	U	0.30	5.0
75-09-2	Methylene chloride	5.0	U	1.3	5.0
156-60-5	trans-1,2-Dichloroethene	5.0	U	0.53	5.0
1634-04-4	Methyl tert-butyl ether	5.0	U	0.61	5.0
75-34-3	1,1-Dichloroethane	5.0	U	0.67	5.0
78-93-3	2-Butanone	5.0	U	2.0	5.0
156-59-2	cis-1,2-Dichloroethene	5.0	U	0.75	5.0
67-66-3	Chloroform	5.0	U	0.64	5.0
71-55-6	1,1,1-Trichloroethane	5.0	U	0.53	5.0
56-23-5	Carbon tetrachloride	5.0	U	0.33	5.0
107-06-2	1,2-Dichloroethane	5.0	U	0.54	5.0
71-43-2	Benzene	5.0	U	0.61	5.0
79-01-6	Trichloroethene	5.0	U	0.62	5.0
78-87-5	1,2-Dichloropropane	5.0	U	0.69	5.0
75-27-4	Bromodichloromethane	5.0	U	0.97	5.0
10061-01-5	cis-1,3-Dichloropropene	5.0	U	0.67	5.0
108-88-3	Toluene	5.0	U	0.47	5.0
10061-02-6	trans-1,3-Dichloropropene	5.0	U	0.68	5.0
79-00-5	1,1,2-Trichloroethane	5.0	U	0.48	5.0
127-18-4	Tetrachloroethene	5.0	U	0.62	5.0
124-48-1	Dibromochloromethane	5.0	U	0.65	5.0
106-93-4	1,2-Dibromoethane	5.0	U	0.74	5.0
108-90-7	Chlorobenzene	5.0	U	0.51	5.0
100-41-4	Ethylbenzene	5.0	U	0.50	5.0
179601-23-1	m,p-Xylene	5.0	U	1.6	5.0
1330-20-7	Xylene (Total)	5.0	U	0.47	5.0
100-42-5	Styrene	5.0	U	0.52	5.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MB-85715

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: MB-85715

Sample wt/vol: 5.00 (g/mL) G Lab File ID: V6I8191.D

Level: (TRACE/LOW/MED) LOW Date Received:

% Moisture: not dec. 0.0 Date Analyzed: 10/22/2016

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
75-25-2	Bromoform	5.0	U	2.0	5.0
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U	0.68	5.0
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U	1.3	5.0
107-02-8	Acrolein	25	U	5.1	25
107-13-1	Acrylonitrile	5.0	U	1.2	5.0
79-20-9	Methyl acetate	5.0	U	1.4	5.0
75-65-0	tert-Butyl Alcohol	10	U	5.0	10

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCS-85715

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-85715

Sample wt/vol: 5.00 (g/mL) G Lab File ID: V6I8188.D

Level: (TRACE/LOW/MED) LOW Date Received:

% Moisture: not dec. 0.0 Date Analyzed: 10/22/2016

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
75-71-8	Dichlorodifluoromethane	49		0.98	5.0
74-87-3	Chloromethane	50		0.80	5.0
75-01-4	Vinyl chloride	51		0.63	5.0
74-83-9	Bromomethane	50		1.1	5.0
75-00-3	Chloroethane	48		1.0	5.0
75-69-4	Trichlorofluoromethane	49		0.42	5.0
75-35-4	1,1-Dichloroethene	48		0.95	5.0
67-64-1	Acetone	35		1.6	5.0
75-15-0	Carbon disulfide	48		0.30	5.0
75-09-2	Methylene chloride	47		1.3	5.0
156-60-5	trans-1,2-Dichloroethene	50		0.53	5.0
1634-04-4	Methyl tert-butyl ether	48		0.61	5.0
75-34-3	1,1-Dichloroethane	47		0.67	5.0
78-93-3	2-Butanone	51		2.0	5.0
156-59-2	cis-1,2-Dichloroethene	49		0.75	5.0
67-66-3	Chloroform	48		0.64	5.0
71-55-6	1,1,1-Trichloroethane	47		0.53	5.0
56-23-5	Carbon tetrachloride	48		0.33	5.0
107-06-2	1,2-Dichloroethane	46		0.54	5.0
71-43-2	Benzene	48		0.61	5.0
79-01-6	Trichloroethene	48		0.62	5.0
78-87-5	1,2-Dichloropropane	46		0.69	5.0
75-27-4	Bromodichloromethane	45		0.97	5.0
10061-01-5	cis-1,3-Dichloropropene	46		0.67	5.0
108-88-3	Toluene	48		0.47	5.0
10061-02-6	trans-1,3-Dichloropropene	45		0.68	5.0
79-00-5	1,1,2-Trichloroethane	49		0.48	5.0
127-18-4	Tetrachloroethene	44		0.62	5.0
124-48-1	Dibromochloromethane	45		0.65	5.0
106-93-4	1,2-Dibromoethane	47		0.74	5.0
108-90-7	Chlorobenzene	46		0.51	5.0
100-41-4	Ethylbenzene	45		0.50	5.0
179601-23-1	m,p-Xylene	94		1.6	5.0
1330-20-7	Xylene (Total)	140		0.47	5.0
100-42-5	Styrene	47		0.52	5.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCS-85715

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-85715

Sample wt/vol: 5.00 (g/mL) G Lab File ID: V6I8188.D

Level: (TRACE/LOW/MED) LOW Date Received:

% Moisture: not dec. 0.0 Date Analyzed: 10/22/2016

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
75-25-2	Bromoform	45		2.0	5.0
79-34-5	1,1,2,2-Tetrachloroethane	48		0.68	5.0
96-12-8	1,2-Dibromo-3-chloropropane	53		1.3	5.0
107-02-8	Acrolein	240		5.1	25
107-13-1	Acrylonitrile	49		1.2	5.0
79-20-9	Methyl acetate	43		1.4	5.0
75-65-0	tert-Butyl Alcohol	110		5.0	10

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCSD-85715

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-85715

Sample wt/vol: 5.00 (g/mL) G Lab File ID: V6I8189.D

Level: (TRACE/LOW/MED) LOW Date Received:

% Moisture: not dec. 0.0 Date Analyzed: 10/22/2016

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
75-71-8	Dichlorodifluoromethane	47		0.98	5.0
74-87-3	Chloromethane	49		0.80	5.0
75-01-4	Vinyl chloride	52		0.63	5.0
74-83-9	Bromomethane	50		1.1	5.0
75-00-3	Chloroethane	50		1.0	5.0
75-69-4	Trichlorofluoromethane	50		0.42	5.0
75-35-4	1,1-Dichloroethene	48		0.95	5.0
67-64-1	Acetone	54		1.6	5.0
75-15-0	Carbon disulfide	50		0.30	5.0
75-09-2	Methylene chloride	51		1.3	5.0
156-60-5	trans-1,2-Dichloroethene	50		0.53	5.0
1634-04-4	Methyl tert-butyl ether	49		0.61	5.0
75-34-3	1,1-Dichloroethane	50		0.67	5.0
78-93-3	2-Butanone	30		2.0	5.0
156-59-2	cis-1,2-Dichloroethene	49		0.75	5.0
67-66-3	Chloroform	49		0.64	5.0
71-55-6	1,1,1-Trichloroethane	48		0.53	5.0
56-23-5	Carbon tetrachloride	49		0.33	5.0
107-06-2	1,2-Dichloroethane	48		0.54	5.0
71-43-2	Benzene	51		0.61	5.0
79-01-6	Trichloroethene	49		0.62	5.0
78-87-5	1,2-Dichloropropane	48		0.69	5.0
75-27-4	Bromodichloromethane	48		0.97	5.0
10061-01-5	cis-1,3-Dichloropropene	49		0.67	5.0
108-88-3	Toluene	50		0.47	5.0
10061-02-6	trans-1,3-Dichloropropene	49		0.68	5.0
79-00-5	1,1,2-Trichloroethane	53		0.48	5.0
127-18-4	Tetrachloroethene	49		0.62	5.0
124-48-1	Dibromochloromethane	50		0.65	5.0
106-93-4	1,2-Dibromoethane	50		0.74	5.0
108-90-7	Chlorobenzene	51		0.51	5.0
100-41-4	Ethylbenzene	48		0.50	5.0
179601-23-1	m,p-Xylene	100		1.6	5.0
1330-20-7	Xylene (Total)	150		0.47	5.0
100-42-5	Styrene	52		0.52	5.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCSD-85715

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-85715

Sample wt/vol: 5.00 (g/mL) G Lab File ID: V6I8189.D

Level: (TRACE/LOW/MED) LOW Date Received:

% Moisture: not dec. 0.0 Date Analyzed: 10/22/2016

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
75-25-2	Bromoform	49		2.0	5.0
79-34-5	1,1,2,2-Tetrachloroethane	49		0.68	5.0
96-12-8	1,2-Dibromo-3-chloropropane	51		1.3	5.0
107-02-8	Acrolein	260		5.1	25
107-13-1	Acrylonitrile	48		1.2	5.0
79-20-9	Methyl acetate	53		1.4	5.0
75-65-0	tert-Butyl Alcohol	93		5.0	10

2D - FORM II VOA-4

SOIL VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Level: (LOW/MED) LOW

	CLIENT SAMPLE NO.	VDMC1 (DBFM) #	VDMC2 (DCE) #	VDMC3 (TOL) #	VDMC4 (BFB) #				TOT OUT
01	LCS-85715	92	107	99	94				0
02	LCSD-85715	98	97	103	97				0
03	MB-85715	100	103	102	95				0
04	HSR-BF-11-10 1416	102	92	101	96				0

		QC LIMITS
VDMC1	(DBFM) Dibromofluoromethane	(76-128)
VDMC2	(DCE) =1,2-Dichloroethane-d4	(88-110)
VDMC3	(TOL) =Toluene-d8	(85-115)
VDMC4	(BFB) =Bromofluorobenzene	(85-120)

Column to be used to flag recovery values

* Values outside of contract required QC limits

som15.09.23.1015

SW846

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE RECOVERY

CLIENT SAMPLE NO.

LCS-85715

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab Sample ID: LCS-85715 LCS Lot No.:

Date Extracted: 10/21/2016 Date Analyzed (1): 10/22/2016

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Dichlorodifluoromethane	50.0000	0.0000	49.4217	99		35 - 135
Chloromethane	50.0000	0.0000	50.2098	100		50 - 130
Vinyl chloride	50.0000	0.0000	51.3407	103		60 - 125
Bromomethane	50.0000	0.0000	50.0442	100		30 - 160
Chloroethane	50.0000	0.0000	48.1469	96		40 - 155
Trichlorofluoromethane	50.0000	0.0000	49.0437	98		25 - 185
1,1-Dichloroethene	50.0000	0.0000	48.3727	97		65 - 135
Acetone	50.0000	0.0000	34.9215	70		20 - 160
Carbon disulfide	50.0000	0.0000	47.8040	96		45 - 160
Methylene chloride	50.0000	0.0000	46.7419	93		55 - 140
trans-1,2-Dichloroethene	50.0000	0.0000	49.6457	99		65 - 135
Methyl tert-butyl ether	50.0000	0.0000	48.0583	96		75 - 126
1,1-Dichloroethane	50.0000	0.0000	46.7127	93		75 - 125
2-Butanone	50.0000	0.0000	51.1842	102		30 - 160
cis-1,2-Dichloroethene	50.0000	0.0000	49.1803	98		65 - 125
Chloroform	50.0000	0.0000	47.5025	95		70 - 125
1,1,1-Trichloroethane	50.0000	0.0000	46.9669	94		70 - 135
Carbon tetrachloride	50.0000	0.0000	47.5185	95		65 - 135
1,2-Dichloroethane	50.0000	0.0000	45.9543	92		70 - 135
Benzene	50.0000	0.0000	47.8218	96		75 - 125
Trichloroethene	50.0000	0.0000	47.6730	95		75 - 125
1,2-Dichloropropane	50.0000	0.0000	45.5660	91		70 - 120
Bromodichloromethane	50.0000	0.0000	45.0988	90		70 - 130
cis-1,3-Dichloropropene	50.0000	0.0000	46.2313	92		70 - 125
Toluene	50.0000	0.0000	48.4977	97		70 - 125
trans-1,3-Dichloropropene	50.0000	0.0000	45.2998	91		65 - 125
1,1,2-Trichloroethane	50.0000	0.0000	48.5847	97		60 - 125
Tetrachloroethene	50.0000	0.0000	43.8956	88		65 - 140
Dibromochloromethane	50.0000	0.0000	44.7807	90		65 - 130
1,2-Dibromoethane	50.0000	0.0000	47.4395	95		70 - 125
Chlorobenzene	50.0000	0.0000	46.3978	93		75 - 125
Ethylbenzene	50.0000	0.0000	45.3032	91		75 - 125
m,p-Xylene	100.0000	0.0000	94.3647	94		80 - 125
Xylene (Total)	150.0000	0.0000	138.3167	92		83 - 125
Styrene	50.0000	0.0000	46.8504	94		75 - 125
Bromoform	50.0000	0.0000	44.6084	89		55 - 135
1,1,2,2-Tetrachloroethane	50.0000	0.0000	47.7737	96		55 - 130
1,2-Dibromo-3-chloropropan	50.0000	0.0000	52.7934	106		40 - 135
Acrolein	250.0000	0.0000	241.5393	97		70 - 130
Acrylonitrile	50.0000	0.0000	49.3211	99		70 - 130
Methyl acetate	50.0000	0.0000	43.0222	86		70 - 130
tert-Butyl Alcohol	100.0000	0.0000	109.3259	109		50 - 130

Column to be used to flag recovery and RPD values with an asterisk

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE RECOVERY

CLIENT SAMPLE NO.

LCS-85715

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab Sample ID: LCS-85715 LCS Lot No.:

Date Extracted: 10/21/2016 Date Analyzed (1): 10/22/2016

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.

* Values outside of QC limits

Spike Recovery: 0 out of 42 outside limits

COMMENTS:

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-85715

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab Sample ID: LCSD-85715 LCS Lot No.:

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC	#	%RPD	#	QC LIMITS RPD	QC LIMITS REC.
Dichlorodifluoromethane	50.0000	47.2437	94		5		30	35 - 135
Chloromethane	50.0000	49.2768	99		1		30	50 - 130
Vinyl chloride	50.0000	52.3896	105		2		30	60 - 125
Bromomethane	50.0000	49.9484	100		0		30	30 - 160
Chloroethane	50.0000	50.0755	100		4		30	40 - 155
Trichlorofluoromethane	50.0000	49.5625	99		1		30	25 - 185
1,1-Dichloroethene	50.0000	47.5652	95		2		30	65 - 135
Acetone	50.0000	53.8875	108		43	*	30	20 - 160
Carbon disulfide	50.0000	49.8958	100		4		30	45 - 160
Methylene chloride	50.0000	50.5209	101		8		30	55 - 140
trans-1,2-Dichloroethene	50.0000	50.0724	100		1		30	65 - 135
Methyl tert-butyl ether	50.0000	49.1160	98		2		30	75 - 126
1,1-Dichloroethane	50.0000	49.6468	99		6		30	75 - 125
2-Butanone	50.0000	29.8009	60		52	*	30	30 - 160
cis-1,2-Dichloroethene	50.0000	48.6483	97		1		30	65 - 125
Chloroform	50.0000	48.9925	98		3		30	70 - 125
1,1,1-Trichloroethane	50.0000	48.2303	96		2		30	70 - 135
Carbon tetrachloride	50.0000	49.3173	99		4		30	65 - 135
1,2-Dichloroethane	50.0000	48.3393	97		5		30	70 - 135
Benzene	50.0000	50.9571	102		6		30	75 - 125
Trichloroethene	50.0000	49.4822	99		4		30	75 - 125
1,2-Dichloropropane	50.0000	47.8020	96		5		30	70 - 120
Bromodichloromethane	50.0000	47.9601	96		6		30	70 - 130
cis-1,3-Dichloropropene	50.0000	49.1183	98		6		30	70 - 125
Toluene	50.0000	50.3878	101		4		30	70 - 125
trans-1,3-Dichloropropene	50.0000	48.6007	97		6		30	65 - 125
1,1,2-Trichloroethane	50.0000	53.3238	107		10		30	60 - 125
Tetrachloroethene	50.0000	49.4942	99		12		30	65 - 140
Dibromochloromethane	50.0000	50.2393	100		11		30	65 - 130
1,2-Dibromoethane	50.0000	50.2679	101		6		30	70 - 125
Chlorobenzene	50.0000	50.7408	101		8		30	75 - 125
Ethylbenzene	50.0000	47.6696	95		4		30	75 - 125
m,p-Xylene	100.0000	103.0208	103		9		30	80 - 125
Xylene (Total)	150.0000	151.7076	101		9		30	83 - 125
Styrene	50.0000	51.5390	103		9		30	75 - 125
Bromoform	50.0000	49.2276	98		10		30	55 - 135
1,1,2,2-Tetrachloroethane	50.0000	48.7018	97		1		30	55 - 130
1,2-Dibromo-3-chloropropan	50.0000	51.0048	102		4		30	40 - 135
Acrolein	250.0000	257.4278	103		6		30	70 - 130
Acrylonitrile	50.0000	48.1978	96		3		30	70 - 130
Methyl acetate	50.0000	52.5724	105		20		30	70 - 130
tert-Butyl Alcohol	100.0000	92.6246	93		16		30	50 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-85715

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab Sample ID: LCSD-85715 LCS Lot No.:

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC #	%RPD #	QC LIMITS	
					RPD	REC.

RPD: 2 out of 42 outside limits

Spike Recovery: 0 out of 42 outside limits

COMMENTS:

4A - FORM IV VOA

VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MB-85715

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab File ID: V6I8191.D Lab Sample ID: MB-85715

Instrument ID: V6

Matrix: (SOIL/SED/WATER) SOIL Date Analyzed: 10/22/2016

Level: (TRACE or LOW/MED) LOW Time Analyzed: 1:39

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	LCS-85715	LCS-85715	V6I8188.D	0:21
02	LCSD-85715	LCSD-85715	V6I8189.D	0:47
03	HSR-BF-11-101416	R0948-01E	V6I8192.D	2:05

COMMENTS:

som15.09.23.1015

8A - FORM VIII VOA

VOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

GC Column: DB-624 ID: 0.25 (mm) Init. Calib. Date(s): 10/21/2016 10/21/2016

EPA Sample No.(VSTD#####): VSTD0506B Date Analyzed: 10/21/2016

Lab File ID (Standard): V6I8184.D Time Analyzed: 22:37

Instrument ID: V6 Heated Purge: (Y/N) Y

		IS1 (S1) AREA #	RT #	IS2 (S2) AREA #	RT #	IS3 (S3) AREA #	RT #
	12 HOUR STD	281631	5.242	197062	8.229	130880	10.736
	UPPER LIMIT	563262	5.742	394124	8.729	261760	11.236
	LOWER LIMIT	140816	4.742	98531	7.729	65440	10.236
	SAMPLE NO.						
01	LCS-85715	316986	5.241	233216	8.228	140699	10.734
02	LCSD-85715	303525	5.236	220457	8.229	143501	10.735
03	MB-85715	304215	5.236	222911	8.229	137181	10.736
04	HSR-BF-11-10 1416	318112	5.237	228327	8.231	136850	10.737

IS1 () = Fluorobenzene

IS2 () = Chlorobenzene-d5

IS3 () = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = 200% (Low-Medium Volatiles) and 140% (Trace Volatiles) of internal standard area

AREA LOWER LIMIT = 50% (Low-Medium Volatiles) and 60% (Trace Volatiles) of internal standard area

RT UPPER LIMIT = +0.50 (Low-Medium Volatiles) and +0.33 (Trace Volatiles) minutes of internal standard RT

RT LOWER LIMIT = -0.50 (Low-Medium Volatiles) and -0.33 (Trace Volatiles) minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

* Semivolatile Organics *

REPORT NARRATIVE

Eurofins Spectrum Analytical, Inc.

Client : Sevenson Environmental Services Inc.

Project: Horseshoe Road Site

Laboratory Workorder / SDG #: R0948

SW846 8270D, SVOA by GC-MS

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code: SW846 8270D

IV. PREPARATION

Soil Samples were prepared following procedures in laboratory test code: SW3550B

V. INSTRUMENTATION

The following instrumentation was used

Instrument Code: S6
Instrument Type: GCMS-Semi
Description: HP7890A
Manufacturer: Agilent
Model: 7890A/5973

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Surrogates:

Surrogate standard percent recoveries were within the QC limits.

D. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for lab control samples were within the QC limits with the following exceptions. Please note that most test procedures allow for several compounds outside of the QC limits for the LCS, although this may indicate a bias for this specific compound.

LCS-85685 in batch 85685, recovery is below criteria for Pentachlorophenol at 0% with criteria of (25-120).

2. Matrix Spike / Matrix Spike Duplicate (MS/MSD):

No client-requested MS/MSD analyses were included in this SDG.

E. Internal Standards:

Internal standard peak areas were within the QC limits.

F. Dilutions:

No sample in this SDG required analysis at dilution.

G. Samples:

No other unusual occurrences were noted during sample analysis.

H. Manual Integration

Where needed manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required. Manual integrations are coded to provide the data reviewer justification for such action. The codes are labeled on the ion chromatogram signal (GC/MS signal) and chromatogram for GC based analysis as follows:

· M1 peak tailing or fronting
· M2 peak co-elution
· M3 rising or falling baseline
· M4 retention time shift
· M5 miscellaneous - under this category, the justification is explained
· M6 software did not integrate peak
· M7 partial peak integration

Manual integrations were performed on the following:

SSTD005AJ Benzoic acid due to M7

SSTD025AJ Pentachlorophenol due to M6

SSTD040AJ Pentachlorophenol due to M6

SSTD060AJ Pentachlorophenol due to M6

SSTD080AJ Pentachlorophenol due to M6

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Eurofins Spectrum Analytical, Inc. RI, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed: Dawn E Wojcik

Date: 10/25/16

Data Flag/Qualifiers (Page 1 of 2):

U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).

J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
- estimated concentration for Tentatively Identified Compound

B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a "trace" concentration below the reporting limit and equal to or above the detection limit.

D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis

E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.

P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.

A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.

Data Flag/Qualifiers (Page 2 of 2):

N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.

* For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.

Q Qualified Results. This compound has an associated Continuing Calibration Verification (CCV) with a %Difference or %Drift above the control limit.

Sample ID Suffixes

DL Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution

RE Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.

RA Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.

RX Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.

MS Matrix Spike.

MSD Matrix Spike Duplicate

DUP Duplicate analysis

SD Serial Dilution

PS Post-digestion or Post-distillation spike. For metals or inorganic analyses

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

HSR-BF-11-101416

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: R0948-01B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: S6C6402.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 25 Decanted: (Y/N) N Date Received: 10/15/2016

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/20/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/21/2016

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
108-95-2	Phenol	220	U	24	220
111-44-4	Bis(2-chloroethyl)ether	220	U	28	220
95-57-8	2-Chlorophenol	220	U	27	220
541-73-1	1,3-Dichlorobenzene	220	U	26	220
106-46-7	1,4-Dichlorobenzene	220	U	24	220
95-50-1	1,2-Dichlorobenzene	220	U	28	220
95-48-7	2-Methylphenol	220	U	25	220
106-44-5	4-Methylphenol	220	U	23	220
621-64-7	N-Nitroso-di-n-propylamine	220	U	21	220
67-72-1	Hexachloroethane	220	U	23	220
98-95-3	Nitrobenzene	220	U	25	220
78-59-1	Isophorone	220	U	22	220
105-67-9	2,4-Dimethylphenol	220	U	24	220
120-83-2	2,4-Dichlorophenol	220	U	25	220
120-82-1	1,2,4-Trichlorobenzene	220	U	30	220
91-20-3	Naphthalene	220	U	27	220
87-68-3	Hexachlorobutadiene	220	U	30	220
91-57-6	2-Methylnaphthalene	220	U	28	220
77-47-4	Hexachlorocyclopentadiene	220	U	63	220
88-06-2	2,4,6-Trichlorophenol	220	U	26	220
95-95-4	2,4,5-Trichlorophenol	440	U	24	440
88-74-4	2-Nitroaniline	440	U	14	440
208-96-8	Acenaphthylene	220	U	24	220
606-20-2	2,6-Dinitrotoluene	220	U	19	220
83-32-9	Acenaphthene	220	U	26	220
51-28-5	2,4-Dinitrophenol	440	U	120	440
121-14-2	2,4-Dinitrotoluene	220	U	15	220
84-66-2	Diethylphthalate	220	U	16	220
86-73-7	Fluorene	220	U	22	220
534-52-1	4,6-Dinitro-2-methylphenol	440	U	17	440
86-30-6	N-Nitrosodiphenylamine	220	U	19	220
118-74-1	Hexachlorobenzene	220	U	21	220
87-86-5	Pentachlorophenol	440	U R	93	440
85-01-8	Phenanthrene	220	U	17	220
120-12-7	Anthracene	220	U	18	220
86-74-8	Carbazole	220	U	19	220

1E - FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

HSR-BF-11-101416

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: R0948-01B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: S6C6402.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 25 Decanted: (Y/N) N Date Received: 10/15/2016

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/20/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/21/2016

GPC Cleanup:(Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
84-74-2	Di-n-butylphthalate	160	J	19	220
206-44-0	Fluoranthene	220	U	19	220
129-00-0	Pyrene	220	U	21	220
85-68-7	Butylbenzylphthalate	220	U	17	220
91-94-1	3,3´-Dichlorobenzidine	220	U	23	220
56-55-3	Benzo(a)anthracene	220	U	22	220
218-01-9	Chrysene	220	U	19	220
117-81-7	Bis(2-ethylhexyl)phthalate	400		19	220
117-84-0	Di-n-octylphthalate	220	U	19	220
205-99-2	Benzo(b)fluoranthene	220	U	26	220
207-08-9	Benzo(k)fluoranthene	220	U	28	220
50-32-8	Benzo(a)pyrene	220	U	20	220
193-39-5	Indeno(1,2,3-cd)pyrene	220	U	24	220
53-70-3	Dibenzo(a,h)anthracene	220	U	23	220
191-24-2	Benzo(g,h,i)perylene	220	U	25	220
92-52-4	1,1´-Biphenyl	220	U	28	220
98-86-2	Acetophenone	220	U	20	220
1912-24-9	Atrazine	220	U	31	220
103-33-3	Azobenzene	220	U	21	220
100-52-7	Benzaldehyde	220	U	29	220
92-87-5	Benzidine	220	U	86	220
39638-32-9	Bis(2-chloroisopropyl)ether	220	U	22	220
105-60-2	Caprolactam	220	U	14	220
62-75-9	N-Nitrosodimethylamine	220	U	22	220

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MB-85685

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: MB-85685

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S6C6399.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: Decanted: (Y/N) Date Received:

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/20/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/21/2016

GPC Cleanup:(Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
108-95-2	Phenol	170	U	19	170
111-44-4	Bis(2-chloroethyl)ether	170	U	21	170
95-57-8	2-Chlorophenol	170	U	21	170
541-73-1	1,3-Dichlorobenzene	170	U	20	170
106-46-7	1,4-Dichlorobenzene	170	U	18	170
95-50-1	1,2-Dichlorobenzene	170	U	21	170
95-48-7	2-Methylphenol	170	U	19	170
106-44-5	4-Methylphenol	170	U	18	170
621-64-7	N-Nitroso-di-n-propylamine	170	U	16	170
67-72-1	Hexachloroethane	170	U	18	170
98-95-3	Nitrobenzene	170	U	19	170
78-59-1	Isophorone	170	U	17	170
105-67-9	2,4-Dimethylphenol	170	U	18	170
120-83-2	2,4-Dichlorophenol	170	U	19	170
120-82-1	1,2,4-Trichlorobenzene	170	U	23	170
91-20-3	Naphthalene	170	U	21	170
87-68-3	Hexachlorobutadiene	170	U	23	170
91-57-6	2-Methylnaphthalene	170	U	21	170
77-47-4	Hexachlorocyclopentadiene	170	U	48	170
88-06-2	2,4,6-Trichlorophenol	170	U	20	170
95-95-4	2,4,5-Trichlorophenol	340	U	19	340
88-74-4	2-Nitroaniline	340	U	11	340
208-96-8	Acenaphthylene	170	U	19	170
606-20-2	2,6-Dinitrotoluene	170	U	14	170
83-32-9	Acenaphthene	170	U	20	170
51-28-5	2,4-Dinitrophenol	340	U	90	340
121-14-2	2,4-Dinitrotoluene	170	U	12	170
84-66-2	Diethylphthalate	170	U	12	170
86-73-7	Fluorene	170	U	17	170
534-52-1	4,6-Dinitro-2-methylphenol	340	U	13	340
86-30-6	N-Nitrosodiphenylamine	170	U	15	170
118-74-1	Hexachlorobenzene	170	U	16	170
87-86-5	Pentachlorophenol	340	U	70	340
85-01-8	Phenanthrene	170	U	13	170
120-12-7	Anthracene	170	U	14	170
86-74-8	Carbazole	170	U	14	170

1E - FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MB-85685

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: MB-85685

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S6C6399.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: Decanted: (Y/N) Date Received:

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/20/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/21/2016

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
84-74-2	Di-n-butylphthalate	170	U	14	170
206-44-0	Fluoranthene	170	U	15	170
129-00-0	Pyrene	170	U	16	170
85-68-7	Butylbenzylphthalate	170	U	13	170
91-94-1	3,3´-Dichlorobenzidine	170	U	18	170
56-55-3	Benzo(a)anthracene	170	U	17	170
218-01-9	Chrysene	170	U	15	170
117-81-7	Bis(2-ethylhexyl)phthalate	170	U	15	170
117-84-0	Di-n-octylphthalate	170	U	14	170
205-99-2	Benzo(b)fluoranthene	170	U	20	170
207-08-9	Benzo(k)fluoranthene	170	U	22	170
50-32-8	Benzo(a)pyrene	170	U	16	170
193-39-5	Indeno(1,2,3-cd)pyrene	170	U	19	170
53-70-3	Dibenzo(a,h)anthracene	170	U	18	170
191-24-2	Benzo(g,h,i)perylene	170	U	19	170
92-52-4	1,1´-Biphenyl	170	U	21	170
98-86-2	Acetophenone	170	U	16	170
1912-24-9	Atrazine	170	U	24	170
103-33-3	Azobenzene	170	U	16	170
100-52-7	Benzaldehyde	170	U	22	170
92-87-5	Benzidine	170	U	65	170
39638-32-9	Bis(2-chloroisopropyl)ether	170	U	17	170
105-60-2	Caprolactam	170	U	11	170
62-75-9	N-Nitrosodimethylamine	170	U	17	170

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCS-85685

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-85685

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S6C6400.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: Decanted: (Y/N) Date Received:

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/20/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/21/2016

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
108-95-2	Phenol	1100		19	170
111-44-4	Bis(2-chloroethyl)ether	1100		21	170
95-57-8	2-Chlorophenol	1100		21	170
541-73-1	1,3-Dichlorobenzene	1000		20	170
106-46-7	1,4-Dichlorobenzene	1000		18	170
95-50-1	1,2-Dichlorobenzene	1100		21	170
95-48-7	2-Methylphenol	1100		19	170
106-44-5	4-Methylphenol	1100		18	170
621-64-7	N-Nitroso-di-n-propylamine	1100		16	170
67-72-1	Hexachloroethane	1000		18	170
98-95-3	Nitrobenzene	1100		19	170
78-59-1	Isophorone	1000		17	170
105-67-9	2,4-Dimethylphenol	1100		18	170
120-83-2	2,4-Dichlorophenol	1100		19	170
120-82-1	1,2,4-Trichlorobenzene	1100		23	170
91-20-3	Naphthalene	1100		21	170
87-68-3	Hexachlorobutadiene	1100		23	170
91-57-6	2-Methylnaphthalene	1100		21	170
77-47-4	Hexachlorocyclopentadiene	990	Q	48	170
88-06-2	2,4,6-Trichlorophenol	1100		20	170
95-95-4	2,4,5-Trichlorophenol	1200		19	340
88-74-4	2-Nitroaniline	1100		11	340
208-96-8	Acenaphthylene	1200		19	170
606-20-2	2,6-Dinitrotoluene	1200		14	170
83-32-9	Acenaphthene	1100		20	170
51-28-5	2,4-Dinitrophenol	970	Q	90	340
121-14-2	2,4-Dinitrotoluene	1200		12	170
84-66-2	Diethylphthalate	1200		12	170
86-73-7	Fluorene	1200		17	170
534-52-1	4,6-Dinitro-2-methylphenol	1100		13	340
86-30-6	N-Nitrosodiphenylamine	1200		15	170
118-74-1	Hexachlorobenzene	1200		16	170
87-86-5	Pentachlorophenol	340	U	70	340
85-01-8	Phenanthrene	1200		13	170
120-12-7	Anthracene	1200		14	170
86-74-8	Carbazole	1200		14	170

1E - FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCS-85685

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-85685

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S6C6400.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: Decanted: (Y/N) Date Received:

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/20/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/21/2016

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
84-74-2	Di-n-butylphthalate	1300		14	170
206-44-0	Fluoranthene	1200		15	170
129-00-0	Pyrene	1200		16	170
85-68-7	Butylbenzylphthalate	1200		13	170
91-94-1	3,3'-Dichlorobenzidine	990		18	170
56-55-3	Benzo(a)anthracene	1200		17	170
218-01-9	Chrysene	1200		15	170
117-81-7	Bis(2-ethylhexyl)phthalate	1200		15	170
117-84-0	Di-n-octylphthalate	1300		14	170
205-99-2	Benzo(b)fluoranthene	1200		20	170
207-08-9	Benzo(k)fluoranthene	1200		22	170
50-32-8	Benzo(a)pyrene	1200		16	170
193-39-5	Indeno(1,2,3-cd)pyrene	1100		19	170
53-70-3	Dibenzo(a,h)anthracene	1200		18	170
191-24-2	Benzo(g,h,i)perylene	1100		19	170
92-52-4	1,1'-Biphenyl	1100		21	170
98-86-2	Acetophenone	920		16	170
1912-24-9	Atrazine	1000		24	170
103-33-3	Azobenzene	1200		16	170
100-52-7	Benzaldehyde	260		22	170
92-87-5	Benzidine	190		65	170
39638-32-9	Bis(2-chloroisopropyl)ether	1100		17	170
105-60-2	Caprolactam	1100		11	170
62-75-9	N-Nitrosodimethylamine	1000		17	170

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCSD-85685

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-85685

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S6C6401.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: Decanted: (Y/N) Date Received:

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/20/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/21/2016

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
108-95-2	Phenol	1200		19	170
111-44-4	Bis(2-chloroethyl)ether	1100		21	170
95-57-8	2-Chlorophenol	1200		21	170
541-73-1	1,3-Dichlorobenzene	1100		20	170
106-46-7	1,4-Dichlorobenzene	1100		18	170
95-50-1	1,2-Dichlorobenzene	1100		21	170
95-48-7	2-Methylphenol	1200		19	170
106-44-5	4-Methylphenol	1200		18	170
621-64-7	N-Nitroso-di-n-propylamine	1200		16	170
67-72-1	Hexachloroethane	1100		18	170
98-95-3	Nitrobenzene	1200		19	170
78-59-1	Isophorone	1100		17	170
105-67-9	2,4-Dimethylphenol	1200		18	170
120-83-2	2,4-Dichlorophenol	1200		19	170
120-82-1	1,2,4-Trichlorobenzene	1200		23	170
91-20-3	Naphthalene	1200		21	170
87-68-3	Hexachlorobutadiene	1100		23	170
91-57-6	2-Methylnaphthalene	1200		21	170
77-47-4	Hexachlorocyclopentadiene	1100	Q	48	170
88-06-2	2,4,6-Trichlorophenol	1200		20	170
95-95-4	2,4,5-Trichlorophenol	1300		19	340
88-74-4	2-Nitroaniline	1200		11	340
208-96-8	Acenaphthylene	1300		19	170
606-20-2	2,6-Dinitrotoluene	1300		14	170
83-32-9	Acenaphthene	1200		20	170
51-28-5	2,4-Dinitrophenol	1100	Q	90	340
121-14-2	2,4-Dinitrotoluene	1300		12	170
84-66-2	Diethylphthalate	1300		12	170
86-73-7	Fluorene	1300		17	170
534-52-1	4,6-Dinitro-2-methylphenol	1200		13	340
86-30-6	N-Nitrosodiphenylamine	1300		15	170
118-74-1	Hexachlorobenzene	1300		16	170
87-86-5	Pentachlorophenol	1200		70	340
85-01-8	Phenanthrene	1300		13	170
120-12-7	Anthracene	1300		14	170
86-74-8	Carbazole	1300		14	170

1E - FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCSD-85685

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-85685

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S6C6401.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: Decanted: (Y/N) Date Received:

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/20/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 10/21/2016

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
84-74-2	Di-n-butylphthalate	1400		14	170
206-44-0	Fluoranthene	1300		15	170
129-00-0	Pyrene	1300		16	170
85-68-7	Butylbenzylphthalate	1300		13	170
91-94-1	3,3´-Dichlorobenzidine	1100		18	170
56-55-3	Benzo(a)anthracene	1300		17	170
218-01-9	Chrysene	1300		15	170
117-81-7	Bis(2-ethylhexyl)phthalate	1300		15	170
117-84-0	Di-n-octylphthalate	1400		14	170
205-99-2	Benzo(b)fluoranthene	1300		20	170
207-08-9	Benzo(k)fluoranthene	1400		22	170
50-32-8	Benzo(a)pyrene	1300		16	170
193-39-5	Indeno(1,2,3-cd)pyrene	1200		19	170
53-70-3	Dibenzo(a,h)anthracene	1300		18	170
191-24-2	Benzo(g,h,i)perylene	1200		19	170
92-52-4	1,1´-Biphenyl	1200		21	170
98-86-2	Acetophenone	980		16	170
1912-24-9	Atrazine	1100		24	170
103-33-3	Azobenzene	1300		16	170
100-52-7	Benzaldehyde	300		22	170
92-87-5	Benzidine	150	J	65	170
39638-32-9	Bis(2-chloroisopropyl)ether	1100		17	170
105-60-2	Caprolactam	1200		11	170
62-75-9	N-Nitrosodimethylamine	1100		17	170

2K - FORM II SV-4

SOIL SEMIVOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Level: (LOW/MED) LOW

	CLIENT SAMPLE NO.	SDMC1 (NBZ) #	SDMC2 (FBP) #	SDMC3 (TPH) #	SDMC4 (PHL) #	SDMC5 (2FP) #	SDMC6 (TBP) #			TOT OUT
01	MB-85685	59	61	66	66	67	64			0
02	LCS-85685	62	65	69	69	70	73			0
03	LCSD-85685	66	71	74	75	75	79			0
04	HSR-BF-11-10 1416	56	60	64	63	65	66			0

			QC LIMITS
SDMC1	(NBZ)	= Nitrobenzene-d5	(35-100)
SDMC2	(FBP)	= 2-Fluorobiphenyl	(45-105)
SDMC3	(TPH)	= Terphenyl-d14	(30-125)
SDMC4	(PHL)	= Phenol-d5	(40-100)
SDMC5	(2FP)	= 2-Fluorophenol	(35-105)
SDMC6	(TBP)	= 2,4,6-Tribromophenol	(35-125)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D DMC diluted out

som15.09.23.1015

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE RECOVERY

CLIENT SAMPLE NO.

LCS-85685

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab Sample ID: LCS-85685 LCS Lot No.:

Date Extracted: 10/20/2016 Date Analyzed (1): 10/21/2016

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Phenol	1666.5000	0.0000	1091.5949	66		40 - 100
Bis(2-chloroethyl)ether	1666.5000	0.0000	1061.8294	64		40 - 105
2-Chlorophenol	1666.5000	0.0000	1100.4866	66		45 - 105
1,3-Dichlorobenzene	1666.5000	0.0000	1021.1521	61		40 - 100
1,4-Dichlorobenzene	1666.5000	0.0000	1032.4642	62		35 - 105
1,2-Dichlorobenzene	1666.5000	0.0000	1054.5766	63		45 - 95
2-Methylphenol	1666.5000	0.0000	1111.5982	67		40 - 105
4-Methylphenol	1666.5000	0.0000	1134.0247	68		40 - 105
N-Nitroso-di-n-propylamine	1666.5000	0.0000	1104.2448	66		40 - 115
Hexachloroethane	1666.5000	0.0000	1009.8330	61		35 - 110
Nitrobenzene	1666.5000	0.0000	1097.2298	66		40 - 115
Isophorone	1666.5000	0.0000	1049.9876	63		45 - 110
2,4-Dimethylphenol	1666.5000	0.0000	1101.2582	66		30 - 105
2,4-Dichlorophenol	1666.5000	0.0000	1127.4490	68		45 - 110
1,2,4-Trichlorobenzene	1666.5000	0.0000	1072.8104	64		45 - 110
Naphthalene	1666.5000	0.0000	1132.3651	68		40 - 105
Hexachlorobutadiene	1666.5000	0.0000	1074.7891	64		40 - 115
2-Methylnaphthalene	1666.5000	0.0000	1106.7325	66		45 - 105
Hexachlorocyclopentadiene	1666.5000	0.0000	992.0051	60		8 - 148
2,4,6-Trichlorophenol	1666.5000	0.0000	1147.0630	69		45 - 110
2,4,5-Trichlorophenol	1666.5000	0.0000	1175.6373	71		50 - 110
2-Nitroaniline	1666.5000	0.0000	1143.9685	69		45 - 120
Acenaphthylene	1666.5000	0.0000	1156.4735	69		45 - 105
2,6-Dinitrotoluene	1666.5000	0.0000	1173.3050	70		50 - 110
Acenaphthene	1666.5000	0.0000	1139.7545	68		45 - 110
2,4-Dinitrophenol	1666.5000	0.0000	968.6309	58		15 - 130
2,4-Dinitrotoluene	1666.5000	0.0000	1187.6332	71		50 - 115
Diethylphthalate	1666.5000	0.0000	1166.3966	70		50 - 115
Fluorene	1666.5000	0.0000	1166.5987	70		50 - 110
4,6-Dinitro-2-methylphenol	1666.5000	0.0000	1080.8631	65		30 - 135
N-Nitrosodiphenylamine	1666.5000	0.0000	1187.8633	71		50 - 115
Hexachlorobenzene	1666.5000	0.0000	1174.9812	71		45 - 120
Pentachlorophenol	1666.5000	0.0000	340.0000	0	*	25 - 120
Phenanthrene	1666.5000	0.0000	1217.8407	73		50 - 110
Anthracene	1666.5000	0.0000	1203.1121	72		55 - 105
Carbazole	1666.5000	0.0000	1204.9855	72		45 - 115
Di-n-butylphthalate	1666.5000	0.0000	1273.2119	76		55 - 110
Fluoranthene	1666.5000	0.0000	1197.7428	72		55 - 115
Pyrene	1666.5000	0.0000	1246.8661	75		45 - 125
Butylbenzylphthalate	1666.5000	0.0000	1244.5734	75		50 - 125
3,3'-Dichlorobenzidine	1666.5000	0.0000	987.8441	59		10 - 130
Benzo(a)anthracene	1666.5000	0.0000	1189.1633	71		50 - 110
Chrysene	1666.5000	0.0000	1240.9486	74		55 - 110
Bis(2-ethylhexyl)phthalate	1666.5000	0.0000	1238.2678	74		45 - 125

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE RECOVERY

CLIENT SAMPLE NO.

LCS-85685

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab Sample ID: LCS-85685 LCS Lot No.:

Date Extracted: 10/20/2016 Date Analyzed (1): 10/21/2016

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Di-n-octylphthalate	1666.5000	0.0000	1311.6458	79		40 - 130
Benzo(b)fluoranthene	1666.5000	0.0000	1183.3996	71		45 - 115
Benzo(k)fluoranthene	1666.5000	0.0000	1248.5022	75		45 - 125
Benzo(a)pyrene	1666.5000	0.0000	1201.1065	72		50 - 110
Indeno(1,2,3-cd)pyrene	1666.5000	0.0000	1112.7186	67		40 - 120
Dibenzo(a,h)anthracene	1666.5000	0.0000	1177.9791	71		40 - 125
Benzo(g,h,i)perylene	1666.5000	0.0000	1107.4822	66		40 - 125
1,1'-Biphenyl	1666.5000	0.0000	1123.2656	67		50 - 121
Acetophenone	1666.5000	0.0000	922.6252	55		50 - 150
Atrazine	1666.5000	0.0000	1045.3252	63		50 - 150
Azobenzene	1666.5000	0.0000	1181.6887	71		50 - 150
Benzaldehyde	1666.5000	0.0000	264.2208	16		10 - 118
Bis(2-chloroisopropyl)ethe	1666.5000	0.0000	1066.8482	64		40 - 140
Caprolactam	1666.5000	0.0000	1143.7562	69		41 - 115
N-Nitrosodimethylamine	1666.5000	0.0000	1029.2327	62		50 - 150

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 1 out of 59 outside limits

COMMENTS:

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-85685

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab Sample ID: LCSD-85685 LCS Lot No.:

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC	#	%RPD	#	QC LIMITS RPD	QC LIMITS REC.
Phenol	1666.5000	1174.2068	70		6		30	40 - 100
Bis(2-chloroethyl)ether	1666.5000	1118.8904	67		5		30	40 - 105
2-Chlorophenol	1666.5000	1185.5608	71		7		30	45 - 105
1,3-Dichlorobenzene	1666.5000	1089.9403	65		6		30	40 - 100
1,4-Dichlorobenzene	1666.5000	1105.7568	66		6		30	35 - 105
1,2-Dichlorobenzene	1666.5000	1117.3068	67		6		30	45 - 95
2-Methylphenol	1666.5000	1193.6320	72		7		30	40 - 105
4-Methylphenol	1666.5000	1224.4591	73		7		30	40 - 105
N-Nitroso-di-n-propylamine	1666.5000	1180.2853	71		7		30	40 - 115
Hexachloroethane	1666.5000	1069.4722	64		5		30	35 - 110
Nitrobenzene	1666.5000	1168.2151	70		6		30	40 - 115
Isophorone	1666.5000	1116.7456	67		6		30	45 - 110
2,4-Dimethylphenol	1666.5000	1161.1022	70		6		30	30 - 105
2,4-Dichlorophenol	1666.5000	1206.6666	72		6		30	45 - 110
1,2,4-Trichlorobenzene	1666.5000	1150.4836	69		8		30	45 - 110
Naphthalene	1666.5000	1197.2215	72		6		30	40 - 105
Hexachlorobutadiene	1666.5000	1132.8398	68		6		30	40 - 115
2-Methylnaphthalene	1666.5000	1179.5670	71		7		30	45 - 105
Hexachlorocyclopentadiene	1666.5000	1057.2579	63		5		30	8 - 148
2,4,6-Trichlorophenol	1666.5000	1226.9016	74		7		30	45 - 110
2,4,5-Trichlorophenol	1666.5000	1271.8272	76		7		30	50 - 110
2-Nitroaniline	1666.5000	1249.3464	75		8		30	45 - 120
Acenaphthylene	1666.5000	1252.0530	75		8		30	45 - 105
2,6-Dinitrotoluene	1666.5000	1286.9109	77		10		30	50 - 110
Acenaphthene	1666.5000	1223.8134	73		7		30	45 - 110
2,4-Dinitrophenol	1666.5000	1079.2564	65		11		30	15 - 130
2,4-Dinitrotoluene	1666.5000	1275.8745	77		8		30	50 - 115
Diethylphthalate	1666.5000	1268.1151	76		8		30	50 - 115
Fluorene	1666.5000	1277.6348	77		10		30	50 - 110
4,6-Dinitro-2-methylphenol	1666.5000	1217.9686	73		12		30	30 - 135
N-Nitrosodiphenylamine	1666.5000	1273.7884	76		7		30	50 - 115
Hexachlorobenzene	1666.5000	1252.3776	75		5		30	45 - 120
Pentachlorophenol	1666.5000	1160.4622	70		200	*	30	25 - 120
Phenanthrene	1666.5000	1307.0384	78		7		30	50 - 110
Anthracene	1666.5000	1300.9898	78		8		30	55 - 105
Carbazole	1666.5000	1290.4011	77		7		30	45 - 115
Di-n-butylphthalate	1666.5000	1383.9672	83		9		30	55 - 110
Fluoranthene	1666.5000	1275.0450	77		7		30	55 - 115
Pyrene	1666.5000	1332.9951	80		6		30	45 - 125
Butylbenzylphthalate	1666.5000	1326.9836	80		6		30	50 - 125
3,3'-Dichlorobenzidine	1666.5000	1097.3121	66		11		30	10 - 130
Benzo(a)anthracene	1666.5000	1281.8337	77		8		30	50 - 110
Chrysene	1666.5000	1281.5199	77		4		30	55 - 110
Bis(2-ethylhexyl)phthalate	1666.5000	1340.6731	80		8		30	45 - 125
Di-n-octylphthalate	1666.5000	1419.8168	85		7		30	40 - 130
Benzo(b)fluoranthene	1666.5000	1283.9424	77		8		30	45 - 115

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-85685

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab Sample ID: LCSD-85685 LCS Lot No.:

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC	#	%RPD	#	QC LIMITS RPD	QC LIMITS REC.
Benzo(k)fluoranthene	1666.5000	1360.7916	82		9		30	45 - 125
Benzo(a)pyrene	1666.5000	1304.6787	78		8		30	50 - 110
Indeno(1,2,3-cd)pyrene	1666.5000	1198.2757	72		7		30	40 - 120
Dibenzo(a,h)anthracene	1666.5000	1285.9649	77		8		30	40 - 125
Benzo(g,h,i)perylene	1666.5000	1213.7446	73		10		30	40 - 125
1,1'-Biphenyl	1666.5000	1220.8096	73		9		30	50 - 121
Acetophenone	1666.5000	979.2063	59		7		30	50 - 150
Atrazine	1666.5000	1113.6461	67		6		30	50 - 150
Azobenzene	1666.5000	1270.2062	76		7		30	50 - 150
Benzaldehyde	1666.5000	295.6159	18		12		30	10 - 118
Bis(2-chloroisopropyl)ethe	1666.5000	1140.2398	68		6		30	40 - 140
Caprolactam	1666.5000	1221.1349	73		6		30	41 - 115
N-Nitrosodimethylamine	1666.5000	1088.8694	65		5		30	50 - 150

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 59 outside limits

Spike Recovery: 0 out of 59 outside limits

COMMENTS:

4C - FORM IV SV

SEMIVOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MB-85685

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab File ID: S6C6399.D Lab Sample ID: MB-85685

Instrument ID: S6 Date Extracted: 10/20/2016

Matrix: (SOIL/SED/WATER) SOIL Date Analyzed: 10/21/2016

Level: (LOW/MED) LOW Time Analyzed: 19:16

Extraction: (Type) SONC GPC Cleanup: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	LCS-85685	LCS-85685	S6C6400.D	10/21/2016
02	LCSD-85685	LCSD-85685	S6C6401.D	10/21/2016
03	HSR-BF-11-101416	R0948-01B	S6C6402.D	10/21/2016

COMMENTS:

8C - FORM VIII SV-1

SEMIVOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

GC Column: ZB-Semi ID: 0.25 (mm) Init. Calib. Date(s): 10/19/2016 10/19/2016

EPA Sample No.(SSTD020##) SSTD025AK Date Analyzed: 10/21/2016

Lab File ID (Standard): S6C6390.D Time Analyzed: 12:05

Instrument ID: S6

		IS1 (DCB) AREA #	RT #	IS2 (NPT) AREA #	RT #	IS3 (ANT) AREA #	RT #
	12 HOUR STD	662670	5.742	2605316	7.228	1519621	9.343
	UPPER LIMIT	1325340	6.242	5210632	7.728	3039242	9.843
	LOWER LIMIT	331335	5.242	1302658	6.728	759811	8.843
	SAMPLE NO.						
01	MB-85685	730431	5.742	2755402	7.228	1554782	9.343
02	LCS-85685	697017	5.742	2620839	7.228	1494881	9.343
03	LCSD-85685	657024	5.742	2489736	7.228	1403707	9.344
04	HSR-BF-11-10 1416	700487	5.742	2643437	7.228	1463802	9.344

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = 200% of internal standard area

AREA LOWER LIMIT = 50% of internal standard area

RT UPPER LIMIT = +0.50 minutes of internal standard RT

RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

8D - FORM VIII SV-2

SEMIVOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

EPA Sample No.(SSTD020##) SSTD025AK Date Analyzed: 10/21/2016

Lab File ID (Standard): S6C6390.D Time Analyzed: 12:05

Instrument ID: S6 GC Column: ZB-Semi ID: 0.25 (mm)

		IS4 (PHN) AREA #	RT #	IS5 (CRY) AREA #	RT #	IS6 (PRY) AREA #	RT #
	12 HOUR STD	2579758	11.141	2599255	14.361	2459690	16.136
	UPPER LIMIT	5159516	11.641	5198510	14.861	4919380	16.636
	LOWER LIMIT	1289879	10.641	1299628	13.861	1229845	15.636
	SAMPLE NO.						
01	MB-85685	2436663	11.141	2148067	14.355	1818193	16.130
02	LCS-85685	2394879	11.147	2163808	14.361	1936983	16.130
03	LCSD-85685	2260606	11.147	2034576	14.361	1794235	16.136
04	HSR-BF-11-10 1416	2266919	11.141	1842174	14.361	1491131	16.130

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = 200% of internal standard area

AREA LOWER LIMIT = 50% of internal standard area

RT UPPER LIMIT = +0.50 minutes of internal standard RT

RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

* Pesticide Organics *

REPORT NARRATIVE

Eurofins Spectrum Analytical, Inc.

Client : Sevenson Environmental Services Inc.

Project: Horseshoe Road Site

Laboratory Workorder / SDG #: R0948

SW846 8081B, Organochlorine Pesticides by GC-ECD

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code: SW846 8081B

IV. PREPARATION

Soil Samples were prepared following procedures in laboratory test code: SW3550B

V. INSTRUMENTATION

The following instrumentation was used

Instrument Code: E5
Instrument Type: GC-ECD
Description: HP6890
Manufacturer: Hewlett-Packard
Model: 6890
GC Column used: 30 m X 0.53 mm ID [0.50 um thickness] CLPPest capillary column.

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Surrogates:

Surrogate standard percent recoveries were within the QC limits with the following exceptions. Please note that the acceptance criteria allow one surrogate recovery outside of the QC limits per fraction.

HSR-BF-11-101416 (R0948-01B), recovery is below criteria for Decachlorobiphenyl on rear column at 48% with criteria of (55-130) and Decachlorobiphenyl on front column at 52% with criteria of (55-130).

D. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for lab control samples were within the QC limits with the following exceptions. Please note that most test procedures allow for several compounds outside of the QC limits for the LCS, although this may indicate a bias for this specific compound.

LCS-85686 in batch 85686, recovery is above criteria for beta-BHC on rear column at 134% with criteria of (60-125).

2. Matrix Spike / Matrix Spike Duplicate (MS/MSD):

No client-requested MS/MSD analyses were included in this SDG.

E. Dilutions:

No sample in this SDG required analysis at dilution.

F. Samples:

The lower concentration between the primary and confirmatory GC column concentrations is reported due to the presence of interferences unless otherwise indicated. P flags are assigned to compounds when D% between the two columns are greater than 40%.

No other unusual occurrences were noted during sample analysis.

G. Manual Integration

No sample in this SDG were performed with manual integration.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed: Dawn E Wojcik

Date: 11/3/16

Data Flag/Qualifiers (Page 1 of 2):

U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).

J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
- estimated concentration for Tentatively Identified Compound

B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a "trace" concentration below the reporting limit and equal to or above the detection limit.

D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis

E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.

P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.

A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.

Data Flag/Qualifiers (Page 2 of 2):

N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.

* For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.

Q Qualified Results. This compound has an associated Continuing Calibration Verification (CCV) with a %Difference or %Drift above the control limit.

Sample ID Suffixes

DL Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution

RE Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.

RA Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.

RX Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.

MS Matrix Spike.

MSD Matrix Spike Duplicate

DUP Duplicate analysis

SD Serial Dilution

PS Post-digestion or Post-distillation spike. For metals or inorganic analyses

1G - FORM I PEST

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

HSR-BF-11-101416

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: R0948-01B

Sample wt/vol: 30.1 (g/mL) G Lab File ID: E5N3209F.D/E5N3209R.D

% Moisture: 25 Decanted: (Y/N) N Date Received: 10/15/2016

Extraction: (Type) SONC Date Extracted: 10/20/2016

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/25/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
319-84-6	alpha-BHC	2.3	U J	0.074	2.3
319-85-7	beta-BHC	2.3	U J	0.083	2.3
319-86-8	delta-BHC	2.3	U J	0.16	2.3
58-89-9	gamma-BHC (Lindane)	2.3	U J	0.073	2.3
76-44-8	Heptachlor	2.3	U J	0.095	2.3
309-00-2	Aldrin	2.3	U J	0.15	2.3
1024-57-3	Heptachlor epoxide	2.3	U J	0.21	2.3
959-98-8	Endosulfan I	2.3	U J	0.079	2.3
60-57-1	Dieldrin	4.4	J	0.21	4.4
72-55-9	4,4´-DDE	4.4	J	0.33	4.4
72-20-8	Endrin	4.4	U J	0.19	4.4
33213-65-9	Endosulfan II	4.4	U J	0.20	4.4
72-54-8	4,4´-DDD	4.4	J	0.29	4.4
1031-07-8	Endosulfan sulfate	4.4	U J	0.17	4.4
50-29-3	4,4´-DDT	4.4	U J	0.44	4.4
72-43-5	Methoxychlor	23	U J	1.2	23
53494-70-5	Endrin ketone	4.4	U J	0.16	4.4
7421-93-4	Endrin aldehyde	4.4	U J	0.30	4.4
5103-71-9	alpha-Chlordane	2.3	U J	0.12	2.3
5103-74-2	gamma-Chlordane	2.3	U J	0.28	2.3
8001-35-2	Toxaphene	230	U J	12	230

1G - FORM I PEST

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MB-85686

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: MB-85686

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E5N3210F.D/E5N3210R.D

% Moisture: Decanted: (Y/N) Date Received:

Extraction: (Type) SONC Date Extracted: 10/20/2016

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/25/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
319-84-6	alpha-BHC	1.7	U	0.056	1.7
319-85-7	beta-BHC	1.7	U	0.063	1.7
319-86-8	delta-BHC	1.7	U	0.12	1.7
58-89-9	gamma-BHC (Lindane)	1.7	U	0.055	1.7
76-44-8	Heptachlor	1.7	U	0.072	1.7
309-00-2	Aldrin	1.7	U	0.11	1.7
1024-57-3	Heptachlor epoxide	1.7	U	0.16	1.7
959-98-8	Endosulfan I	1.7	U	0.060	1.7
60-57-1	Dieldrin	3.3	U	0.16	3.3
72-55-9	4,4´-DDE	3.3	U	0.25	3.3
72-20-8	Endrin	3.3	U	0.14	3.3
33213-65-9	Endosulfan II	3.3	U	0.15	3.3
72-54-8	4,4´-DDD	3.3	U	0.22	3.3
1031-07-8	Endosulfan sulfate	3.3	U	0.13	3.3
50-29-3	4,4´-DDT	3.3	U	0.33	3.3
72-43-5	Methoxychlor	17	U	0.88	17
53494-70-5	Endrin ketone	3.3	U	0.12	3.3
7421-93-4	Endrin aldehyde	3.3	U	0.23	3.3
5103-71-9	alpha-Chlordane	1.7	U	0.087	1.7
5103-74-2	gamma-Chlordane	1.7	U	0.21	1.7
8001-35-2	Toxaphene	170	U	8.8	170

1G - FORM I PEST

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCS-85686(1)

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-85686

Sample wt/vol: 30 (g/mL) G Lab File ID: E5N3211F.D

% Moisture: Decanted: (Y/N) Date Received:

Extraction: (Type) SONC Date Extracted: 10/20/2016

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/25/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
319-84-6	alpha-BHC	5.5		0.056	1.7
319-85-7	beta-BHC	5.1	P	0.063	1.7
319-86-8	delta-BHC	5.2		0.12	1.7
58-89-9	gamma-BHC (Lindane)	5.6		0.055	1.7
76-44-8	Heptachlor	6.0		0.072	1.7
309-00-2	Aldrin	5.2		0.11	1.7
1024-57-3	Heptachlor epoxide	5.1		0.16	1.7
959-98-8	Endosulfan I	5.2		0.060	1.7
60-57-1	Dieldrin	10		0.16	3.3
72-55-9	4,4´-DDE	9.9		0.25	3.3
72-20-8	Endrin	14		0.14	3.3
33213-65-9	Endosulfan II	8.9		0.15	3.3
72-54-8	4,4´-DDD	9.6		0.22	3.3
1031-07-8	Endosulfan sulfate	11		0.13	3.3
50-29-3	4,4´-DDT	11	P	0.33	3.3
72-43-5	Methoxychlor	58		0.88	17
53494-70-5	Endrin ketone	11		0.12	3.3
7421-93-4	Endrin aldehyde	9.8		0.23	3.3
5103-71-9	alpha-Chlordane	4.9		0.087	1.7
5103-74-2	gamma-Chlordane	4.9		0.21	1.7
8001-35-2	Toxaphene	170	U	8.8	170

1G - FORM I PEST

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCS-85686(2)

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-85686

Sample wt/vol: 30 (g/mL) G Lab File ID: E5N3211R.D

% Moisture: Decanted: (Y/N) Date Received:

Extraction: (Type) SONC Date Extracted: 10/20/2016

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/25/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
319-84-6	alpha-BHC	4.6		0.056	1.7
319-85-7	beta-BHC	8.9	P	0.063	1.7
319-86-8	delta-BHC	5.4		0.12	1.7
58-89-9	gamma-BHC (Lindane)	6.1		0.055	1.7
76-44-8	Heptachlor	7.1		0.072	1.7
309-00-2	Aldrin	5.5		0.11	1.7
1024-57-3	Heptachlor epoxide	6.2		0.16	1.7
959-98-8	Endosulfan I	5.1		0.060	1.7
60-57-1	Dieldrin	13		0.16	3.3
72-55-9	4,4'-DDE	10		0.25	3.3
72-20-8	Endrin	14		0.14	3.3
33213-65-9	Endosulfan II	11		0.15	3.3
72-54-8	4,4'-DDD	13		0.22	3.3
1031-07-8	Endosulfan sulfate	14		0.13	3.3
50-29-3	4,4'-DDT	16	P	0.33	3.3
72-43-5	Methoxychlor	67		0.88	17
53494-70-5	Endrin ketone	11		0.12	3.3
7421-93-4	Endrin aldehyde	10		0.23	3.3
5103-71-9	alpha-Chlordane	6.0		0.087	1.7
5103-74-2	gamma-Chlordane	6.4		0.21	1.7
8001-35-2	Toxaphene	170	U	8.8	170

1G - FORM I PEST

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCSD-85686(1)

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-85686

Sample wt/vol: 30 (g/mL) G Lab File ID: E5N3212F.D

% Moisture: Decanted: (Y/N) Date Received:

Extraction: (Type) SONC Date Extracted: 10/20/2016

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/25/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
319-84-6	alpha-BHC	5.1		0.056	1.7
319-85-7	beta-BHC	4.8	P	0.063	1.7
319-86-8	delta-BHC	4.9		0.12	1.7
58-89-9	gamma-BHC (Lindane)	5.3		0.055	1.7
76-44-8	Heptachlor	5.5		0.072	1.7
309-00-2	Aldrin	4.9		0.11	1.7
1024-57-3	Heptachlor epoxide	4.9		0.16	1.7
959-98-8	Endosulfan I	5.0		0.060	1.7
60-57-1	Dieldrin	9.7		0.16	3.3
72-55-9	4,4'-DDE	9.5		0.25	3.3
72-20-8	Endrin	13		0.14	3.3
33213-65-9	Endosulfan II	8.9		0.15	3.3
72-54-8	4,4'-DDD	9.4		0.22	3.3
1031-07-8	Endosulfan sulfate	10		0.13	3.3
50-29-3	4,4'-DDT	10		0.33	3.3
72-43-5	Methoxychlor	57		0.88	17
53494-70-5	Endrin ketone	11		0.12	3.3
7421-93-4	Endrin aldehyde	9.1		0.23	3.3
5103-71-9	alpha-Chlordane	4.7		0.087	1.7
5103-74-2	gamma-Chlordane	4.8		0.21	1.7
8001-35-2	Toxaphene	170	U	8.8	170

1G - FORM I PEST

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCSD-85686(2)

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-85686

Sample wt/vol: 30 (g/mL) G Lab File ID: E5N3212R.D

% Moisture: Decanted: (Y/N) Date Received:

Extraction: (Type) SONC Date Extracted: 10/20/2016

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/25/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
319-84-6	alpha-BHC	4.5		0.056	1.7
319-85-7	beta-BHC	7.1	P	0.063	1.7
319-86-8	delta-BHC	5.2		0.12	1.7
58-89-9	gamma-BHC (Lindane)	6.0		0.055	1.7
76-44-8	Heptachlor	7.1		0.072	1.7
309-00-2	Aldrin	5.1		0.11	1.7
1024-57-3	Heptachlor epoxide	5.9		0.16	1.7
959-98-8	Endosulfan I	5.1		0.060	1.7
60-57-1	Dieldrin	11		0.16	3.3
72-55-9	4,4´-DDE	11		0.25	3.3
72-20-8	Endrin	14		0.14	3.3
33213-65-9	Endosulfan II	11		0.15	3.3
72-54-8	4,4´-DDD	12		0.22	3.3
1031-07-8	Endosulfan sulfate	13		0.13	3.3
50-29-3	4,4´-DDT	14		0.33	3.3
72-43-5	Methoxychlor	63		0.88	17
53494-70-5	Endrin ketone	11		0.12	3.3
7421-93-4	Endrin aldehyde	10		0.23	3.3
5103-71-9	alpha-Chlordane	5.9		0.087	1.7
5103-74-2	gamma-Chlordane	6.1		0.21	1.7
8001-35-2	Toxaphene	170	U	8.8	170

2P - FORM II PEST-2

SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

GC Column(1): CLPPest ID: 0.53 (mm) GC Column(2): CLPPestII ID: 0.53 (mm)

	CLIENT SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	HSR-BF-11-10 1416	54	33	52 *	48 *			2
02	MB-85686	62	47	60	61			0
03	LCS-85686	74	75	79	82			0
04	LCSD-85686	68	67	79	82			0

	QC LIMITS
TCX = Tetrachloro-m-xylene	(14-113)
DCB = Decachlorobiphenyl	(55-130)

Column to be used to flag recovery values

* Values outside of QC limits

D Surrogate diluted out

som15.09.23.1015

SW846

3M - FORM III PEST-3
SOIL PESTICIDE LABORATORY CONTROL
SAMPLE RECOVERY

CLIENT SAMPLE NO.

LCS-85686

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab Sample ID: LCS-85686 LCS Lot No.:

Date Extracted: 10/20/2016 Date Analyzed (1): 10/25/2016

Instrument ID (1): E5 GC Column(1): CLPPest ID: 0.53 (mm)

COMPOUND	AMOUNT ADDED (UG/KG)	AMOUNT RECOVERED (UG/KG)	%REC	#	QC LIMITS
alpha-BHC	6.6670	5.5229	83		60-125
beta-BHC	6.6670	5.0518	76		60-125
delta-BHC	6.6670	5.1921	78		55-130
gamma-BHC (Lindane)	6.6670	5.6456	85		60-125
Heptachlor	6.6670	5.9720	90		50-140
Aldrin	6.6670	5.2019	78		45-140
Heptachlor epoxide	6.6670	5.0809	76		65-130
Endosulfan I	6.6670	5.2162	78		15-135
Dieldrin	13.3330	10.0388	75		65-125
4,4´-DDE	13.3330	9.9346	75		70-125
Endrin	13.3330	14.1090	106		60-135
Endosulfan II	13.3330	8.9279	67		35-140
4,4´-DDD	13.3330	9.5612	72		30-135
Endosulfan sulfate	13.3330	10.5119	79		60-135
4,4´-DDT	13.3330	11.1908	84		45-140
Methoxychlor	66.6670	57.8686	87		55-145
Endrin ketone	13.3330	10.6656	80		65-135
Endrin aldehyde	13.3330	9.7812	73		35-145
alpha-Chlordane	6.6670	4.8894	73		65-120
gamma-Chlordane	6.6670	4.8945	73		65-125

Instrument ID (2): E5 GC Column(2): CLPPestII ID: 0.53 (mm)

Date Analyzed (2): 10/25/2016

COMPOUND	AMOUNT ADDED (UG/KG)	AMOUNT RECOVERED (UG/KG)	%REC	#	QC LIMITS
alpha-BHC	6.6670	4.5755	69		60-125
beta-BHC	6.6670	8.9250	134	*	60-125
delta-BHC	6.6670	5.4322	81		55-130
gamma-BHC (Lindane)	6.6670	6.0758	91		60-125

COMMENTS:

som15.09.23.1015

SW846

3M - FORM III PEST-3
SOIL PESTICIDE LABORATORY CONTROL
SAMPLE RECOVERY

CLIENT SAMPLE NO.
LCS-85686

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab Sample ID: LCS-85686 LCS Lot No.:

Date Extracted: 10/20/2016 Date Analyzed (1): 10/25/2016

Heptachlor	6.6670	7.1172	107	50-140
Aldrin	6.6670	5.5426	83	45-140
Heptachlor epoxide	6.6670	6.1671	93	65-130
Endosulfan I	6.6670	5.1342	77	15-135
Dieldrin	13.3330	12.6128	95	65-125
4,4´-DDE	13.3330	10.2297	77	70-125
Endrin	13.3330	14.0868	106	60-135
Endosulfan II	13.3330	10.9876	82	35-140
4,4´-DDD	13.3330	12.9829	97	30-135
Endosulfan sulfate	13.3330	13.5860	102	60-135
4,4´-DDT	13.3330	15.7974	118	45-140
Methoxychlor	66.6670	67.0708	101	55-145
Endrin ketone	13.3330	10.5027	79	65-135
Endrin aldehyde	13.3330	10.3789	78	35-145
alpha-Chlordane	6.6670	5.9596	89	65-120
gamma-Chlordane	6.6670	6.4166	96	65-125

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

LCS Recovery: 1 out of 40 outside limits.

COMMENTS:

som15.09.23.1015

SW846

2410697
2410713

3M - FORM III PEST-3
SOIL PESTICIDE LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

CLIENT SAMPLE NO.
LCSD-85686

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab Sample ID: LCSD-85686 LCS Lot No.:

Date Extracted: 10/20/2016 Date Analyzed (1): 10/25/2016

Instrument ID (1): E5 GC Column(1): CLPPest ID: 0.53 (mm)

COMPOUND	AMOUNT ADDED (UG/KG)	AMOUNT RECOVERED (UG/KG)	%REC #	QC LIMITS	%RPD #	RPD LIMIT
alpha-BHC	6.6670	5.0933	76	60-125	9.0	30
beta-BHC	6.6670	4.7890	72	60-125	5.0	30
delta-BHC	6.6670	4.9087	74	55-130	5.0	30
gamma-BHC (Lindane)	6.6670	5.2548	79	60-125	7.0	30
Heptachlor	6.6670	5.4500	82	50-140	9.0	30
Aldrin	6.6670	4.9114	74	45-140	5.0	30
Heptachlor epoxide	6.6670	4.9106	74	65-130	3.0	30
Endosulfan I	6.6670	4.9732	75	15-135	4.0	30
Dieldrin	13.3330	9.6669	73	65-125	3.0	30
4,4´-DDE	13.3330	9.5399	72	70-125	4.0	30
Endrin	13.3330	13.2928	100	60-135	6.0	30
Endosulfan II	13.3330	8.8678	67	35-140	0	30
4,4´-DDD	13.3330	9.3661	70	30-135	3.0	30
Endosulfan sulfate	13.3330	10.0369	75	60-135	5.0	30
4,4´-DDT	13.3330	10.3593	78	45-140	7.0	30
Methoxychlor	66.6670	56.8053	85	55-145	2.0	30
Endrin ketone	13.3330	10.5505	79	65-135	1.0	30
Endrin aldehyde	13.3330	9.0920	68	35-145	7.0	30
alpha-Chlordane	6.6670	4.7119	71	65-120	3.0	30
gamma-Chlordane	6.6670	4.7653	71	65-125	3.0	30

Instrument ID (2): E5 GC Column(2): CLPPestII ID: 0.53 (mm)

Date Analyzed (2): 10/25/2016

COMPOUND	AMOUNT ADDED (UG/KG)	AMOUNT RECOVERED (UG/KG)	%REC #	QC LIMITS	%RPD #	RPD LIMIT
alpha-BHC	6.6670	4.4753	67	60-125	3.0	30
beta-BHC	6.6670	7.1282	107	60-125	22	30
delta-BHC	6.6670	5.2186	78	55-130	4.0	30
gamma-BHC (Lindane)	6.6670	6.0433	91	60-125	0	30

COMMENTS:

2410697
2410713

3M - FORM III PEST-3
SOIL PESTICIDE LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

CLIENT SAMPLE NO.
LCSD-85686

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab Sample ID: LCSD-85686 LCS Lot No.:

Date Extracted: 10/20/2016 Date Analyzed (1): 10/25/2016

Heptachlor	6.6670	7.0943	106	50-140	1.0	30
Aldrin	6.6670	5.1317	77	45-140	8.0	30
Heptachlor epoxide	6.6670	5.9299	89	65-130	4.0	30
Endosulfan I	6.6670	5.1173	77	15-135	0	30
Dieldrin	13.3330	10.9555	82	65-125	15	30
4,4´-DDE	13.3330	10.6710	80	70-125	4.0	30
Endrin	13.3330	13.5271	101	60-135	5.0	30
Endosulfan II	13.3330	11.3235	85	35-140	4.0	30
4,4´-DDD	13.3330	11.9638	90	30-135	7.0	30
Endosulfan sulfate	13.3330	12.7058	95	60-135	7.0	30
4,4´-DDT	13.3330	14.0479	105	45-140	12	30
Methoxychlor	66.6670	62.6312	94	55-145	7.0	30
Endrin ketone	13.3330	10.7772	81	65-135	3.0	30
Endrin aldehyde	13.3330	10.3404	78	35-145	0	30
alpha-Chlordane	6.6670	5.9379	89	65-120	0	30
gamma-Chlordane	6.6670	6.0512	91	65-125	5.0	30

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

LCS Recovery: 0 out of 40 outside limits.

RPD: 0 out of 40 outside limits.

COMMENTS:

som15.09.23.1015

SW846

4E - FORM IV PEST
PESTICIDE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MB-85686

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab File ID: E5N3210F.D / E5N3210R.D Lab Sample ID: MB-85686

Matrix: (SOIL/SED/WATER) SOIL Extraction: (Type) SONC Date Extracted: 10/20/2016

Sulfur Cleanup: (Y/N) N GPC Cleanup:(Y/N) N

Date Analyzed (1): 10/25/2016 Date Analyzed (2): 10/25/2016

Time Analyzed (1): 2:15 Time Analyzed (2): 2:15

Instrument ID (1): E5 Instrument ID (2): E5

GC Column(1): CLPPest ID: 0.53 (mm) GC Column(2): CLPPestII ID: 0.53 (mm)

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED (1)	DATE ANALYZED (2)
01	HSR-BF-11-101416	R0948-01B	10/25/2016	10/25/2016
02	LCS-85686	LCS-85686	10/25/2016	10/25/2016
03	LCSD-85686	LCSD-85686	10/25/2016	10/25/2016

COMMENTS:

* PCB Organics *

REPORT NARRATIVE

Eurofins Spectrum Analytical, Inc.

Client : Sevenson Environmental Services Inc.

Project: Horseshoe Road Site

Laboratory Workorder / SDG #: R0948

SW846 8082A, PCB by GC-ECD

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code: SW846 8082A

IV. PREPARATION

Soil Samples were prepared following procedures in laboratory test code: SW3550B

V. INSTRUMENTATION

The following instrumentation was used

Instrument Code: E6
Instrument Type: GC-ECD
Description: HP6890
Manufacturer: Hewlett-Packard
Model: 6890
GC Column used: 30 m X 0.53 mm ID [0.50 um thickness] CLPPest capillary column.

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Surrogates:

Surrogate standard percent recoveries were within the QC limits with the following exceptions. Please note that the acceptance criteria allow one surrogate recovery outside of the QC limits per fraction.

HSR-BF-11-101416 (R0948-01B), recovery is below criteria for Decachlorobiphenyl on front column at 50% with criteria of (60-125).

D. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for lab control samples were within the QC limits with the following exceptions. Please note that most test procedures allow for several compounds outside of the QC limits for the LCS, although this may indicate a bias for this specific compound.

LCSD-85684 in batch 85684, recovery is above criteria for Aroclor-1260 on rear column at 133% with criteria of (60-130).

2. Matrix Spike / Matrix Spike Duplicate (MS/MSD):

No client-requested MS/MSD analyses were included in this SDG.

E. Dilutions:

No sample in this SDG required analysis at dilution.

F. Samples:

The lower concentration between the primary and confirmatory GC column concentrations is reported due to the presence of interferences unless otherwise indicated. P flags are assigned to compounds when D% between the two columns are greater than 40%.

No other unusual occurrences were noted during sample analysis.

G. Manual Integration

No sample in this SDG were performed with manual integration.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed: Dawn E Wojcik

Date: 11/4/16

Data Flag/Qualifiers (Page 1 of 2):

U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).

J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
- estimated concentration for Tentatively Identified Compound

B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a "trace" concentration below the reporting limit and equal to or above the detection limit.

D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis

E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.

P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.

A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.

Data Flag/Qualifiers (Page 2 of 2):

N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.

* For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.

Q Qualified Results. This compound has an associated Continuing Calibration Verification (CCV) with a %Difference or %Drift above the control limit.

Sample ID Suffixes

DL Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution

RE Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.

RA Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.

RX Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.

MS Matrix Spike.

MSD Matrix Spike Duplicate

DUP Duplicate analysis

SD Serial Dilution

PS Post-digestion or Post-distillation spike. For metals or inorganic analyses

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

HSR-BF-11-101416

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: R0948-01B

Sample wt/vol: 30.1 (g/mL) G Lab File ID: E6C1560F.D/E6C1560R.D

% Moisture: 25 Decanted: (Y/N) N Date Received: 10/15/2016

Extraction: (Type) SONC Date Extracted: 10/20/2016

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/22/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
12674-11-2	Aroclor-1016	44	UJ	3.3	44
11104-28-2	Aroclor-1221	44	UJ	5.8	44
11141-16-5	Aroclor-1232	44	UJ	3.2	44
53469-21-9	Aroclor-1242	44	UJ	3.3	44
12672-29-6	Aroclor-1248	44	UJ	5.0	44
11097-69-1	Aroclor-1254	44	UJ	5.8	44
11096-82-5	Aroclor-1260	44	UJ	2.4	44

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MB-85684

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: MB-85684

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E6C1557F.D/E6C1557R.D

% Moisture: Decanted: (Y/N) Date Received:

Extraction: (Type) SONC Date Extracted: 10/20/2016

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/22/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
12674-11-2	Aroclor-1016	33	U	2.5	33
11104-28-2	Aroclor-1221	33	U	4.4	33
11141-16-5	Aroclor-1232	33	U	2.4	33
53469-21-9	Aroclor-1242	33	U	2.5	33
12672-29-6	Aroclor-1248	33	U	3.8	33
11097-69-1	Aroclor-1254	33	U	4.4	33
11096-82-5	Aroclor-1260	33	U	1.8	33

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCS-85684(1)

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-85684

Sample wt/vol: 30 (g/mL) G Lab File ID: E6C1558F.D

% Moisture: Decanted: (Y/N) Date Received:

Extraction: (Type) SONC Date Extracted: 10/20/2016

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/22/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
12674-11-2	Aroclor-1016	98		2.5	33
11104-28-2	Aroclor-1221	33	U	4.4	33
11141-16-5	Aroclor-1232	33	U	2.4	33
53469-21-9	Aroclor-1242	33	U	2.5	33
12672-29-6	Aroclor-1248	33	U	3.8	33
11097-69-1	Aroclor-1254	33	U	4.4	33
11096-82-5	Aroclor-1260	110		1.8	33

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCS-85684(2)

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-85684

Sample wt/vol: 30 (g/mL) G Lab File ID: E6C1558R.D

% Moisture: Decanted: (Y/N) Date Received:

Extraction: (Type) SONC Date Extracted: 10/20/2016

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/22/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
12674-11-2	Aroclor-1016	110		2.5	33
11104-28-2	Aroclor-1221	33	U	4.4	33
11141-16-5	Aroclor-1232	33	U	2.4	33
53469-21-9	Aroclor-1242	33	U	2.5	33
12672-29-6	Aroclor-1248	33	U	3.8	33
11097-69-1	Aroclor-1254	33	U	4.4	33
11096-82-5	Aroclor-1260	130		1.8	33

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCSD-85684(1)

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-85684

Sample wt/vol: 30 (g/mL) G Lab File ID: E6C1559F.D

% Moisture: Decanted: (Y/N) Date Received:

Extraction: (Type) SONC Date Extracted: 10/20/2016

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/22/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
12674-11-2	Aroclor-1016	120		2.5	33
11104-28-2	Aroclor-1221	33	U	4.4	33
11141-16-5	Aroclor-1232	33	U	2.4	33
53469-21-9	Aroclor-1242	33	U	2.5	33
12672-29-6	Aroclor-1248	33	U	3.8	33
11097-69-1	Aroclor-1254	33	U	4.4	33
11096-82-5	Aroclor-1260	160		1.8	33

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCSD-85684(2)

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-85684

Sample wt/vol: 30 (g/mL) G Lab File ID: E6C1559R.D

% Moisture: Decanted: (Y/N) Date Received:

Extraction: (Type) SONC Date Extracted: 10/20/2016

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/22/2016

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	MDL	PQL
12674-11-2	Aroclor-1016	130		2.5	33
11104-28-2	Aroclor-1221	33	U	4.4	33
11141-16-5	Aroclor-1232	33	U	2.4	33
53469-21-9	Aroclor-1242	33	U	2.5	33
12672-29-6	Aroclor-1248	33	U	3.8	33
11097-69-1	Aroclor-1254	33	U	4.4	33
11096-82-5	Aroclor-1260	180		1.8	33

2R - FORM II ARO-2

SOIL AROCLOR SURROGATE RECOVERY

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

GC Column(1): CLPPest ID: 0.53 (mm) GC Column(2): CLPPestII ID: 0.53 (mm)

	CLIENT SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	MB-85684	51	51	63	81			0
02	LCS-85684	57	57	62	94			0
03	LCSD-85684	69	51	76	124			0
04	HSR-BF-11-10 1416	48	48	50 *	90			1

	QC LIMITS
TCX = Tetrachloro-m-xylene	(34-147)
DCB = Decachlorobiphenyl	(60-125)

Column to be used to flag recovery values

* Values outside of QC limits

D Surrogate diluted out

som15.09.23.1015

SW846

3P - FORM III ARO-4
SOIL AROCLOR LABORATORY CONTROL
SAMPLE RECOVERY

CLIENT SAMPLE NO.

LCS-85684

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab Sample ID: LCS-85684 LCS Lot No.:

Date Extracted: 10/20/2016 Date Analyzed (1): 10/22/2016

Instrument ID (1): E6 GC Column(1): CLPPest ID: 0.53 (mm)

COMPOUND	AMOUNT ADDED (UG/KG)	AMOUNT RECOVERED (UG/KG)	%REC	#	QC LIMITS
Aroclor-1016	133.3330	98.1341	74		40-140
Aroclor-1260	133.3330	109.2915	82		60-130

Instrument ID (2): E6 GC Column(2): CLPPestII ID: 0.53 (mm)

Date Analyzed (2): 10/22/2016

COMPOUND	AMOUNT ADDED (UG/KG)	AMOUNT RECOVERED (UG/KG)	%REC	#	QC LIMITS
Aroclor-1016	133.3330	111.2907	83		40-140
Aroclor-1260	133.3330	125.4890	94		60-130

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

LCS Recovery: 0 out of 4 outside limits.

COMMENTS:

som15.09.23.1015

SW846

2409369
2409405

3P - FORM III ARO-4
SOIL AROCLOR LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

CLIENT SAMPLE NO.
LCSD-85684

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab Sample ID: LCSD-85684 LCS Lot No.:

Date Extracted: 10/20/2016 Date Analyzed (1): 10/22/2016

Instrument ID (1): E6 GC Column(1): CLPPest ID: 0.53 (mm)

COMPOUND	AMOUNT ADDED (UG/KG)	AMOUNT RECOVERED (UG/KG)	%REC	#	QC LIMITS	%RPD	#	RPD LIMIT
Aroclor-1016	133.3330	119.5292	90		40-140	20		30
Aroclor-1260	133.3330	161.6221	121		60-130	38	*	30

Instrument ID (2): E6 GC Column(2): CLPPestII ID: 0.53 (mm)

Date Analyzed (2): 10/22/2016

COMPOUND	AMOUNT ADDED (UG/KG)	AMOUNT RECOVERED (UG/KG)	%REC	#	QC LIMITS	%RPD	#	RPD LIMIT
Aroclor-1016	133.3330	132.6914	100		40-140	19		30
Aroclor-1260	133.3330	177.3337	133	*	60-130	34	*	30

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

LCS Recovery: 1 out of 4 outside limits.

RPD: 2 out of 4 outside limits.

COMMENTS:

som15.09.23.1015

SW846

4F - FORM IV ARO

AROCLOR METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MB-85684

Lab Name: EUROFINS SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: ESAI-RI Case No.: R0948 Mod. Ref No.: SDG No.: SR0948

Lab File ID: E6C1557F.D / E6C1557R.D Lab Sample ID: MB-85684

Matrix: (SOIL/SED/WATER) SOIL Extraction: (Type) SONC Date Extracted: 10/20/2016

Sulfur Cleanup: (Y/N) Y GPC Cleanup:(Y/N) N

Acid Cleanup: (Y/N Y

Date Analyzed (1): 10/22/2016 Date Analyzed (2): 10/22/2016

Time Analyzed (1): 3:08 Time Analyzed (2): 3:08

Instrument ID (1): E6 Instrument ID (2): E6

GC Column(1): CLPPest ID: 0.53 (mm) GC Column(2): CLPPestII ID: 0.53 (mm)

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED (1)	DATE ANALYZED (2)
01	LCS-85684	LCS-85684	10/22/2016	10/22/2016
02	LCSD-85684	LCSD-85684	10/22/2016	10/22/2016
03	HSR-BF-11-10 1416	R0948-01B	10/22/2016	10/22/2016

COMMENTS:

* Metals *

REPORT NARRATIVE

Eurofins Spectrum Analytical, Inc.

Client : Sevenson Environmental Services Inc.

Project: Horseshoe Road Site

Laboratory Workorder / SDG #: R0948

SW846 6010C, SW846 7471B, SW846 9012B

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test codes: SW846 6010C, SW846 7471B, SW846 9012B

IV. PREPARATION

Soil Samples were prepared following procedures in laboratory test code: SW3050B, SW7471B, and SW9012B.

V. INSTRUMENTATION

Instrument Code: FIMS2
Instrument Type: CVAA
Description: FIMS
Manufacturer: Perkin-Elmer

Model: FIMS100

Instrument Code: LACHAT2
Instrument Type: WC
Description: Flow Injection Analyzer
Manufacturer: Lachat
Model: QuickChem 8500 Series 2

Instrument Code: OPTIMA4
Instrument Type: ICP
Description: Optima 8300 ICP-OES
Manufacturer: Perkin-Elmer
Model: Optima 8300 ICP-OES

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for laboratory control samples were within the QC limits.

2. Matrix spike (MS):

Matrix spikes were performed on samples: HSR-BF-11-101416 (R0948-01BMS) and HSR-BF-11-101416 (R0948-01DMS).

Percent recoveries were within the QC limits with the following exceptions:

HSR-BF-11-101416 (R0948-01BMS), recovery is below criteria for Antimony at 39% with criteria of (80-120).

D. Post Digestion Spike (PDS):

Post-digestion spike analysis was performed on sample: HSR-BF-11-101416 (R0948-01BPDS).

HSR-BF-11-101416 (R0948-01BPDS) for Antimony. Recovery was within criteria in the PDS.

E. **Duplicate sample:**

Duplicate analyses were performed on samples: HSR-BF-11-101416 (R0948-01BDUP) and HSR-BF-11-101416 (R0948-01DDUP).

Relative percent differences were within the QC limits with the following exceptions:

HSR-BF-11-101416 (R0948-01BDUP), Duplicate analysis not within control limit for Calcium, Copper, Iron, Magnesium, Nickel and Sodium.

F. **Serial Dilution (SD):**

Serial Dilution analyses were performed on sample: HSR-BF-11-101416 (R0948-01BSD).

Percent differences were within the QC limits with the exception of the following:

HSR-BF-11-101416 (R0948-01BSD), Serial Dilution analysis not within control limit for Barium, Beryllium, Chromium, Cobalt, Iron, Lead, Magnesium, Nickel and Zinc.

G. **Samples:**

No other unusual occurrences were noted during sample analysis.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Eurofins Spectrum Analytical, Inc. RI, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed: Sharon B Lawler

Date: 10/25/16

Data Flag/Qualifiers (Page 1 of 2):

U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).

J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
- estimated concentration for Tentatively Identified Compound

B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a "trace" concentration below the reporting limit and equal to or above the detection limit.

D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis

E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.

P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.

A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.

Data Flag/Qualifiers (Page 2 of 2):

N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.

* For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.

Q Qualified Results. This compound has an associated Continuing Calibration Verification (CCV) with a %Difference or %Drift above the control limit.

Sample ID Suffixes

DL Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution

RE Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.

RA Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.

RX Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.

MS Matrix Spike.

MSD Matrix Spike Duplicate

DUP Duplicate analysis

SD Serial Dilution

PS Post-digestion or Post-distillation spike. For metals or inorganic analyses

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1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

HSR-BF-11-101416

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: G2849030

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0948

Matrix (soil/water): SOIL Lab Sample ID: R0948-01

Level (low/med): MED Date Received: 10/15/2016

% Solids: 75.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	MDL	PQL
7429-90-5	Aluminum	6760			P	1.2	9.7
7440-36-0	Antimony	0.51	B	N J UJ 1.7	P	0.37	0.97
7440-38-2	Arsenic	7.7			P	0.40	0.97
7440-39-3	Barium	31.3		E	P	0.030	9.7
7440-41-7	Beryllium	0.58		E	P	0.0015	0.24
7440-43-9	Cadmium	0.015	U		P	0.015	0.24
7440-70-2	Calcium	7360		*J	P	5.9	39.0
7440-47-3	Chromium	20.9		E	P	0.018	0.97
7440-48-4	Cobalt	4.3		E	P	0.043	2.4
7440-50-8	Copper	14.7		*J	P	0.11	1.5
7439-89-6	Iron	20700		*E J	P	1.5	9.7
7439-92-1	Lead	12.7		E	P	0.17	0.49
7439-95-4	Magnesium	1550		*EJ	P	0.61	24.0
7439-96-5	Manganese	196			P	0.13	2.4
7439-97-6	Mercury	0.026	B	J	CV	0.0029	0.046
7440-02-0	Nickel	9.7		*EJ	P	0.042	2.4
7440-09-7	Potassium	1040			P	3.3	49.0
7782-49-2	Selenium	3.5			P	0.62	1.5
7440-22-4	Silver	0.062	U		P	0.062	1.5
7440-23-5	Sodium	114		*J	P	1.1	49.0
7440-28-0	Thallium	0.21	U	J	P	0.21	0.97
7440-62-2	Vanadium	33.8			P	0.058	2.4
7440-66-6	Zinc	40.5		E	P	0.17	2.4
57-12-5	Cyanide	0.21	U		CA	0.21	1.3

Comments:

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: G2849030

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0948

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCS-85678**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Cyanide				1.2	1.2		1	1.4	100.0

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LABORATORY CONTROL SAMPLE

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: G2849030

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0948

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCS-85693**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Aluminum				500.0	480.7		400	600.0	96.1
Antimony				25.0	28.7		20	30.0	114.8
Arsenic				25.0	25.1		20	30.0	100.4
Barium				500.0	518.8		400	600.0	103.8
Beryllium				12.5	12.9		10	15.0	103.2
Cadmium				12.5	12.9		10	15.0	103.2
Calcium				1250.0	1198.3		1000	1500.0	95.9
Chromium				50.0	51.2		40	60.0	102.4
Cobalt				125.0	128.4		100	150.0	102.7
Copper				62.5	62.5		50	75.0	100.0
Iron				250.0	251.3		200	300.0	100.5
Lead				25.0	25.8		20	30.0	103.2
Magnesium				1250.0	1223.8		1000	1500.0	97.9
Manganese				125.0	130.7		100	150.0	104.6
Nickel				125.0	126.5		100	150.0	101.2
Potassium				1250.0	1259.2		1000	1500.0	100.7
Selenium				25.0	24.3		20	30.0	97.2
Silver				62.5	62.1		46.9	75.0	99.4
Sodium				1250.0	1282.2		1000	1500.0	102.6
Thallium				25.0	25.3		20	30.0	101.2
Vanadium				125.0	125.4		100	150.0	100.3
Zinc				125.0	120.1		100	150.0	96.1

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7

LABORATORY CONTROL SAMPLE

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: G2849030

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0948

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCS-85704**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Mercury				0.8	0.8		0.6	0.9	100.0

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5A

SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

HSR-BF-11-101416S

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: G2849030

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0948

Matrix (soil/water): SOIL Level (low/med): MED

% Solids for Sample: 75.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Antimony	75-125	9.4		0.51	B	23.1	39	N	P
Arsenic	75-125	32.3		7.7		23.1	107		P
Barium	75-125	462		31.3		462	93		P
Beryllium	75-125	11.6		0.58		11.5	95		P
Cadmium	75-125	10.5		0.015	U	11.5	91		P
Chromium	75-125	62.6		20.9		46.2	90		P
Cobalt	75-125	109		4.3		115	91		P
Copper	75-125	71.3		14.7		57.7	98		P
Lead	75-125	34.9		12.7		23.1	96		P
Nickel	75-125	109		9.7		115	86		P
Selenium	75-125	23.4		3.5		23.1	86		P
Silver	75-125	54.3		0.062	U	57.7	94		P
Thallium	75-125	19.2		0.21	U	23.1	83		P
Vanadium	75-125	141		33.8		115	93		P
Zinc	75-125	137		40.5		115	84		P
Mercury	75-125	1.1		0.027	B	1.0	99		CV

Comments:

U.S. EPA - CLP

5A

SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

HSR-BF-11-101416S

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: G2849030

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0948

Matrix (soil/water): SOIL Level (low/med): MED

% Solids for Sample: 75.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Cyanide	75-125	1.4		0.21	U	1.6	90		CA

Comments:

U.S. EPA - CLP

5B

POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

HSR-BF-11-101416A

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: G2849030

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0948

Matrix (soil/water): SOIL Level (low/med): MED

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Control Limit %R	Spike Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Antimony		553.84		10.43	B	500.0	109		P

Comments:

U.S. EPA - CLP

6

DUPLICATES

EPA SAMPLE NO.

HSR-BF-11-101416D

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: G2849030

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0948

Matrix (soil/water): SOIL Level (low/med): MED

% Solids for Sample: 75.2 % Solids for Duplicate: 75.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Cyanide		0.2100	U	0.2100	U			CA

U.S. EPA - CLP

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DUPLICATES

EPA SAMPLE NO.

HSR-BF-11-101416D

Lab Name: Eurofins Spectrum Analytical, Inc. Contract: G2849030

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0948

Matrix (soil/water): SOIL Level (low/med): MED

% Solids for Sample: 75.2 % Solids for Duplicate: 75.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		6755.6231		6773.3646		0.3		P
Antimony		0.5060	B	0.4874	B	3.7		P
Arsenic		7.7190		9.3763		19.4		P
Barium	9.7	31.2857		33.5917		7.1		P
Beryllium	0.2	0.5788		0.5217		10.4		P
Cadmium		0.0150	U	0.0130	U			P
Calcium		7355.5772		26762.6069		113.8	*	P
Chromium		20.9423		21.7622		3.8		P
Cobalt	2.4	4.2669		3.6299		16.1		P
Copper		14.6852		18.2658		21.7	*	P
Iron		20723.6600		27091.2969		26.6	*	P
Lead		12.7245		13.1802		3.5		P
Magnesium		1549.0111		1261.4525		20.5	*	P
Manganese		195.8521		227.6858		15		P
Nickel	2.4	9.7232		6.8940		34.1	*	P
Potassium		1044.2504		1154.1150		10		P
Selenium	1.5	3.5419		3.3873		4.5		P
Silver		0.0620	U	0.0540	U			P
Sodium	49.0	113.6681		172.6446		41.2	*	P
Thallium		0.2100	U	0.1800	U			P
Vanadium		33.8190		41.2144		19.7		P
Zinc		40.4538		45.7342		12.3		P
Mercury		0.0265	B	0.0341	B	25.1		CV

U.S. EPA - CLP

3

BLANKS

Lab Name: Eurofins Spectrum Analytical, Inc Contract: G2849030

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0948

Preparation Blank Matrix (soil/water): SOIL Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG **MB-85704**

FIMS2_161024A

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	10/24/16 12:12	C		C		C		C	M
Mercury	0.028	U	0.028	U					0.002	U	CV

U.S. EPA - CLP

3

BLANKS

Lab Name: Eurofins Spectrum Analytical, Inc Contract: G2849030

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0948

Preparation Blank Matrix (soil/water): SOIL Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG **MB-85678**

LACHAT2_161020A

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	10/20/16 9:07	C	10/20/16 9:15	C		C		C	M
Cyanide	2.3	U	2.3	U	2.3	U			0.160	U	CA

U.S. EPA - CLP

3

BLANKS

Lab Name: Eurofins Spectrum Analytical, Inc Contract: G2849030

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0948

Preparation Blank Matrix (soil/water): SOIL

Method Blank ID: **MB-85693**

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

OPTIMA4_161024A

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	10/24/16 8:28	C	10/24/16 9:02	C		C		C	M
Aluminum	11.0	U	11.0	U	11.0	U			1.200	U	P
Antimony	5.1	U	5.1	U	5.1	U			0.816	B	P
Arsenic	3.9	U	3.9	U	3.9	U			0.410	U	P
Barium	1.4	B	1.6	B	1.8	B			0.031	U	P
Beryllium	0.1	B	0.1	B	0.2	B			0.006	B	P
Cadmium	0.5	U	0.5	U	0.5	U			0.015	U	P
Calcium	52.0	U	52.0	U	-69.8	B			6.100	U	P
Chromium	0.3	U	0.3	U	0.3	U			0.019	U	P
Cobalt	0.4	B	0.8	B	0.9	B			0.044	U	P
Copper	1.2	U	1.2	U	1.2	U			0.110	U	P
Iron	47.0	U	47.0	U	47.0	U			1.500	U	P
Lead	4.5	U	4.5	U	4.5	U			0.170	U	P
Magnesium	5.2	U	15.6	B	7.5	B			0.630	U	P
Manganese	0.6	U	0.6	U	0.7	B			0.130	U	P
Nickel	1.2	U	1.2	U	1.3	B			0.043	U	P
Potassium	92.0	U	92.0	U	92.0	U			3.400	U	P
Selenium	7.8	U	10.8	B	9.4	B			0.640	U	P
Silver	2.7	U	2.7	U	2.8	B			0.101	B	P
Sodium	15.0	U	-23.2	B	-32.3	B			1.100	U	P
Thallium	2.4	U	2.6	B	3.2	B			0.220	U	P
Vanadium	0.3	B	0.6	B	0.5	B			0.060	U	P
Zinc	3.2	U	3.2	U	3.2	U			0.180	U	P

U.S. EPA - CLP

3

BLANKS

Lab Name: Eurofins Spectrum Analytical, Inc Contract: G2849030

Lab Code: ESAI-RI Case No.: SAS No.: SDG No.: SR0948

Preparation Blank Matrix (soil/water): Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg):

OPTIMA4_161024B

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	10/24/16 11:30	C	10/24/16 12:06	C		C		C	M
Calcium	52.0	U	52.0	U	52.0	U					P
Iron	47.0	U	47.0	U	47.0	U					P

* Wet Chemistry *

CASE NARRATIVE

Spectrum Analytical, Inc. Lab Reference No. SC27181

Client: Eurofins Spectrum Analytical, Inc. - RI

Project: Horseshoe Road Site / R0948

SDG #: 27181

I. RECEIPT

No exceptions were encountered unless a Sample Receipt Exception or a communication form is included in the addendum with this package.

II. HOLDING TIMES

All samples were prepared and analyzed within the method-specific holding time.

III. METHODS

Analyses were performed according to NJDEP EPH 10-08 Revision:3.

IV. PREPARATION

Soil/Sediment samples were prepared according to SW846 3546.

V. INSTRUMENTATION

The following equipment was used to analyze NJDEP EPH 10-08 Revision:3:

HPS2 details: Agilent 6890 with 5973 MS FID: Agilent HP-2 (30M, 0.32mm, 0.25um)
MS: Agilent HP-2MS (30M, 0.25mm, 0.25um)

VI. ANALYSIS

A. Calibration:

All quality control samples were within the acceptance criteria with the following exceptions:

In calibration 1610072:

Analyte quantified by quadratic type calibration: Acenaphthylene, Benzo (b) fluoranthene, C10-C12 Aromatic Hydrocarbons , C12-C16 Aromatic Hydrocarbons , C16-C21 Aliphatic Hydrocarbons , C16-C21 Aromatic Hydrocarbons , C21-C36 Aromatic Hydrocarbons , C21-C40 Aliphatic Hydrocarbons

This affected the following samples:

S609176-CCV2, S609176-CCV1, S608937-ICV1, HSR-BF-11-101416, 1618309-MS1, 1618309-DUP1, 1618309-BSD1, 1618309-BS2, 1618309-BS1, 1618309-BLK1

In sample S609176-CCV1:

Analyte percent difference is outside individual acceptance criteria (25), but within overall method allowances.

C9-C12 Aliphatic Hydrocarbons (-31.2%)
n-Hexatriacontane (-21.2%)
n-Octatriacontane (-21.3%)
n-Tetracontane (-22.5%)

This affected the following samples:

1618309-BLK1, 1618309-BS1, 1618309-BS2, 1618309-BSD1, 1618309-DUP1, 1618309-MS1, HSR-BF-11-101416

B. Blanks:

All blanks were within the acceptance criteria.

C. Surrogates:

All method criteria were met.

D. Spikes:

1. Laboratory Control Samples (LCS):

All method criteria were met.

2. Matrix Spike / Matrix Spike Duplicate Samples (MS/MSD):

A matrix spike was analyzed:

In batch 1618309 from source sample HSR-BF-11-101416 (SC27181-01).

All method criteria were met with the following exceptions:

1,2,3-Trimethylbenzene, 2-Methylnaphthalene, C12-C16 Aliphatic Hydrocarbons, C16-C21 Aliphatic Hydrocarbons , C16-C21 Aromatic Hydrocarbons , C21-C40 Aliphatic Hydrocarbons , Naphthalene in batch 1618309, lab sample 1618309-MS1 from source sample HSR-BF-11-101416 (SC27181-01): The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

E. Duplicates:

A duplicate was analyzed.

In batch 1618309 from source sample HSR-BF-11-101416 (SC27181-01).

All method criteria were met with the following exceptions:

C21-C40 Aliphatic Hydrocarbons in batch 1618309, sample 1618309-DUP1 from source sample HSR-BF-11-101416 (SC27181-01): The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

F. Internal Standards:

Internal standards were within the acceptance criteria.

G. Samples:
All method criteria were met.

FORM I - ORGANIC ANALYSIS DATA SHEET

NJDEP EPH 10-08 Revision:3

HSR-BF-11-101416

Laboratory:	Eurofins Spectrum Analytical, Inc. - MA			SDG:	27181		
Client:	Eurofins Spectrum Analytical, Inc. - RI			Project:	Horseshoe Road Site		
Project Number:	R0948			Received:	10/17/16 16:10		
Matrix:	Soil	Laboratory ID:	SC27181-01		File ID:	C2718101.D	
Sampled:	10/14/16 10:45	Prepared:	10/21/16 06:39		Analyzed:	10/25/16 15:46	
% Solids:	77.28	Preparation:	SW846 3546		Initial/Final:	15.043 g / 2 ml	
Batch:	1618309	Sequence:	S609176	Calibration:	1610072	Instrument:	HPS2
Reported to:	MRL	Dilution:	1				

CAS NO.	COMPOUND	RESULT (mg/kg dry)	MDL	MRL	Q
ALIH(9-12)	C9-C12 Aliphatic Hydrocarbons	12.9	0.819	12.9	U
ALIH(12-16)	C12-C16 Aliphatic Hydrocarbons	20.5	0.666	12.9	
ALIH(16-21)	C16-C21 Aliphatic Hydrocarbons	3.40	0.863	12.9	J
ALIH(21-40)	C21-C40 Aliphatic Hydrocarbons	17.2	2.33	12.9	
AROH(10-12)	C10-C12 Aromatic Hydrocarbons	12.9	0.600	12.9	U
AROH(12-16)	C12-C16 Aromatic Hydrocarbons	12.9	0.615	12.9	U
AROH(16-21)	C16-C21 Aromatic Hydrocarbons	6.18	1.06	12.9	J
526-73-8	1,2,3-Trimethylbenzene	0.516	0.280	0.516	U
AROH(21-36)	C21-C36 Aromatic Hydrocarbons	12.9	3.02	12.9	U
91-20-3	Naphthalene	0.516	0.265	0.516	U
	Total Aliphatics	41.1	4.68	12.9	
91-57-6	2-Methylnaphthalene	0.516	0.256	0.516	U
	Total Aromatics	6.18	5.29	12.9	J
208-96-8	Acenaphthylene	0.516	0.273	0.516	U
	Total EPH Hydrocarbons	47.3	9.97	103	J
83-32-9	Acenaphthene	0.516	0.322	0.516	U
86-73-7	Fluorene	0.516	0.276	0.516	U
85-01-8	Phenanthrene	0.516	0.337	0.516	U
120-12-7	Anthracene	0.516	0.361	0.516	U
206-44-0	Fluoranthene	0.516	0.300	0.516	U
129-00-0	Pyrene	0.516	0.296	0.516	U
56-55-3	Benzo (a) anthracene	0.516	0.332	0.516	U
218-01-9	Chrysene	0.516	0.328	0.516	U
205-99-2	Benzo (b) fluoranthene	0.516	0.415	0.516	U
207-08-9	Benzo (k) fluoranthene	0.516	0.392	0.516	U
50-32-8	Benzo (a) pyrene	0.516	0.288	0.516	U
193-39-5	Indeno (1,2,3-cd) pyrene	0.516	0.360	0.516	U
53-70-3	Dibenzo (a,h) anthracene	0.516	0.368	0.516	U
191-24-2	Benzo (g,h,i) perylene	0.516	0.376	0.516	U

FORM I - INORGANIC ANALYSIS DATA SHEET

SM2540 G (11) Mod.

HSR-BF-11-101416

Laboratory:	Eurofins Spectrum Analytical, Inc. - MA			SDG:	27181
Client:	Eurofins Spectrum Analytical, Inc. - RI			Project:	Horseshoe Road Site
Project Number:	R0948			Received:	10/17/16 16:10
Matrix:	Soil	Laboratory ID:	SC27181-01	File ID:	
Sampled:	10/14/16 10:45	Prepared:	10/18/16 12:39	Analyzed:	10/18/16 12:41
% Solids:	77.28	Preparation:	General Preparation	Initial/Final:	1 g / 1 ml
Batch:	1618032	Sequence:		Calibration:	
Instrument:	Inst				
Reported to:	MRL				

CAS NO.	Analyte	Result (%)	Dilution Factor	MDL	MRL	Q
solids	% Solids	77.3	1			

FORM IIIa - LCS / LCS DUPLICATE RECOVERY

NJDEP EPH 10-08 Revision:3

Laboratory:	Eurofins Spectrum Analytical, Inc. - MA	SDG:	27181
Client:	Eurofins Spectrum Analytical, Inc. - RI	Project:	Horseshoe Road Site
Matrix:	Soil/Sediment	Instrument:	HPS2
Batch:	1618309	Laboratory ID:	1618309-BS1
Preparation:	SW846 3546	Initial/Final:	15.0457 g / 2 ml
Analyzed:	10/25/16 14:48	Spike ID:	16H0578
		File ID:	BS618309.D

COMPOUND	SPIKE ADDED	LCS CONCENTRATION	LCS % REC. #	QC LIMITS REC.
C9-C12 Aliphatic Hydrocarbons	19.9 mg/kg wet	25.3 mg/kg wet	127	40 - 140
C12-C16 Aliphatic Hydrocarbons	13.3 mg/kg wet	17.7 mg/kg wet	133	40 - 140
C16-C21 Aliphatic Hydrocarbons	19.9 mg/kg wet	19.7 mg/kg wet	99	40 - 140
C21-C40 Aliphatic Hydrocarbons	66.5 mg/kg wet	58.7 mg/kg wet	88	40 - 140
C10-C12 Aromatic Hydrocarbons	13.3 mg/kg wet	10.2 mg/kg wet	76	40 - 140
C12-C16 Aromatic Hydrocarbons	19.9 mg/kg wet	14.8 mg/kg wet	74	40 - 140
C16-C21 Aromatic Hydrocarbons	33.2 mg/kg wet	20.0 mg/kg wet	60	40 - 140
1,2,3-Trimethylbenzene	6.65 mg/kg wet	4.01 mg/kg wet	60	40 - 140
C21-C36 Aromatic Hydrocarbons	53.2 mg/kg wet	42.0 mg/kg wet	79	40 - 140
Naphthalene	6.65 mg/kg wet	4.60 mg/kg wet	69	40 - 140
2-Methylnaphthalene	6.65 mg/kg wet	4.52 mg/kg wet	68	40 - 140
Acenaphthylene	6.65 mg/kg wet	4.24 mg/kg wet	64	40 - 140
Acenaphthene	6.65 mg/kg wet	4.65 mg/kg wet	70	40 - 140
Fluorene	6.65 mg/kg wet	4.64 mg/kg wet	70	40 - 140
Phenanthrene	6.65 mg/kg wet	4.77 mg/kg wet	72	40 - 140
Anthracene	6.65 mg/kg wet	3.29 mg/kg wet	49	40 - 140
Fluoranthene	6.65 mg/kg wet	4.51 mg/kg wet	68	40 - 140
Pyrene	6.65 mg/kg wet	4.62 mg/kg wet	70	40 - 140
Benzo (a) anthracene	6.65 mg/kg wet	4.58 mg/kg wet	69	40 - 140
Chrysene	6.65 mg/kg wet	4.32 mg/kg wet	65	40 - 140
Benzo (b) fluoranthene	6.65 mg/kg wet	4.71 mg/kg wet	71	40 - 140
Benzo (k) fluoranthene	6.65 mg/kg wet	4.26 mg/kg wet	64	40 - 140
Benzo (a) pyrene	6.65 mg/kg wet	4.30 mg/kg wet	65	40 - 140
Indeno (1,2,3-cd) pyrene	6.65 mg/kg wet	4.22 mg/kg wet	64	40 - 140
Dibenzo (a,h) anthracene	6.65 mg/kg wet	4.37 mg/kg wet	66	40 - 140
Benzo (g,h,i) perylene	6.65 mg/kg wet	4.24 mg/kg wet	64	40 - 140
Naphthalene (aliphatic fraction)	6.65 mg/kg wet	0.00 mg/kg wet	0	0 - 200
2-Methylnaphthalene (aliphatic fraction)	6.65 mg/kg wet	0.00 mg/kg wet	0	0 - 200
n-Nonane	6.65 mg/kg wet	3.00 mg/kg wet	45	30 - 140
n-Decane	6.65 mg/kg wet	2.86 mg/kg wet	43	30 - 140

FORM IIIa - LCS / LCS DUPLICATE RECOVERY

NJDEP EPH 10-08 Revision:3

Laboratory:	Eurofins Spectrum Analytical, Inc. - MA	SDG:	27181
Client:	Eurofins Spectrum Analytical, Inc. - RI	Project:	Horseshoe Road Site
Matrix:	Soil/Sediment	Instrument:	HPS2
Batch:	1618309	Laboratory ID:	1618309-BS1
Preparation:	SW846 3546	Initial/Final:	15.0457 g / 2 ml
Analyzed:	10/25/16 14:48	Spike ID:	16H0578
		File ID:	BS618309.D

COMPOUND	SPIKE ADDED	LCS CONCENTRATION	LCS % REC. #	QC LIMITS REC.
n-Dodecane	6.65 mg/kg wet	4.76 mg/kg wet	72	40 - 140
n-Tetradecane	6.65 mg/kg wet	5.54 mg/kg wet	83	40 - 140
n-Hexadecane	6.65 mg/kg wet	6.24 mg/kg wet	94	40 - 140
n-Octadecane	6.65 mg/kg wet	6.14 mg/kg wet	92	40 - 140
n-Eicosane	6.65 mg/kg wet	6.24 mg/kg wet	94	40 - 140
n-Heneicosane	6.65 mg/kg wet	7.05 mg/kg wet	106	40 - 140
n-Docosane	6.65 mg/kg wet	6.16 mg/kg wet	93	40 - 140
n-Tetracosane	6.65 mg/kg wet	6.06 mg/kg wet	91	40 - 140
n-Hexacosane	6.65 mg/kg wet	5.69 mg/kg wet	86	40 - 140
n-Octacosane	6.65 mg/kg wet	5.72 mg/kg wet	86	40 - 140
n-Triacontane	6.65 mg/kg wet	5.66 mg/kg wet	85	40 - 140
n-Dotriacontane	6.65 mg/kg wet	5.85 mg/kg wet	88	40 - 140
n-Tetratriacontane	6.65 mg/kg wet	5.76 mg/kg wet	87	40 - 140
n-Hexatriacontane	6.65 mg/kg wet	5.37 mg/kg wet	81	40 - 140
n-Octatriacontane	6.65 mg/kg wet	4.89 mg/kg wet	74	40 - 140
n-Tetracontane	6.65 mg/kg wet	4.66 mg/kg wet	70	40 - 140

File ID: BSD18309.D

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
C9-C12 Aliphatic Hydrocarbons	19.4 mg/kg wet	25.7 mg/kg wet	132	2	25	40 - 140
C12-C16 Aliphatic Hydrocarbons	13.0 mg/kg wet	16.7 mg/kg wet	129	6	25	40 - 140
C16-C21 Aliphatic Hydrocarbons	19.4 mg/kg wet	18.9 mg/kg wet	97	4	25	40 - 140
C21-C40 Aliphatic Hydrocarbons	64.8 mg/kg wet	56.7 mg/kg wet	87	3	25	40 - 140
C10-C12 Aromatic Hydrocarbons	13.0 mg/kg wet	11.3 mg/kg wet	87	11	25	40 - 140
C12-C16 Aromatic Hydrocarbons	19.4 mg/kg wet	15.4 mg/kg wet	79	4	25	40 - 140

FORM IIIa - LCS / LCS DUPLICATE RECOVERY

NJDEP EPH 10-08 Revision:3

Laboratory:	Eurofins Spectrum Analytical, Inc. - MA	SDG:	27181
Client:	Eurofins Spectrum Analytical, Inc. - RI	Project:	Horseshoe Road Site
Matrix:	Soil/Sediment	Instrument:	HPS2
Batch:	1618309	Laboratory ID:	1618309-BSD1
Preparation:	SW846 3546	Initial/Final:	15.4374 g / 2 ml
Analyzed:	10/25/16 15:17	Spike ID:	16H0578
		File ID:	BSD18309.D

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
C16-C21 Aromatic Hydrocarbons	32.4 mg/kg wet	19.8 mg/kg wet	61	1	25	40 - 140
1,2,3-Trimethylbenzene	6.48 mg/kg wet	4.71 mg/kg wet	73	16	25	40 - 140
C21-C36 Aromatic Hydrocarbons	51.8 mg/kg wet	43.2 mg/kg wet	83	3	25	40 - 140
Naphthalene	6.48 mg/kg wet	5.18 mg/kg wet	80	12	25	40 - 140
2-Methylnaphthalene	6.48 mg/kg wet	4.98 mg/kg wet	77	10	25	40 - 140
Acenaphthylene	6.48 mg/kg wet	4.37 mg/kg wet	67	3	25	40 - 140
Acenaphthene	6.48 mg/kg wet	4.80 mg/kg wet	74	3	25	40 - 140
Fluorene	6.48 mg/kg wet	4.70 mg/kg wet	73	1	25	40 - 140
Phenanthrene	6.48 mg/kg wet	4.62 mg/kg wet	71	3	25	40 - 140
Anthracene	6.48 mg/kg wet	3.24 mg/kg wet	50	2	25	40 - 140
Fluoranthene	6.48 mg/kg wet	4.38 mg/kg wet	68	3	25	40 - 140
Pyrene	6.48 mg/kg wet	4.51 mg/kg wet	70	2	25	40 - 140
Benzo (a) anthracene	6.48 mg/kg wet	4.32 mg/kg wet	67	6	25	40 - 140
Chrysene	6.48 mg/kg wet	4.18 mg/kg wet	65	3	25	40 - 140
Benzo (b) fluoranthene	6.48 mg/kg wet	4.17 mg/kg wet	64	12	25	40 - 140
Benzo (k) fluoranthene	6.48 mg/kg wet	4.27 mg/kg wet	66	0.08	25	40 - 140
Benzo (a) pyrene	6.48 mg/kg wet	4.08 mg/kg wet	63	5	25	40 - 140
Indeno (1,2,3-cd) pyrene	6.48 mg/kg wet	4.03 mg/kg wet	62	5	25	40 - 140
Dibenzo (a,h) anthracene	6.48 mg/kg wet	4.19 mg/kg wet	65	4	25	40 - 140
Benzo (g,h,i) perylene	6.48 mg/kg wet	4.07 mg/kg wet	63	4	25	40 - 140

FORM IIIa - LCS / LCS DUPLICATE RECOVERY

NJDEP EPH 10-08 Revision:3

Laboratory:	Eurofins Spectrum Analytical, Inc. - MA	SDG:	27181
Client:	Eurofins Spectrum Analytical, Inc. - RI	Project:	Horseshoe Road Site
Matrix:	Soil/Sediment	Instrument:	HPS2
Batch:	1618309	Laboratory ID:	1618309-BSD1
Preparation:	SW846 3546	Initial/Final:	15.4374 g / 2 ml
Analyzed:	10/25/16 15:17	Spike ID:	16H0578
		File ID:	BSD18309.D

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Naphthalene (aliphatic fraction)	6.48 mg/kg wet	0.00 mg/kg wet	0		200	0 - 200
2-Methylnaphthalene (aliphatic fracti	6.48 mg/kg wet	0.00 mg/kg wet	0		200	0 - 200
n-Nonane	6.48 mg/kg wet	2.81 mg/kg wet	43	7	25	30 - 140
n-Decane	6.48 mg/kg wet	2.58 mg/kg wet	40	10	25	40 - 140
n-Dodecane	6.48 mg/kg wet	4.74 mg/kg wet	73	0.4	25	40 - 140
n-Tetradecane	6.48 mg/kg wet	4.88 mg/kg wet	75	13	25	40 - 140
n-Hexadecane	6.48 mg/kg wet	5.73 mg/kg wet	88	9	25	40 - 140
n-Octadecane	6.48 mg/kg wet	5.71 mg/kg wet	88	7	25	40 - 140
n-Eicosane	6.48 mg/kg wet	6.03 mg/kg wet	93	3	25	40 - 140
n-Heneicosane	6.48 mg/kg wet	6.80 mg/kg wet	105	4	25	40 - 140
n-Docosane	6.48 mg/kg wet	6.21 mg/kg wet	96	0.8	25	40 - 140
n-Tetracosane	6.48 mg/kg wet	5.83 mg/kg wet	90	4	25	40 - 140
n-Hexacosane	6.48 mg/kg wet	5.73 mg/kg wet	88	0.7	25	40 - 140
n-Octacosane	6.48 mg/kg wet	5.72 mg/kg wet	88	0.02	25	40 - 140
n-Triacontane	6.48 mg/kg wet	5.75 mg/kg wet	89	1	25	40 - 140
n-Dotriacontane	6.48 mg/kg wet	5.72 mg/kg wet	88	2	25	40 - 140
n-Tetratriacontane	6.48 mg/kg wet	5.70 mg/kg wet	88	1	25	40 - 140
n-Hexatriacontane	6.48 mg/kg wet	5.51 mg/kg wet	85	3	25	40 - 140
n-Octatriacontane	6.48 mg/kg wet	5.00 mg/kg wet	77	2	25	40 - 140
n-Tetracontane	6.48 mg/kg wet	4.83 mg/kg wet	75	4	25	40 - 140

FORM IIIa - LCS / LCS DUPLICATE RECOVERY

NJDEP EPH 10-08 Revision:3

Laboratory:	Eurofins Spectrum Analytical, Inc. - MA	SDG:	27181
Client:	Eurofins Spectrum Analytical, Inc. - RI	Project:	Horseshoe Road Site
Matrix:	Soil/Sediment	Instrument:	HPS2
Batch:	1618309	Laboratory ID:	1618309-BS2
Preparation:	SW846 3546	Initial/Final:	15 g / 2 ml
Analyzed:	10/25/16 17:15	Spike ID:	16H0578
		File ID:	NJFRAC1025.D

COMPOUND	SPIKE ADDED	LCS CONCENTRATION	LCS % REC. #	QC LIMITS REC.
C9-C12 Aliphatic Hydrocarbons	20.0 mg/kg wet	16.5 mg/kg wet	83	40 - 140
C12-C16 Aliphatic Hydrocarbons	13.3 mg/kg wet	14.9 mg/kg wet	112	40 - 140
C16-C21 Aliphatic Hydrocarbons	20.0 mg/kg wet	17.3 mg/kg wet	86	40 - 140
C21-C40 Aliphatic Hydrocarbons	66.7 mg/kg wet	52.6 mg/kg wet	79	40 - 140
C10-C12 Aromatic Hydrocarbons	13.3 mg/kg wet	10.7 mg/kg wet	80	40 - 140
C12-C16 Aromatic Hydrocarbons	20.0 mg/kg wet	15.1 mg/kg wet	75	40 - 140
C16-C21 Aromatic Hydrocarbons	33.3 mg/kg wet	19.7 mg/kg wet	59	40 - 140
1,2,3-Trimethylbenzene	6.67 mg/kg wet	4.31 mg/kg wet	65	40 - 140
C21-C36 Aromatic Hydrocarbons	53.3 mg/kg wet	43.4 mg/kg wet	81	40 - 140
Naphthalene	6.67 mg/kg wet	4.87 mg/kg wet	73	40 - 140
2-Methylnaphthalene	6.67 mg/kg wet	4.72 mg/kg wet	71	40 - 140
Acenaphthylene	6.67 mg/kg wet	4.34 mg/kg wet	65	40 - 140
Acenaphthene	6.67 mg/kg wet	4.71 mg/kg wet	71	40 - 140
Fluorene	6.67 mg/kg wet	4.64 mg/kg wet	70	40 - 140
Phenanthrene	6.67 mg/kg wet	4.64 mg/kg wet	70	40 - 140
Anthracene	6.67 mg/kg wet	3.21 mg/kg wet	48	40 - 140
Fluoranthene	6.67 mg/kg wet	4.47 mg/kg wet	67	40 - 140
Pyrene	6.67 mg/kg wet	4.56 mg/kg wet	68	40 - 140
Benzo (a) anthracene	6.67 mg/kg wet	4.65 mg/kg wet	70	40 - 140
Chrysene	6.67 mg/kg wet	4.29 mg/kg wet	64	40 - 140
Benzo (b) fluoranthene	6.67 mg/kg wet	4.56 mg/kg wet	68	40 - 140
Benzo (k) fluoranthene	6.67 mg/kg wet	3.42 mg/kg wet	51	40 - 140
Benzo (a) pyrene	6.67 mg/kg wet	4.42 mg/kg wet	66	40 - 140
Indeno (1,2,3-cd) pyrene	6.67 mg/kg wet	4.33 mg/kg wet	65	40 - 140
Dibenzo (a,h) anthracene	6.67 mg/kg wet	4.52 mg/kg wet	68	40 - 140
Benzo (g,h,i) perylene	6.67 mg/kg wet	4.33 mg/kg wet	65	40 - 140
Naphthalene (aliphatic fraction)	6.67 mg/kg wet	0.00 mg/kg wet	0	0 - 200
2-Methylnaphthalene (aliphatic fraction)	6.67 mg/kg wet	0.00 mg/kg wet	0	0 - 200
n-Nonane	6.67 mg/kg wet	2.73 mg/kg wet	41	30 - 140
n-Decane	6.67 mg/kg wet	4.65 mg/kg wet	70	40 - 140

FORM IIIa - LCS / LCS DUPLICATE RECOVERY

NJDEP EPH 10-08 Revision:3

Laboratory:	Eurofins Spectrum Analytical, Inc. - MA	SDG:	27181
Client:	Eurofins Spectrum Analytical, Inc. - RI	Project:	Horseshoe Road Site
Matrix:	Soil/Sediment	Instrument:	HPS2
Batch:	1618309	Laboratory ID:	1618309-BS2
Preparation:	SW846 3546	Initial/Final:	15 g / 2 ml
Analyzed:	10/25/16 17:15	Spike ID:	16H0578
		File ID:	NJFRAC1025.D

COMPOUND	SPIKE ADDED	LCS CONCENTRATION	LCS % REC. #	QC LIMITS REC.
n-Dodecane	6.67 mg/kg wet	3.64 mg/kg wet	55	40 - 140
n-Tetradecane	6.67 mg/kg wet	4.06 mg/kg wet	61	40 - 140
n-Hexadecane	6.67 mg/kg wet	4.78 mg/kg wet	72	40 - 140
n-Octadecane	6.67 mg/kg wet	5.08 mg/kg wet	76	40 - 140
n-Eicosane	6.67 mg/kg wet	5.47 mg/kg wet	82	40 - 140
n-Heneicosane	6.67 mg/kg wet	6.10 mg/kg wet	91	40 - 140
n-Docosane	6.67 mg/kg wet	5.90 mg/kg wet	88	40 - 140
n-Tetracosane	6.67 mg/kg wet	5.73 mg/kg wet	86	40 - 140
n-Hexacosane	6.67 mg/kg wet	5.74 mg/kg wet	86	40 - 140
n-Octacosane	6.67 mg/kg wet	5.68 mg/kg wet	85	40 - 140
n-Triacontane	6.67 mg/kg wet	5.76 mg/kg wet	86	40 - 140
n-Dotriacontane	6.67 mg/kg wet	5.72 mg/kg wet	86	40 - 140
n-Tetratriacontane	6.67 mg/kg wet	5.73 mg/kg wet	86	40 - 140
n-Hexatriacontane	6.67 mg/kg wet	5.56 mg/kg wet	83	40 - 140
n-Octatriacontane	6.67 mg/kg wet	5.27 mg/kg wet	79	40 - 140
n-Tetracontane	6.67 mg/kg wet	5.19 mg/kg wet	78	40 - 140

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Individual peaks for multi-component analytes are indicated by a number in parentheses

FORM IIIb (Organic) / FORM V (Inorganic)
MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

HSR-BF-11-101416

NJDEP EPH 10-08 Revision:3

Laboratory:	Eurofins Spectrum Analytical, Inc. - MA	SDG:	27181
Client:	Eurofins Spectrum Analytical, Inc. - RI	Project:	Horseshoe Road Site
Matrix:	Soil/Sediment	Instrument:	HPS2
Batch:	1618309	Laboratory ID:	1618309-MS1
Preparation:	SW846 3546	Initial/Final:	15.0245 g / 2 ml
Source Sample Name:	HSR-BF-11-101416	% Solids:	77.28
		Spike ID:	16H0578
		File ID:	C2718101M.D

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	MS CONCENTRATION	MS % REC. #	QC LIMITS REC.
C9-C12 Aliphatic Hydrocarbons	25.8 mg/kg dry	BRL mg/kg dry	18.8	73	40 - 140
C12-C16 Aliphatic Hydrocarbons	17.2 mg/kg dry	20.5 mg/kg dry	12.6	-46 *	40 - 140
C16-C21 Aliphatic Hydrocarbons	25.8 mg/kg dry	3.40 mg/kg dry	5.00	6 *	40 - 140
C21-C40 Aliphatic Hydrocarbons	86.1 mg/kg dry	17.2 mg/kg dry	29.1	14 *	40 - 140
C10-C12 Aromatic Hydrocarbons	17.2 mg/kg dry	BRL mg/kg dry	8.88	52	40 - 140
C12-C16 Aromatic Hydrocarbons	25.8 mg/kg dry	BRL mg/kg dry	13.7	53	40 - 140
C16-C21 Aromatic Hydrocarbons	43.1 mg/kg dry	6.18 mg/kg dry	21.9	36 *	40 - 140
1,2,3-Trimethylbenzene	8.61 mg/kg dry	BRL mg/kg dry	1.29	15 *	40 - 140
C21-C36 Aromatic Hydrocarbons	68.9 mg/kg dry	BRL mg/kg dry	52.0	75	40 - 140
Naphthalene	8.61 mg/kg dry	BRL mg/kg dry	3.05	35 *	40 - 140
2-Methylnaphthalene	8.61 mg/kg dry	BRL mg/kg dry	3.04	35 *	40 - 140
Acenaphthylene	8.61 mg/kg dry	BRL mg/kg dry	3.67	43	40 - 140
Acenaphthene	8.61 mg/kg dry	BRL mg/kg dry	3.74	43	40 - 140
Fluorene	8.61 mg/kg dry	BRL mg/kg dry	4.89	57	40 - 140
Phenanthrene	8.61 mg/kg dry	BRL mg/kg dry	5.04	58	40 - 140
Anthracene	8.61 mg/kg dry	BRL mg/kg dry	4.74	55	40 - 140
Fluoranthene	8.61 mg/kg dry	BRL mg/kg dry	4.95	58	40 - 140
Pyrene	8.61 mg/kg dry	BRL mg/kg dry	4.88	57	40 - 140
Benzo(a)anthracene	8.61 mg/kg dry	BRL mg/kg dry	4.96	58	40 - 140

FORM IIIb (Organic) / FORM V (Inorganic)
MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

HSR-BF-11-101416

NJDEP EPH 10-08 Revision:3

Laboratory:	Eurofins Spectrum Analytical, Inc. - MA	SDG:	27181
Client:	Eurofins Spectrum Analytical, Inc. - RI	Project:	Horseshoe Road Site
Matrix:	Soil/Sediment	Instrument:	HPS2
Batch:	1618309	Laboratory ID:	1618309-MS1
Preparation:	SW846 3546	Initial/Final:	15.0245 g / 2 ml
Source Sample Name:	HSR-BF-11-101416	% Solids:	77.28
		Spike ID:	16H0578
		File ID:	C2718101M.D

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	MS CONCENTRATION	MS % REC. #	QC LIMITS REC.
Chrysene	8.61 mg/kg dry	BRL mg/kg dry	4.74	55	40 - 140
Benzo (b) fluoranthene	8.61 mg/kg dry	BRL mg/kg dry	4.56	53	40 - 140
Benzo (k) fluoranthene	8.61 mg/kg dry	BRL mg/kg dry	4.83	56	40 - 140
Benzo (a) pyrene	8.61 mg/kg dry	BRL mg/kg dry	4.60	53	40 - 140
Indeno (1,2,3-cd) pyrene	8.61 mg/kg dry	BRL mg/kg dry	4.43	51	40 - 140
Dibenzo (a,h) anthracene	8.61 mg/kg dry	BRL mg/kg dry	4.49	52	40 - 140
Benzo (g,h,i) perylene	8.61 mg/kg dry	BRL mg/kg dry	4.47	52	40 - 140

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

FORM IIIc - DUPLICATES

HSR-BF-11-101416

NJDEP EPH 10-08 Revision:3

Laboratory: Eurofins Spectrum Analytical, Inc. - MA
Client: Eurofins Spectrum Analytical, Inc. - RI
Matrix: Soil/Sediment
Batch: 1618309
Preparation: SW846 3546
Source Sample Name: HSR-BF-11-101416

SDG: 27181
Project: Horseshoe Road Site
Laboratory ID: 1618309-DUP1
Lab Source ID: SC27181-01
Initial/Final: 15.0642 g / 2 ml
% Solids: 77.28
File ID: C2718101D.D

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION	C	DUPLICATE CONCENTRATION	C	RPD %	Q	METHOD
C9-C12 Aliphatic Hydrocarbons	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
C12-C16 Aliphatic Hydrocarbons	50	20.5 mg/kg dry		18.0 mg/kg dry		13		NJDEP EPH 10-08 Revision:3
C16-C21 Aliphatic Hydrocarbons	50	3.40 mg/kg dry		3.23 mg/kg dry		5		NJDEP EPH 10-08 Revision:3
C21-C40 Aliphatic Hydrocarbons	50	17.2 mg/kg dry		10.2 mg/kg dry		51	*	NJDEP EPH 10-08 Revision:3
C10-C12 Aromatic Hydrocarbons	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
C12-C16 Aromatic Hydrocarbons	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
C16-C21 Aromatic Hydrocarbons	50	6.18 mg/kg dry		6.13 mg/kg dry		0.8		NJDEP EPH 10-08 Revision:3
1,2,3-Trimethylbenzene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
C21-C36 Aromatic Hydrocarbons	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
Naphthalene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
2-Methylnaphthalene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
Acenaphthylene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
Acenaphthene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
Fluorene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
Phenanthrene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
Anthracene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
Fluoranthene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
Pyrene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
Benzo (a) anthracene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
Chrysene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
Benzo (b) fluoranthene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3

FORM IIIc - DUPLICATES

HSR-BF-11-101416

NJDEP EPH 10-08 Revision:3

Laboratory: Eurofins Spectrum Analytical, Inc. - MA
Client: Eurofins Spectrum Analytical, Inc. - RI
Matrix: Soil/Sediment
Batch: 1618309
Preparation: SW846 3546
Source Sample Name: HSR-BF-11-101416

SDG: 27181
Project: Horseshoe Road Site
Laboratory ID: 1618309-DUP1
Lab Source ID: SC27181-01
Initial/Final: 15.0642 g / 2 ml
% Solids: 77.28
File ID: C2718101D.D

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION	C	DUPLICATE CONCENTRATION	C	RPD %	Q	METHOD
Benzo (k) fluoranthene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
Benzo (a) pyrene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
Indeno (1,2,3-cd) pyrene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
Dibenzo (a,h) anthracene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3
Benzo (g,h,i) perylene	50	BRL mg/kg dry		BRL				NJDEP EPH 10-08 Revision:3

* Values outside of QC limits

Individual peaks for multi-component analytes are indicated by a number in parentheses

* Wet Chemistry *

ESC
L·A·B S·C·I·E·N·C·E·S
YOUR LAB OF CHOICE

ACCREDITED IN ACCORDANCE WITH nelac
NJ OK001

Case Narrative

Lab No: 20161016

This report contains the analytical results for the 1 sample(s) received under chain of custody by ESC Lab Sciences on 10/18/2016 2:40:08 PM. These samples are associated with your Horseshoe Road Site project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

L866742
A non-standard, expedited turn of 5 business days was requested for this project.
Sample(s) were analyzed as is.

Client	:	Spectrum Analytical, Inc.
Client Project	:	Horseshoe Road Site
Lab Number	:	20161016
Date Reported	:	10/24/16
Date Received	:	10/18/16
Page Number	:	2 of 2

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID :	**20161016-01**							
Client ID :	**HSR-BF-11-101416**							
Date Sampled :	**10/14/2016 10:45:00 AM**							
Matrix :	**SCM**							
	Radiochemical Analyses							
Ra-226	DOE Ga-01-R*	0.622 +/- 0.320	0.879	pCi/g	J SCT 11-7-16	10/18/16	10/18/16	AK

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Am-241		89.4	91.1	1.8						GS1669
Co-60		89.6	92.9	3.6						GS1669
Cs-137	0.066	99.2	101.0	1.9	NC	0.639				GS1669
Ra-226	0.061				2.8	0.231				GS1669

Lab Approval:

Ron Eidson
Director of Radiochemistry

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Division of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 - EMail: outreach@esclabsciences.com - Tel: (918)251-2515

R0948

eurofins | Spectrum Analytical

CHAIN-OF-CUSTODY RECORD

WorkOrder : R0948
Project: Horseshoe Road Site
Report Type : LEVEL 4
Purchase Order : R0948

Due Date : 10/27/2016
FAX Due Date : 10/24/2016
Report To : Agnes R Huntley

EDD Types :
Please generate a Little PEL EDD

Subcontractor:
ESC Lab Sciences Company
311 N Aspen Ave.
Broken Arrow, OK 74012

Phone: (918) 251-2525

Invoice To:
Eurofins Spectrum Analytical, Inc.
2425 New Holland Pike
Lancaster, PA 17601
Attention: Accounts Payable
AccountsPayable@EurofinsUS.com

EQuISFacilityCode: N/A

Please e-mail results in electronic format (PDF and/or EDD) to ESAI_RI_LabResults@EurofinsUS.com.

Requested Test

Client Sample ID	Collection Date	#	Matrix	DUP/MS/MSD	Mitkem Sample ID	RADIUM_226_S
HSR-BF-11-101416	10/14/2016 10:45	1	Soil		R0948-01G	X

Please send notice immediatley and prior to the start of sample preperation and/or analysis if certification is not held for the requested analyses. Notice should be emailed to ESAI_RI_ClientServices

1) RADIUM_226_S, RADIUM 226 (SOLID)

Use 'Client Sample IDs' when reporting data. If needed, truncate 'Client Sample IDs' to fit on reports. Use full 'Client Sample ID' when generating EDD. # = number of containers

Comments:

U866742
20161016

		Date/Time			Date/Time
Relinquished by:	Agnes R Huntley		Received by:		10/18/16 1405
Relinquished by:			Received by:		

10/17/2016
Page 1 of 1

SAMPLE LOGIN

Date Received: 10/18/2016 2:40:0

Lab Number: 20161016

Due: 10/25/2016

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20161016-01 B	HSR-BF-11-10/14/16	SCM	10/14/16	Plastic	16 oz (C1)	None		Yes	Yes
20161016-01 A	HSR-BF-11-10/14/16	SCM	10/14/16	Plastic	Lg Zip Bag	None		Yes	Yes
Gamma Spec (NORM)			DOE Ga-01-R*						

CONTAINER INSPECTION

Coolers 0 of 1 Custody Seals Broken Ø Temperature: Amb C Ice Radiation Survey: <300 cpm

SAMPLE INSPECTION

Sample Seal Broken Ø Chain of Custody Record ✓ Labels in Tact ✓ Radiation Survey Complete ✓

Anomalies

SN: 47747
4/28/17

Inspected By: [signature] DATE 10/18/16

QA or Designee Review: Raymond Thomas DATE 10/18/16

Sample Custodian Review: [signature] DATE 10/18/16

Project Notes:

FORM IV - METHOD BLANK SUMMARY

1618309-BLK1

NJDEP EPH 10-08 Revision:3

Laboratory:	Eurofins Spectrum Analytical, Inc. - MA		SDG:	27181	
Client:	Eurofins Spectrum Analytical, Inc. - RI		Project:	Horseshoe Road Site	
Matrix:	Soil/Sediment	Laboratory ID:	1618309-BLK1	File ID:	BK618309.D
		Preparation:	SW846 3546	Initial/Final:	15.3987 g / 2 ml
Analyzed:	10/25/16 13:49	Instrument:	HPS2		
Batch:	1618309	Sequence:	S609176	Calibration:	1610072

This method blank applies to the following sample analyses:

SAMPLE NO.	LAB SAMPLE ID	FILE ID	DATE ANALYZED	TIME ANALYZED
LCS	1618309-BS1	BS618309.D	10/25/16	14:48
LCS Dup	1618309-BSD1	BSD18309.D	10/25/16	15:17
HSR-BF-11-101416	SC27181-01	C2718101.D	10/25/16	15:46
Duplicate	1618309-DUP1	C2718101D.D	10/25/16	16:16
Matrix Spike	1618309-MS1	C2718101M.D	10/25/16	16:45
LCS	1618309-BS2	NJFRAC1025.D	10/25/16	17:15

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:

☑ Standard TAT - 7 to 10 business days

☐ Rush TAT - Date Needed: _____

All TATs subject to laboratory approval
Min. 24-hr notification needed for rushes
Samples disposed after 60 days unless otherwise instructed.

Report To: Joel Italian
Sevenson Environmental Services
400 Horsehoe Road
Sayreville, NJ 08872
Telephone #:
Project Mgr: Joel Czachorowski

Invoice To: Sevenson Environmental Services
2749 Lockport Road
Niagra Falls NY 14305
P.O No.: G2849030 Quote/RQN:

Project No: G284
Site Name: Horse Shoe Road OU-3
Location: Sayreville State: NJ
Sampler(s): Joel Italian

F=Field Filtered 1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH3OH 8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= _____ 12= _____

List Preservative Code below:

DW=Dinking Water GW=Groundwater SW=Surface Water WW=Waste Water
O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas
X1= _____ X2= _____ X3= _____

G= Grab C=Compsite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Encore	Total Metals & Hg	SVOA	Pest & PCBs	Cyanide	NJ EPH	VOC	Radium 226/228		Check if chlorinated	
						Containers					Analysis									
R0948-01	HSR-BF-11-101416	10/14/2016	10:45 AM	C	SO		5		1	3	x	x	x	x	x	x	x		☐	EME Pit
																			☐	Wetland Topsoil to 10K Cy
																			☐	
																			☐	
																			☐	
																			☐	Fed Ex Tracking # 777472433779
																			☐	
																			☐	
																			☐	
																			☐	

QA/QC Reporting Notes:
* additional charges may appply

MA DEP MCP CAM Report? ☐ Yes ☐ No
CT DPH RCP Report? ☐ Yes ☐ No
☐ Standard ☐ No QC
☐ DQA*
☐ ASP A* ☐ ASP B*
☐ NJ Reduced* ☐ NJ Full*
☐ Tier II* ☐ Tier IV*
☐ Other: _____
State-specific reporting standards:

Relinquished by:	Received by:	Date:	Time:	Temp °C
[signature] 10-14-16 1540	[signature]	10/15/16	9:30 Am	Observed 4.3°C
				Correction Factor 0
				Corrected 4.3°C
				IR ID # IR-74

☑ EDD format: datareview@sevenson.com
☑ E-mail to: Jitalian@sevenson.com
jczachorowski@sevenson.com

Condition upon receipt: Custody Seals: ☒ Present ☒ Intact ☐ Broken
☐ Ambient ☑ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

Eurofins Spectrum Analytical, Inc. -- ESAI-RI

Received By: SB	Page 01 of 00
Reviewed By: AC	Log-in Date 10/15/2016
Work Order: R0948	Client Name: Sevenson Environmental Services Inc.
Project Name/Event: Horseshoe Road Site	

Remarks: (1/2) Please see associated sample/extract transfer logbook pages submitted with this data package.

1. Custody Seal(s)	Present / Absent
	Intact / Broken
2. Custody Seal Nos.	N/A
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists	Present / Absent
4. Airbill	AirBill / Sticker
	Present / Absent
5. Airbill No.	FedEx 7774 7243 3779
6. Sample Tags	Present / Absent
Sample Tag Numbers	Listed / Not Listed on Chain-of-Custody
7. Sample Condition	Intact / Broken/ Leaking
8. Cooler Temperature Indicator Bottle	Present / Absent
9. Cooler Temperature	4.3 °C
10. Does information on TR/COCs and sample tags agree?	Yes / No
11. Date Received at Laboratory	10/15/2016
12. Time Received	09:30

Sample Transfer	
Fraction (1) TVOA/VOA	Fraction (2) SVOA/PEST/ARO
Area #	Area #
By	By
On	On

Lab Sample ID	HNO3	H2SO4	HCl	NaOH	H3PO4	VOA Matrix	Soil HeadSpace or Air Bubble > or equal to 1/4"
	Preservation (pH)						
R0948-01						E	

IR Temp Gun ID:MT-74

CoolantCondition: ICE

Preservative Name/Lot No:

VOA Matrix Key:

US = Unpreserved Soil	A= Air
UA = Unpreserved Aqueous	H = HCl
M = MeOH	E = Encore
N = NaHSO4	F = Freeze

See Sample Condition Notification/Corrective Action Form Yes / No

Horseshoe Road and Atlantic Resources Corporation Superfund Site (OU3) – Site Sample Review Form

Prepared for: HSR-BF-11-101416 (collected 10/14/2016)

Prepared by: James B. Hyzy, PhD

Date: 11/8/2016

This memorandum summarizes the results of the internal data quality review assessment for the above referenced sample conducted by Sevenson Environmental Services, Inc. personnel as part of its Corporate Data Quality Assurance Program. All results have been evaluated relative to the site-specific UFP-QAPP. The analyses performed are of acceptable data quality.

Analytical results from the sample event were compared against the Project Action Limits for chemical analyses (NJAC 7:26D Remediation Standards, Residential Direct Contact Soil Remediation Standards, dated June 2008) to identify exceedances. A summary table is attached.

Pentachlorophenol, although below its Contact Remediation Standard, is rejected ("R") due to no recovery in the LCS QC sample.

"I, the undersigned, as authorized by my company and its contract to USACE, certify that I have reviewed the data and find it to be as presented above."

Approved by:

J. B. Hyzy PhD

James B. Hyzy, PhD
Project Chemist
Sevenson Environmental Services, Inc.

Contamination Limits Comparison Results

Client Sample ID *HSR-BF-11-101416* **Lab ID :** *MITKEM* **Contamination Limit Used :**
Sample Date : *10/14/2016 10:45* **Sample Matrix :** *SO* *NJDEP RDCSRS*

Analytical Method	Analyte Name	Tot/	Final Result	Final Quals	Unc / Error	Result Units	Contamina - tion Limit
6010C	Aluminum	TOT	6760			mg/Kg	78000
	Antimony	TOT	0.51	UJ		mg/Kg	31
	Arsenic	TOT	7.7			mg/Kg	19
	Barium	TOT	31.3			mg/Kg	16000
	Beryllium	TOT	0.58			mg/Kg	16
	Cadmium	TOT	0.24	U		mg/Kg	78
	Calcium	TOT	7360	J		mg/Kg	
	Chromium	TOT	20.9			mg/Kg	
	Cobalt	TOT	4.3			mg/Kg	1600
	Copper	TOT	14.7	J		mg/Kg	3100
	Iron	TOT	20700	J		mg/Kg	
	Lead	TOT	12.7			mg/Kg	400
	Magnesium	TOT	1550	J		mg/Kg	
	Manganese	TOT	196			mg/Kg	11000
	Nickel	TOT	9.7	J		mg/Kg	1600
	Potassium	TOT	1040			mg/Kg	
	Selenium	TOT	3.5			mg/Kg	390
	Silver	TOT	1.5	U		mg/Kg	390
	Sodium	TOT	114	J		mg/Kg	
	Thallium	TOT	0.97	U		mg/Kg	5
	Vanadium	TOT	33.8			mg/Kg	78
	Zinc	TOT	40.5			mg/Kg	23000
7471B	Mercury	TOT	0.026	J		mg/Kg	23
8081B	4,4'-DDD	NA	4.4	UJ		ug/Kg	3000
	4,4'-DDE	NA	4.4	UJ		ug/Kg	2000
	4,4'-DDT	NA	4.4	UJ		ug/Kg	2000
	Aldrin	NA	2.3	UJ		ug/Kg	40
	alpha-BHC	NA	2.3	UJ		ug/Kg	100
	alpha-Chlordane	NA	2.3	UJ		ug/Kg	
	beta-BHC	NA	2.3	UJ		ug/Kg	400
	delta-BHC	NA	2.3	UJ		ug/Kg	
	Dieldrin	NA	4.4	UJ		ug/Kg	40
	Endosulfan I	NA	2.3	UJ		ug/Kg	
	Endosulfan II	NA	4.4	UJ		ug/Kg	
	Endosulfan sulfate	NA	4.4	UJ		ug/Kg	470000
	Endrin	NA	4.4	UJ		ug/Kg	23000
	Endrin aldehyde	NA	4.4	UJ		ug/Kg	
	Endrin ketone	NA	4.4	UJ		ug/Kg	
	GAMMA-BHC	NA	2.3	UJ		ug/Kg	400
	gamma-Chlordane	NA	2.3	UJ		ug/Kg	
	Heptachlor	NA	2.3	UJ		ug/Kg	100
	Heptachlor epoxide	NA	2.3	UJ		ug/Kg	70

Contamination Limits Comparison Results

Client Sample ID *HSR-BF-11-101416* **Lab ID :** *MITKEM* **Contamination Limit Used :**
Sample Date : *10/14/2016 10:45* **Sample Matrix :** *SO* *NJDEP RDCSRS*

Analytical Method	Analyte Name	Tot/	Final Result	Final Quals	Unc / Error	Result Units	Contamina - tion Limit	
8081B	Methoxychlor	NA	23	UJ		ug/Kg	390000	
	Toxaphene	NA	230	UJ		ug/Kg	600	
8082A	Aroclor 1016	NA	44	UJ		ug/Kg		
	Aroclor 1221	NA	44	UJ		ug/Kg		
	Aroclor 1232	NA	44	UJ		ug/Kg		
	Aroclor 1242	NA	44	UJ		ug/Kg		
	Aroclor 1248	NA	44	UJ		ug/Kg		
	Aroclor 1254	NA	44	UJ		ug/Kg		
	Aroclor 1260	NA	44	UJ		ug/Kg		
8260B	1,1,1-Trichloroethane	NA	8.1	U		ug/Kg	290000	
	1,1,2,2-Tetrachloroethane	NA	8.1	U		ug/Kg	1000	
	1,1,2-Trichloroethane	NA	8.1	U		ug/Kg	2000	
	1,1-Dichloroethane	NA	8.1	U		ug/Kg	8000	
	1,1-Dichloroethene	NA	8.1	U		ug/Kg	11000	
	1,2-Dibromo-3-chloropropane	NA	8.1	U		ug/Kg	80	
	1,2-Dibromoethane	NA	8.1	U		ug/Kg	8	> Limit*
	1,2-Dichloroethane	NA	8.1	U		ug/Kg	900	SJC 11-8-16
	1,2-Dichloropropane	NA	8.1	U		ug/Kg	2000	
	2-Butanone	NA	8.1	UJ		ug/Kg	3100000	
	Acetone	NA	8.1	UJ		ug/Kg	70000000	
	Acrolein	NA	41	U		ug/Kg	500	
	Acrylonitrile	NA	8.1	U		ug/Kg	900	
	Benzene	NA	8.1	U		ug/Kg	2000	
	Bromodichloromethane	NA	8.1	U		ug/Kg	1000	
	Bromoform	NA	8.1	U		ug/Kg	81000	
	Bromomethane	NA	8.1	U		ug/Kg	25000	
	Carbon disulfide	NA	8.1	U		ug/Kg	7800000	
	Carbon tetrachloride	NA	8.1	U		ug/Kg	600	
	Chlorobenzene	NA	8.1	U		ug/Kg	510000	
	Chloroethane	NA	8.1	U		ug/Kg	220000	
	Chloroform	NA	8.1	U		ug/Kg	600	
	Chloromethane	NA	8.1	U		ug/Kg	4000	
	cis-1,2-Dichloroethene	NA	8.1	U		ug/Kg	230000	
	cis-1,3-Dichloropropene	NA	8.1	U		ug/Kg		
	Dibromochloromethane	NA	8.1	U		ug/Kg	3000	
	Dichlorodifluoromethane	NA	8.1	U		ug/Kg	490000	
	Ethylbenzene	NA	8.1	U		ug/Kg	7800000	
	m,p-Xylene	NA	8.1	U		ug/Kg		
	Methyl acetate	NA	8.1	U		ug/Kg	78000000	
	Methylene chloride	NA	8.1	U		ug/Kg	34000	
	methyl-t-butyl ether	NA	8.1	U		ug/Kg	110000	
	Styrene	NA	8.1	U		ug/Kg	90000	

Contamination Limits Comparison Results

Client Sample ID *HSR-BF-11-101416* **Lab ID :** *MITKEM* **Contamination Limit Used :**
Sample Date : *10/14/2016 10:45* **Sample Matrix :** *SO* *NJDEP RDCSRS*

Analytical Method	Analyte Name	Tot/	Final Result	Final Quals	Unc / Error	Result Units	Contamina - tion Limit	
8260B	tert-Butyl Alcohol	NA	16	U		ug/Kg		
	Tetrachloroethene	NA	8.1	U		ug/Kg	2000	
	Toluene	NA	8.1	U		ug/Kg	6300000	
	Total Xylenes	NA	8.1	U		ug/Kg	12000000	
	trans-1,2-Dichloroethene	NA	8.1	U		ug/Kg	300000	
	trans-1,3-Dichloropropene	NA	8.1	U		ug/Kg		
	Trichloroethene	NA	8.1	U		ug/Kg	7000	
	Trichlorofluoromethane	NA	8.1	U		ug/Kg	23000000	
	Vinyl chloride	NA	8.1	U		ug/Kg	700	
8270D	1,1'-Biphenyl	NA	220	U		ug/Kg	3100000	
	1,2,4-Trichlorobenzene	NA	220	U		ug/Kg	73000	
	1,2-Dichlorobenzene	NA	220	U		ug/Kg	5300000	
	1,3-Dichlorobenzene	NA	220	U		ug/Kg	5300000	
	1,4-Dichlorobenzene	NA	220	U		ug/Kg	5000	
	2,4,5-Trichlorophenol	NA	440	U		ug/Kg	6100000	
	2,4,6-Trichlorophenol	NA	220	U		ug/Kg	19000	
	2,4-Dichlorophenol	NA	220	U		ug/Kg	180000	
	2,4-Dimethylphenol	NA	220	U		ug/Kg	1200000	
	2,4-Dinitrophenol	NA	440	U		ug/Kg	120000	
	2,4-Dinitrotoluene	NA	220	U		ug/Kg	700	
	2,6-Dinitrotoluene	NA	220	U		ug/Kg	700	
	2-Chlorophenol	NA	220	U		ug/Kg	310000	
	2-METHYL-4,6-	NA	440	U		ug/Kg	6000	
	2-Methylnaphthalene	NA	220	U		ug/Kg	230000	
	2-Methylphenol	NA	220	U		ug/Kg	310000	
	2-Nitroaniline	NA	440	U		ug/Kg	39000	
	3,3'-Dichlorobenzidine	NA	220	U		ug/Kg	1000	
	4-Methylphenol	NA	220	U		ug/Kg	31000	
	Acenaphthene	NA	220	U		ug/Kg	3400000	
	Acenaphthylene	NA	220	U		ug/Kg		
	Acetophenone	NA	220	U		ug/Kg	2000	
	Anthracene	NA	220	U		ug/Kg	17000000	
	Atrazine	NA	220	U		ug/Kg	210000	
	Azobenzene	NA	220	U		ug/Kg		
	Benzaldehyde	NA	220	U		ug/Kg	6100000	
	Benzidine	NA	220	U		ug/Kg	700	
	Benzo(a)anthracene	NA	220	U		ug/Kg	600	
	Benzo(a)pyrene	NA	220	U		ug/Kg	200	> Limit**
	Benzo(b)fluoranthene	NA	220	U		ug/Kg	600	
	Benzo(g,h,i)perylene	NA	220	U		ug/Kg	380000000	BM 11-8-16
	Benzo(k)fluoranthene	NA	220	U		ug/Kg	6000	
	BIS(2-CHLOROETHYL) ETHER	NA	220	U		ug/Kg	400	

Contamination Limits Comparison Results

Client Sample ID *HSR-BF-11-101416* **Lab ID :** *MITKEM* **Contamination Limit Used :**
Sample Date : *10/14/2016 10:45* **Sample Matrix :** *SO* *NJDEP RDCSRS*

Analytical Method	Analyte Name	Tot/	Final Result	Final Quals	Unc / Error	Result Units	Contamina - tion Limit	
8270D	Bis(2-chloroisopropyl)ether	NA	220	U		ug/Kg	23000	
	BIS(2-ETHYLHEXYL) PHTHALATE	NA	400			ug/Kg	35000	
	BUTYLBENZYL PHTHALATE	NA	220	U		ug/Kg	1200000	
	Caprolactam	NA	220	U		ug/Kg	31000000	
	Carbazole	NA	220	U		ug/Kg	24000	
	Chrysene	NA	220	U		ug/Kg	62000	
	DIBENZ(A,H)ANTHRACENE	NA	220	U		ug/Kg	200	> Limit**
	DIETHYL PHTHALATE	NA	220	U		ug/Kg	49000000	SJS 11-8-16
	DI-N-BUTYL PHTHALATE	NA	160	J		ug/Kg	6100000	
	DI-N-OCTYL PHTHALATE	NA	220	U		ug/Kg	2400000	
	Fluoranthene	NA	220	U		ug/Kg	2300000	
	Fluorene	NA	220	U		ug/Kg	2300000	
	Hexachlorobenzene	NA	220	U		ug/Kg	300	
	Hexachlorobutadiene	NA	220	U		ug/Kg	6000	
	Hexachlorocyclopentadiene	NA	220	U		ug/Kg	45000	
	Hexachloroethane	NA	220	U		ug/Kg	35000	
	Indeno(1,2,3-cd)pyrene	NA	220	U		ug/Kg	600	
	Isophorone	NA	220	U		ug/Kg	510000	
	Naphthalene	NA	220	U		ug/Kg	6000	
	Nitrobenzene	NA	220	U		ug/Kg	31000	
	N-Nitrosodimethylamine	NA	220	U		ug/Kg	700	
	N-Nitroso-di-n-propylamine	NA	220	U		ug/Kg	200	> Limit**
	N-Nitrosodiphenylamine	NA	220	U		ug/Kg	99000	
	Pentachlorophenol	NA	440	R		ug/Kg	3000	SJS 11-8-16
	Phenanthrene	NA	220	U		ug/Kg		
	Phenol	NA	220	U		ug/Kg	18000000	
	Pyrene	NA	220	U		ug/Kg	1700000	
9012B	Cyanide	NA	1.3	U		mg/Kg	1600	

Contamination Limits Comparison Results

Client Sample ID *HSR-BF-11-101416* **Lab ID :** *OLBA* **Contamination Limit Used :**
Sample Date : *10/14/2016 10:45* **Sample Matrix :** *SO* *NJDEP RDCSRS*

Analytical Method	Analyte Name	Tot/	Final Result	Final Quals	Unc / Error	Result Units	Contamina - tion Limit
DOE Ga-01-R*	Ra-226	TOT	0.662		0.320	pCi/g	2

NOTES: All ">Limit" compounds are analyzed down to MDL. If any were detected between MDL and RL, they would be reported and flagged with a "J" qualifier. The MDLs that are reported in the analytical report for the ">Limit" compounds are well below the Contamination Limit Used Values; therefore all data qualified with ">Limit" are acceptable.

Pentachlorophenol is "R" flagged due to no recovery in the LCS QC sample. SJS 11-8-16

Eurofins Spectrum Analytical, Inc. -- ESAI-RI

10/26/2016

Client: Sevenson Environmental Services Inc.
Client Sample ID: HSR-BF-11-101416 **Project:** Horseshoe Road Site
Lab ID: R0948-01 **Collection Date:** 10/14/2016 10:45

Analyses	Result	Qual	MDL	RL	Units	DF	Date Analyzed	Batch ID
SW846 9012B -- TOTAL CYANIDE							**SW9012_S**	
Cyanide	ND		0.21	1.3	mg/Kg	1	10/20/2016 9:11	85678

Qualifiers:
ND - Not Detected at the MDL
J - Analyte detected below Reporting Limit
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit
MDL - Method Detection Limit

m16.02.09.0928

Eurofins Spectrum Analytical, Inc. -- ESAI-RI

10/26/2016

Client: Sevenson Environmental Services Inc.
Client Sample ID: HSR-BF-11-101416 **Project:** Horseshoe Road Site
Lab ID: R0948-01 **Collection Date:** 10/14/2016 10:45

Analyses	Result	Qual	MDL	RL	Units	DF	Date Analyzed	Batch ID
SW846 6010C -- METALS BY ICP						**SW6010_S**		
Aluminum	6800		1.2	9.7	mg/Kg	1	10/24/2016 8:39	85693
Antimony	0.51	BJ	0.37	0.97	mg/Kg	1	10/24/2016 8:39	85693
Arsenic	7.7		0.40	0.97	mg/Kg	1	10/24/2016 8:39	85693
Barium	31		0.030	9.7	mg/Kg	1	10/24/2016 8:39	85693
Beryllium	0.58	B	0.0015	0.24	mg/Kg	1	10/24/2016 8:39	85693
Cadmium	ND		0.015	0.24	mg/Kg	1	10/24/2016 8:39	85693
Calcium	7400		5.9	39	mg/Kg	1	10/24/2016 8:39	85693
Chromium	21		0.018	0.97	mg/Kg	1	10/24/2016 8:39	85693
Cobalt	4.3		0.043	2.4	mg/Kg	1	10/24/2016 8:39	85693
Copper	15		0.11	1.5	mg/Kg	1	10/24/2016 8:39	85693
Iron	21000		1.5	9.7	mg/Kg	1	10/24/2016 8:39	85693
Lead	13		0.17	0.49	mg/Kg	1	10/24/2016 8:39	85693
Magnesium	1500		0.61	24	mg/Kg	1	10/24/2016 8:39	85693
Manganese	200		0.13	2.4	mg/Kg	1	10/24/2016 8:39	85693
Nickel	9.7		0.042	2.4	mg/Kg	1	10/24/2016 8:39	85693
Potassium	1000		3.3	49	mg/Kg	1	10/24/2016 8:39	85693
Selenium	3.5		0.62	1.5	mg/Kg	1	10/24/2016 8:39	85693
Silver	ND		0.062	1.5	mg/Kg	1	10/24/2016 8:39	85693
Sodium	110		1.1	49	mg/Kg	1	10/24/2016 8:39	85693
Thallium	ND		0.21	0.97	mg/Kg	1	10/24/2016 8:39	85693
Vanadium	34		0.058	2.4	mg/Kg	1	10/24/2016 8:39	85693
Zinc	40		0.17	2.4	mg/Kg	1	10/24/2016 8:39	85693
SW846 7471B -- MERCURY BY FIA						**SW7471**		
Mercury	0.026	J	0.0029	0.046	mg/Kg	1	10/24/2016 12:03	85704

Qualifiers:
ND - Not Detected at the MDL
J - Analyte detected below Reporting Limit
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit
MDL - Method Detection Limit

m16.02.09.0928

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- [x] Final Report
- [ ] Re-Issued Report
- [ ] Revised Report

Report Date:
26-Oct-16 17:25

Laboratory Report

Eurofins Spectrum Analytical, Inc.
646 Camp Ave.
North Kingstown, RI 02852
Attn: Agnes Huntley

Project: Horseshoe Road Site
Project #: R0948

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SC27181-01	HSR-BF-11-101416	Soil	14-Oct-16 10:45	17-Oct-16 16:10

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87936
Maine # MA138
New Hampshire # 2972/2538
New Jersey # MA011
New York # 11393
Pennsylvania # 68-04426/68-02924
Rhode Island # LAO00348
USDA # P330-15-00375
Vermont # VT-11393

Authorized by:

June O'Connor
Laboratory Director

Eurofins Spectrum Analytical holds primary NELAC certification in the State of New York for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of New York does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.
Please note that this report contains 14 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

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Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

CASE NARRATIVE:

Data has been reported to the RDL. This report includes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the detection limit are reported as "<" (less than) the detection limit in this report.

The samples were received 2.5 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

NJDEP EPH 10-08 Revision:3

Calibration:

1610072

Analyte quantified by quadratic equation type calibration.

Acenaphthylene
Benzo (b) fluoranthene
C10-C12 Aromatic Hydrocarbons
C12-C16 Aromatic Hydrocarbons
C16-C21 Aliphatic Hydrocarbons
C16-C21 Aromatic Hydrocarbons
C21-C36 Aromatic Hydrocarbons
C21-C40 Aliphatic Hydrocarbons

This affected the following samples:

1618309-BLK1
1618309-BS1
1618309-BS2
1618309-BSD1
1618309-DUP1
1618309-MS1
HSR-BF-11-101416
S608937-ICV1
S609176-CCV1
S609176-CCV2

Spikes:

1618309-MS1 *Source: SC27181-01*

The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

1,2,3-Trimethylbenzene
2-Methylnaphthalene
C12-C16 Aliphatic Hydrocarbons
C16-C21 Aliphatic Hydrocarbons
C16-C21 Aromatic Hydrocarbons
C21-C40 Aliphatic Hydrocarbons
Naphthalene

Duplicates:

1618309-DUP1 *Source: SC27181-01*

NJDEP EPH 10-08 Revision:3

Duplicates:

1618309-DUP1 *Source: SC27181-01*

The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

C21-C40 Aliphatic Hydrocarbons

Samples:

S609176-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

n-Hexatriacontane (-21.2%)
n-Octatriacontane (-21.3%)
n-Tetracontane (-22.5%)

Analyte percent difference is outside individual acceptance criteria (25), but within overall method allowances.

C9-C12 Aliphatic Hydrocarbons (-31.2%)

This affected the following samples:

1618309-BLK1
1618309-BS1
1618309-BS2
1618309-BSD1
1618309-DUP1
1618309-MS1
HSR-BF-11-101416

Sample Acceptance Check Form

Client:	Eurofins Spectrum Analytical, Inc. - RI
Project:	Horseshoe Road Site / R0948
Work Order:	SC27181
Sample(s) received on:	10/17/2016

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	Yes	No	N/A
Were custody seals present?	☐	☑	☐
Were custody seals intact?	☐	☐	☑
Were samples received at a temperature of ≤ 6°C?	☑	☐	☐
Were samples refrigerated upon transfer to laboratory representative?	☑	☐	☐
Were sample containers received intact?	☑	☐	☐
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	☑	☐	☐
Were samples accompanied by a Chain of Custody document?	☑	☐	☐
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	☐	☑	☐
Did sample container labels agree with Chain of Custody document?	☑	☐	☐
Were samples received within method-specific holding times?	☑	☐	☐

Summary of Hits

Lab ID: SC27181-01 **Client ID:** HSR-BF-11-101416

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
C12-C16 Aliphatic Hydrocarbons	20.5		12.9	mg/kg	NJDEP EPH 10-08 Revision:3
C16-C21 Aliphatic Hydrocarbons	3.40	J	12.9	mg/kg	NJDEP EPH 10-08 Revision:3
C16-C21 Aromatic Hydrocarbons	6.18	J	12.9	mg/kg	NJDEP EPH 10-08 Revision:3
C21-C40 Aliphatic Hydrocarbons	17.2		12.9	mg/kg	NJDEP EPH 10-08 Revision:3
Total Aliphatics	41.1		12.9	mg/kg	NJDEP EPH 10-08 Revision:3
Total Aromatics	6.18	J	12.9	mg/kg	NJDEP EPH 10-08 Revision:3
Total EPH Hydrocarbons	47.3	J	103	mg/kg	NJDEP EPH 10-08 Revision:3

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
HSR-BF-11-101416	R0948	Soil	14-Oct-16 10:45	17-Oct-16
SC27181-01				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
NJ EPH Aliphatic/Aromatic Ranges Prepared by method SW846 3546													
	C9-C12 Aliphatic Hydrocarbons	< 12.9	U	mg/kg dry	12.9	0.819	1	NJDEP EPH 10-08 Revision:3	21-Oct-16	25-Oct-16	NAA	1618309	
	C12-C16 Aliphatic Hydrocarbons	**20.5**		mg/kg dry	12.9	0.666	1	"	"	"	"	"	
	C16-C21 Aliphatic Hydrocarbons	**3.40**	J	mg/kg dry	12.9	0.863	1	"	"	"	"	"	
	C21-C40 Aliphatic Hydrocarbons	**17.2**		mg/kg dry	12.9	2.33	1	"	"	"	"	"	
	C10-C12 Aromatic Hydrocarbons	< 12.9	U	mg/kg dry	12.9	0.600	1	"	"	"	"	"	
	C12-C16 Aromatic Hydrocarbons	< 12.9	U	mg/kg dry	12.9	0.615	1	"	"	"	"	"	
	C16-C21 Aromatic Hydrocarbons	**6.18**	J	mg/kg dry	12.9	1.06	1	"	"	"	"	"	
	C21-C36 Aromatic Hydrocarbons	< 12.9	U	mg/kg dry	12.9	3.02	1	"	"	"	"	"	
	Total Aliphatics	**41.1**		mg/kg dry	12.9	4.68	1	"	"	"	"	"	
	Total Aromatics	**6.18**	J	mg/kg dry	12.9	5.29	1	"	"	"	"	"	
	Total EPH Hydrocarbons	**47.3**	J	mg/kg dry	103	9.97	1	"	"	"	"	"	
NJ EPH Target Analytes													
526-73-8	1,2,3-Trimethylbenzene	< 0.516	U	mg/kg dry	0.516	0.280	1	"	"	"	"	"	
91-20-3	Naphthalene	< 0.516	U	mg/kg dry	0.516	0.265	1	"	"	"	"	"	
91-57-6	2-Methylnaphthalene	< 0.516	U	mg/kg dry	0.516	0.256	1	"	"	"	"	"	
208-96-8	Acenaphthylene	< 0.516	U	mg/kg dry	0.516	0.273	1	"	"	"	"	"	
83-32-9	Acenaphthene	< 0.516	U	mg/kg dry	0.516	0.322	1	"	"	"	"	"	
86-73-7	Fluorene	< 0.516	U	mg/kg dry	0.516	0.276	1	"	"	"	"	"	
85-01-8	Phenanthrene	< 0.516	U	mg/kg dry	0.516	0.337	1	"	"	"	"	"	
120-12-7	Anthracene	< 0.516	U	mg/kg dry	0.516	0.361	1	"	"	"	"	"	
206-44-0	Fluoranthene	< 0.516	U	mg/kg dry	0.516	0.300	1	"	"	"	"	"	
129-00-0	Pyrene	< 0.516	U	mg/kg dry	0.516	0.296	1	"	"	"	"	"	
56-55-3	Benzo (a) anthracene	< 0.516	U	mg/kg dry	0.516	0.332	1	"	"	"	"	"	
218-01-9	Chrysene	< 0.516	U	mg/kg dry	0.516	0.328	1	"	"	"	"	"	
205-99-2	Benzo (b) fluoranthene	< 0.516	U	mg/kg dry	0.516	0.415	1	"	"	"	"	"	
207-08-9	Benzo (k) fluoranthene	< 0.516	U	mg/kg dry	0.516	0.392	1	"	"	"	"	"	
50-32-8	Benzo (a) pyrene	< 0.516	U	mg/kg dry	0.516	0.288	1	"	"	"	"	"	
193-39-5	Indeno (1,2,3-cd) pyrene	< 0.516	U	mg/kg dry	0.516	0.360	1	"	"	"	"	"	
53-70-3	Dibenzo (a,h) anthracene	< 0.516	U	mg/kg dry	0.516	0.368	1	"	"	"	"	"	
191-24-2	Benzo (g,h,i) perylene	< 0.516	U	mg/kg dry	0.516	0.376	1	"	"	"	"	"	
Surrogate recoveries:													
3386-33-2	*1-Chlorooctadecane*	*43*			*40-140 %*			"	"	"	"	"	
84-15-1	*Ortho-Terphenyl*	*67*			*40-140 %*			"	"	"	"	"	
580-13-2	*2-Bromonaphthalene*	*50*			*40-140 %*			"	"	"	"	"	
321-60-8	*2-Fluorobiphenyl*	*134*			*40-140 %*			"	"	"	"	"	
General Chemistry Parameters													
	% Solids	**77.3**		%			1	SM2540 G (11) Mod.	18-Oct-16	18-Oct-16	EEM	1618032	

Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1618309 - SW846 3546										
Blank (1618309-BLK1)					Prepared: 21-Oct-16 Analyzed: 25-Oct-16					
C9-C12 Aliphatic Hydrocarbons	< 9.74	U	mg/kg wet	9.74						
C12-C16 Aliphatic Hydrocarbons	< 9.74	U	mg/kg wet	9.74						
C16-C21 Aliphatic Hydrocarbons	< 9.74	U	mg/kg wet	9.74						
C21-C40 Aliphatic Hydrocarbons	< 9.74	U	mg/kg wet	9.74						
C10-C12 Aromatic Hydrocarbons	< 9.74	U	mg/kg wet	9.74						
C12-C16 Aromatic Hydrocarbons	< 9.74	U	mg/kg wet	9.74						
C16-C21 Aromatic Hydrocarbons	< 9.74	U	mg/kg wet	9.74						
1,2,3-Trimethylbenzene	< 0.390	U	mg/kg wet	0.390						
C21-C36 Aromatic Hydrocarbons	< 9.74	U	mg/kg wet	9.74						
Total Aliphatics	< 9.74	U	mg/kg wet	9.74						
Naphthalene	< 0.390	U	mg/kg wet	0.390						
2-Methylnaphthalene	< 0.390	U	mg/kg wet	0.390						
Total Aromatics	< 9.74	U	mg/kg wet	9.74						
Acenaphthylene	< 0.390	U	mg/kg wet	0.390						
Acenaphthene	< 0.390	U	mg/kg wet	0.390						
Fluorene	< 0.390	U	mg/kg wet	0.390						
Phenanthrene	< 0.390	U	mg/kg wet	0.390						
Anthracene	< 0.390	U	mg/kg wet	0.390						
Fluoranthene	< 0.390	U	mg/kg wet	0.390						
Pyrene	< 0.390	U	mg/kg wet	0.390						
Benzo (a) anthracene	< 0.390	U	mg/kg wet	0.390						
Chrysene	< 0.390	U	mg/kg wet	0.390						
Benzo (b) fluoranthene	< 0.390	U	mg/kg wet	0.390						
Benzo (k) fluoranthene	< 0.390	U	mg/kg wet	0.390						
Benzo (a) pyrene	< 0.390	U	mg/kg wet	0.390						
Indeno (1,2,3-cd) pyrene	< 0.390	U	mg/kg wet	0.390						
Dibenzo (a,h) anthracene	< 0.390	U	mg/kg wet	0.390						
Benzo (g,h,i) perylene	< 0.390	U	mg/kg wet	0.390						
n-Hexadecane	< 0.390	U	mg/kg wet	0.390						
n-Tetradecane	< 0.390	U	mg/kg wet	0.390						
n-Eicosane	< 0.390	U	mg/kg wet	0.390						
n-Octacosane	< 0.390	U	mg/kg wet	0.390						
Naphthalene (aliphatic fraction)	**0.00**	U	mg/kg wet							
2-Methylnaphthalene (aliphatic fraction)	**0.00**	U	mg/kg wet							
n-Nonane	< 0.390	U	mg/kg wet	0.390						
n-Decane	< 0.390	U	mg/kg wet	0.390						
n-Dodecane	< 0.390	U	mg/kg wet	0.390						
n-Octadecane	< 0.390	U	mg/kg wet	0.390						
n-Heneicosane	< 0.390	U	mg/kg wet	0.390						
n-Docosane	< 0.390	U	mg/kg wet	0.390						
n-Tetracosane	< 0.390	U	mg/kg wet	0.390						
n-Hexacosane	< 0.390	U	mg/kg wet	0.390						
n-Triacontane	< 0.390	U	mg/kg wet	0.390						
n-Dotriacontane	< 0.390	U	mg/kg wet	0.390						
n-Tetratriacontane	< 0.390	U	mg/kg wet	0.390						
n-Hexatriacontane	< 0.390	U	mg/kg wet	0.390						
n-Octatriacontane	< 0.390	U	mg/kg wet	0.390						
n-Tetracontane	< 0.390	U	mg/kg wet	0.390						
Surrogate: 1-Chlorooctadecane	*1.76*		mg/kg wet		*3.25*		*54*	*40-140*		
Surrogate: Ortho-Terphenyl	*2.97*		mg/kg wet		*3.25*		*91*	*40-140*		
Surrogate: 2-Bromonaphthalene	*1.85*		mg/kg wet		*2.60*		*71*	*40-140*		

Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1618309 - SW846 3546										
Blank (1618309-BLK1)						Prepared: 21-Oct-16 Analyzed: 25-Oct-16				
Surrogate: 2-Fluorobiphenyl	*3.09*		mg/kg wet		*2.60*		*119*	*40-140*		
LCS (1618309-BS1)						Prepared: 21-Oct-16 Analyzed: 25-Oct-16				
C9-C12 Aliphatic Hydrocarbons	**25.3**		mg/kg wet	9.97	19.9		127	40-140		
C12-C16 Aliphatic Hydrocarbons	**17.7**		mg/kg wet	9.97	13.3		133	40-140		
C16-C21 Aliphatic Hydrocarbons	**19.7**		mg/kg wet	9.97	19.9		99	40-140		
C21-C40 Aliphatic Hydrocarbons	**58.7**		mg/kg wet	9.97	66.5		88	40-140		
C10-C12 Aromatic Hydrocarbons	**10.2**		mg/kg wet	9.97	13.3		76	40-140		
C12-C16 Aromatic Hydrocarbons	**14.8**		mg/kg wet	9.97	19.9		74	40-140		
C16-C21 Aromatic Hydrocarbons	**20.0**		mg/kg wet	9.97	33.2		60	40-140		
C21-C36 Aromatic Hydrocarbons	**42.0**		mg/kg wet	9.97	53.2		79	40-140		
1,2,3-Trimethylbenzene	**4.01**		mg/kg wet	0.399	6.65		60	40-140		
Naphthalene	**4.60**		mg/kg wet	0.399	6.65		69	40-140		
2-Methylnaphthalene	**4.52**		mg/kg wet	0.399	6.65		68	40-140		
Acenaphthylene	**4.24**		mg/kg wet	0.399	6.65		64	40-140		
Acenaphthene	**4.65**		mg/kg wet	0.399	6.65		70	40-140		
Fluorene	**4.64**		mg/kg wet	0.399	6.65		70	40-140		
Phenanthrene	**4.77**		mg/kg wet	0.399	6.65		72	40-140		
Anthracene	**3.29**		mg/kg wet	0.399	6.65		49	40-140		
Fluoranthene	**4.51**		mg/kg wet	0.399	6.65		68	40-140		
Pyrene	**4.62**		mg/kg wet	0.399	6.65		70	40-140		
Benzo (a) anthracene	**4.58**		mg/kg wet	0.399	6.65		69	40-140		
Chrysene	**4.32**		mg/kg wet	0.399	6.65		65	40-140		
Benzo (b) fluoranthene	**4.71**		mg/kg wet	0.399	6.65		71	40-140		
Benzo (k) fluoranthene	**4.26**		mg/kg wet	0.399	6.65		64	40-140		
Benzo (a) pyrene	**4.30**		mg/kg wet	0.399	6.65		65	40-140		
Indeno (1,2,3-cd) pyrene	**4.22**		mg/kg wet	0.399	6.65		64	40-140		
Dibenzo (a,h) anthracene	**4.37**		mg/kg wet	0.399	6.65		66	40-140		
Benzo (g,h,i) perylene	**4.24**		mg/kg wet	0.399	6.65		64	40-140		
n-Hexadecane	**6.24**		mg/kg wet	0.399	6.65		94	40-140		
n-Tetradecane	**5.54**		mg/kg wet	0.399	6.65		83	40-140		
n-Eicosane	**6.24**		mg/kg wet	0.399	6.65		94	40-140		
n-Octacosane	**5.72**		mg/kg wet	0.399	6.65		86	40-140		
Naphthalene (aliphatic fraction)	**0.00**	U	mg/kg wet		6.65			0-200		
2-Methylnaphthalene (aliphatic fraction)	**0.00**	U	mg/kg wet		6.65			0-200		
n-Nonane	**3.00**		mg/kg wet	0.399	6.65		45	30-140		
n-Decane	**2.86**		mg/kg wet	0.399	6.65		43	40-140		
n-Dodecane	**4.76**		mg/kg wet	0.399	6.65		72	40-140		
n-Octadecane	**6.14**		mg/kg wet	0.399	6.65		92	40-140		
n-Heneicosane	**7.05**		mg/kg wet	0.399	6.65		106	40-140		
n-Docosane	**6.16**		mg/kg wet	0.399	6.65		93	40-140		
n-Tetracosane	**6.06**		mg/kg wet	0.399	6.65		91	40-140		
n-Hexacosane	**5.69**		mg/kg wet	0.399	6.65		86	40-140		
n-Triacontane	**5.66**		mg/kg wet	0.399	6.65		85	40-140		
n-Dotriacontane	**5.85**		mg/kg wet	0.399	6.65		88	40-140		
n-Tetratriacontane	**5.76**		mg/kg wet	0.399	6.65		87	40-140		
n-Hexatriacontane	**5.37**		mg/kg wet	0.399	6.65		81	40-140		
n-Octatriacontane	**4.89**		mg/kg wet	0.399	6.65		74	40-140		
n-Tetracontane	**4.66**		mg/kg wet	0.399	6.65		70	40-140		
Surrogate: 1-Chlorooctadecane	*2.85*		mg/kg wet		*3.32*		*86*	*40-140*		
Surrogate: Ortho-Terphenyl	*3.26*		mg/kg wet		*3.32*		*98*	*40-140*		
Surrogate: 2-Bromonaphthalene	*3.68*		mg/kg wet		*2.66*		*138*	*40-140*		

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Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1618309 - SW846 3546										
LCS (1618309-BS1)						Prepared: 21-Oct-16 Analyzed: 25-Oct-16				
Surrogate: 2-Fluorobiphenyl	*3.65*		mg/kg wet		*2.66*		*137*	*40-140*		
LCS (1618309-BS2)						Prepared: 21-Oct-16 Analyzed: 25-Oct-16				
C9-C12 Aliphatic Hydrocarbons	**16.5**		mg/kg wet	10.0	20.0		83	40-140		
C12-C16 Aliphatic Hydrocarbons	**14.9**		mg/kg wet	10.0	13.3		112	40-140		
C16-C21 Aliphatic Hydrocarbons	**17.3**		mg/kg wet	10.0	20.0		86	40-140		
C21-C40 Aliphatic Hydrocarbons	**52.6**		mg/kg wet	10.0	66.7		79	40-140		
C10-C12 Aromatic Hydrocarbons	**10.7**		mg/kg wet	10.0	13.3		80	40-140		
C12-C16 Aromatic Hydrocarbons	**15.1**		mg/kg wet	10.0	20.0		75	40-140		
C16-C21 Aromatic Hydrocarbons	**19.7**		mg/kg wet	10.0	33.3		59	40-140		
C21-C36 Aromatic Hydrocarbons	**43.4**		mg/kg wet	10.0	53.3		81	40-140		
1,2,3-Trimethylbenzene	**4.31**		mg/kg wet	0.400	6.67		65	40-140		
Naphthalene	**4.87**		mg/kg wet	0.400	6.67		73	40-140		
2-Methylnaphthalene	**4.72**		mg/kg wet	0.400	6.67		71	40-140		
Acenaphthylene	**4.34**		mg/kg wet	0.400	6.67		65	40-140		
Acenaphthene	**4.71**		mg/kg wet	0.400	6.67		71	40-140		
Fluorene	**4.64**		mg/kg wet	0.400	6.67		70	40-140		
Phenanthrene	**4.64**		mg/kg wet	0.400	6.67		70	40-140		
Anthracene	**3.21**		mg/kg wet	0.400	6.67		48	40-140		
Fluoranthene	**4.47**		mg/kg wet	0.400	6.67		67	40-140		
Pyrene	**4.56**		mg/kg wet	0.400	6.67		68	40-140		
Benzo (a) anthracene	**4.65**		mg/kg wet	0.400	6.67		70	40-140		
Chrysene	**4.29**		mg/kg wet	0.400	6.67		64	40-140		
Benzo (b) fluoranthene	**4.56**		mg/kg wet	0.400	6.67		68	40-140		
Benzo (k) fluoranthene	**3.42**		mg/kg wet	0.400	6.67		51	40-140		
Benzo (a) pyrene	**4.42**		mg/kg wet	0.400	6.67		66	40-140		
Indeno (1,2,3-cd) pyrene	**4.33**		mg/kg wet	0.400	6.67		65	40-140		
Dibenzo (a,h) anthracene	**4.52**		mg/kg wet	0.400	6.67		68	40-140		
Benzo (g,h,i) perylene	**4.33**		mg/kg wet	0.400	6.67		65	40-140		
n-Hexadecane	**4.78**		mg/kg wet	0.400	6.67		72	40-140		
n-Tetradecane	**4.06**		mg/kg wet	0.400	6.67		61	40-140		
n-Eicosane	**5.47**		mg/kg wet	0.400	6.67		82	40-140		
n-Octacosane	**5.68**		mg/kg wet	0.400	6.67		85	40-140		
Naphthalene (aliphatic fraction)	**0.00**	U	mg/kg wet		6.67			0-200		
2-Methylnaphthalene (aliphatic fraction)	**0.00**	U	mg/kg wet		6.67			0-200		
n-Nonane	**2.73**		mg/kg wet	0.400	6.67		41	30-140		
n-Decane	**4.65**		mg/kg wet	0.400	6.67		70	40-140		
n-Dodecane	**3.64**		mg/kg wet	0.400	6.67		55	40-140		
n-Octadecane	**5.08**		mg/kg wet	0.400	6.67		76	40-140		
n-Heneicosane	**6.10**		mg/kg wet	0.400	6.67		91	40-140		
n-Docosane	**5.90**		mg/kg wet	0.400	6.67		88	40-140		
n-Tetracosane	**5.73**		mg/kg wet	0.400	6.67		86	40-140		
n-Hexacosane	**5.74**		mg/kg wet	0.400	6.67		86	40-140		
n-Triacontane	**5.76**		mg/kg wet	0.400	6.67		86	40-140		
n-Dotriacontane	**5.72**		mg/kg wet	0.400	6.67		86	40-140		
n-Tetratriacontane	**5.73**		mg/kg wet	0.400	6.67		86	40-140		
n-Hexatriacontane	**5.56**		mg/kg wet	0.400	6.67		83	40-140		
n-Octatriacontane	**5.27**		mg/kg wet	0.400	6.67		79	40-140		
n-Tetracontane	**5.19**		mg/kg wet	0.400	6.67		78	40-140		
Surrogate: 1-Chlorooctadecane	*2.73*		mg/kg wet		*3.33*		*82*	*40-140*		
Surrogate: Ortho-Terphenyl	*3.22*		mg/kg wet		*3.33*		*97*	*40-140*		
Surrogate: 2-Bromonaphthalene	*3.16*		mg/kg wet		*2.67*		*119*	*40-140*		

Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1618309 - SW846 3546										
LCS (1618309-BS2)						Prepared: 21-Oct-16 Analyzed: 25-Oct-16				
Surrogate: 2-Fluorobiphenyl	*3.73*		mg/kg wet		*2.67*		*140*	*40-140*		
LCS Dup (1618309-BSD1)						Prepared: 21-Oct-16 Analyzed: 25-Oct-16				
C9-C12 Aliphatic Hydrocarbons	**25.7**		mg/kg wet	9.72	19.4		132	40-140	2	25
C12-C16 Aliphatic Hydrocarbons	**16.7**		mg/kg wet	9.72	13.0		129	40-140	6	25
C16-C21 Aliphatic Hydrocarbons	**18.9**		mg/kg wet	9.72	19.4		97	40-140	4	25
C21-C40 Aliphatic Hydrocarbons	**56.7**		mg/kg wet	9.72	64.8		87	40-140	3	25
C10-C12 Aromatic Hydrocarbons	**11.3**		mg/kg wet	9.72	13.0		87	40-140	11	25
C12-C16 Aromatic Hydrocarbons	**15.4**		mg/kg wet	9.72	19.4		79	40-140	4	25
C16-C21 Aromatic Hydrocarbons	**19.8**		mg/kg wet	9.72	32.4		61	40-140	1	25
C21-C36 Aromatic Hydrocarbons	**43.2**		mg/kg wet	9.72	51.8		83	40-140	3	25
1,2,3-Trimethylbenzene	**4.71**		mg/kg wet	0.389	6.48		73	40-140	16	25
Naphthalene	**5.18**		mg/kg wet	0.389	6.48		80	40-140	12	25
2-Methylnaphthalene	**4.98**		mg/kg wet	0.389	6.48		77	40-140	10	25
Acenaphthylene	**4.37**		mg/kg wet	0.389	6.48		67	40-140	3	25
Acenaphthene	**4.80**		mg/kg wet	0.389	6.48		74	40-140	3	25
Fluorene	**4.70**		mg/kg wet	0.389	6.48		73	40-140	1	25
Phenanthrene	**4.62**		mg/kg wet	0.389	6.48		71	40-140	3	25
Anthracene	**3.24**		mg/kg wet	0.389	6.48		50	40-140	2	25
Fluoranthene	**4.38**		mg/kg wet	0.389	6.48		68	40-140	3	25
Pyrene	**4.51**		mg/kg wet	0.389	6.48		70	40-140	2	25
Benzo (a) anthracene	**4.32**		mg/kg wet	0.389	6.48		67	40-140	6	25
Chrysene	**4.18**		mg/kg wet	0.389	6.48		65	40-140	3	25
Benzo (b) fluoranthene	**4.17**		mg/kg wet	0.389	6.48		64	40-140	12	25
Benzo (k) fluoranthene	**4.27**		mg/kg wet	0.389	6.48		66	40-140	0.08	25
Benzo (a) pyrene	**4.08**		mg/kg wet	0.389	6.48		63	40-140	5	25
Indeno (1,2,3-cd) pyrene	**4.03**		mg/kg wet	0.389	6.48		62	40-140	5	25
Dibenzo (a,h) anthracene	**4.19**		mg/kg wet	0.389	6.48		65	40-140	4	25
Benzo (g,h,i) perylene	**4.07**		mg/kg wet	0.389	6.48		63	40-140	4	25
n-Hexadecane	**5.73**		mg/kg wet	0.389	6.48		88	40-140	9	25
n-Tetradecane	**4.88**		mg/kg wet	0.389	6.48		75	40-140	13	25
n-Eicosane	**6.03**		mg/kg wet	0.389	6.48		93	40-140	3	25
n-Octacosane	**5.72**		mg/kg wet	0.389	6.48		88	40-140	0.02	25
Naphthalene (aliphatic fraction)	**0.00**	U	mg/kg wet		6.48			0-200		200
2-Methylnaphthalene (aliphatic fraction)	**0.00**	U	mg/kg wet		6.48			0-200		200
n-Nonane	**2.81**		mg/kg wet	0.389	6.48		43	30-140	7	25
n-Decane	**2.58**		mg/kg wet	0.389	6.48		40	40-140	10	25
n-Dodecane	**4.74**		mg/kg wet	0.389	6.48		73	40-140	0.4	25
n-Octadecane	**5.71**		mg/kg wet	0.389	6.48		88	40-140	7	25
n-Heneicosane	**6.80**		mg/kg wet	0.389	6.48		105	40-140	4	25
n-Docosane	**6.21**		mg/kg wet	0.389	6.48		96	40-140	0.8	25
n-Tetracosane	**5.83**		mg/kg wet	0.389	6.48		90	40-140	4	25
n-Hexacosane	**5.73**		mg/kg wet	0.389	6.48		88	40-140	0.7	25
n-Triacontane	**5.75**		mg/kg wet	0.389	6.48		89	40-140	1	25
n-Dotriacontane	**5.72**		mg/kg wet	0.389	6.48		88	40-140	2	25
n-Tetratriacontane	**5.70**		mg/kg wet	0.389	6.48		88	40-140	1	25
n-Hexatriacontane	**5.51**		mg/kg wet	0.389	6.48		85	40-140	3	25
n-Octatriacontane	**5.00**		mg/kg wet	0.389	6.48		77	40-140	2	25
n-Tetracontane	**4.83**		mg/kg wet	0.389	6.48		75	40-140	4	25
Surrogate: 1-Chlorooctadecane	*2.60*		mg/kg wet		*3.24*		*80*	*40-140*		
Surrogate: Ortho-Terphenyl	*3.18*		mg/kg wet		*3.24*		*98*	*40-140*		
Surrogate: 2-Bromonaphthalene	*3.59*		mg/kg wet		*2.59*		*138*	*40-140*		

Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1618309 - SW846 3546										
LCS Dup (1618309-BSD1)						Prepared: 21-Oct-16 Analyzed: 25-Oct-16				
Surrogate: 2-Fluorobiphenyl	*3.62*		mg/kg wet		*2.59*		*140*	*40-140*		
Duplicate (1618309-DUP1)			**Source: SC27181-01**			Prepared: 21-Oct-16 Analyzed: 25-Oct-16				
C9-C12 Aliphatic Hydrocarbons	< 12.9	U	mg/kg dry	12.9		BRL				50
C12-C16 Aliphatic Hydrocarbons	**18.0**		mg/kg dry	12.9		20.5			13	50
C16-C21 Aliphatic Hydrocarbons	**3.23**	J	mg/kg dry	12.9		3.40			5	50
C21-C40 Aliphatic Hydrocarbons	**10.2**	QM7, J	mg/kg dry	12.9		17.2			51	50
C10-C12 Aromatic Hydrocarbons	< 12.9	U	mg/kg dry	12.9		BRL				50
C12-C16 Aromatic Hydrocarbons	< 12.9	U	mg/kg dry	12.9		BRL				50
C16-C21 Aromatic Hydrocarbons	**6.13**	J	mg/kg dry	12.9		6.18			0.8	50
C21-C36 Aromatic Hydrocarbons	< 12.9	U	mg/kg dry	12.9		BRL				50
1,2,3-Trimethylbenzene	< 0.515	U	mg/kg dry	0.515		BRL				50
Naphthalene	< 0.515	U	mg/kg dry	0.515		BRL				50
2-Methylnaphthalene	< 0.515	U	mg/kg dry	0.515		BRL				50
Acenaphthylene	< 0.515	U	mg/kg dry	0.515		BRL				50
Acenaphthene	< 0.515	U	mg/kg dry	0.515		BRL				50
Fluorene	< 0.515	U	mg/kg dry	0.515		BRL				50
Phenanthrene	< 0.515	U	mg/kg dry	0.515		BRL				50
Anthracene	< 0.515	U	mg/kg dry	0.515		BRL				50
Fluoranthene	< 0.515	U	mg/kg dry	0.515		BRL				50
Pyrene	< 0.515	U	mg/kg dry	0.515		BRL				50
Benzo (a) anthracene	< 0.515	U	mg/kg dry	0.515		BRL				50
Chrysene	< 0.515	U	mg/kg dry	0.515		BRL				50
Benzo (b) fluoranthene	< 0.515	U	mg/kg dry	0.515		BRL				50
Benzo (k) fluoranthene	< 0.515	U	mg/kg dry	0.515		BRL				50
Benzo (a) pyrene	< 0.515	U	mg/kg dry	0.515		BRL				50
Indeno (1,2,3-cd) pyrene	< 0.515	U	mg/kg dry	0.515		BRL				50
Dibenzo (a,h) anthracene	< 0.515	U	mg/kg dry	0.515		BRL				50
Benzo (g,h,i) perylene	< 0.515	U	mg/kg dry	0.515		BRL				50
Surrogate: 1-Chlorooctadecane	*1.99*		mg/kg dry		*4.30*		*46*	*40-140*		
Surrogate: Ortho-Terphenyl	*2.86*		mg/kg dry		*4.30*		*67*	*40-140*		
Surrogate: 2-Bromonaphthalene	*1.72*		mg/kg dry		*3.44*		*50*	*40-140*		
Surrogate: 2-Fluorobiphenyl	*4.50*		mg/kg dry		*3.44*		*131*	*40-140*		
Matrix Spike (1618309-MS1)			**Source: SC27181-01**			Prepared: 21-Oct-16 Analyzed: 25-Oct-16				
C9-C12 Aliphatic Hydrocarbons	**18.8**		mg/kg dry	12.9	25.8	BRL	73	40-140		
C12-C16 Aliphatic Hydrocarbons	**12.6**	QM7, J	mg/kg dry	12.9	17.2	20.5	-46	40-140		
C16-C21 Aliphatic Hydrocarbons	**5.00**	QM7, J	mg/kg dry	12.9	25.8	3.40	6	40-140		
C21-C40 Aliphatic Hydrocarbons	**29.1**	QM7	mg/kg dry	12.9	86.1	17.2	14	40-140		
C10-C12 Aromatic Hydrocarbons	**8.88**	J	mg/kg dry	12.9	17.2	BRL	52	40-140		
C12-C16 Aromatic Hydrocarbons	**13.7**		mg/kg dry	12.9	25.8	BRL	53	40-140		
C16-C21 Aromatic Hydrocarbons	**21.9**	QM7	mg/kg dry	12.9	43.1	6.18	36	40-140		
1,2,3-Trimethylbenzene	**1.29**	QM7	mg/kg dry	0.517	8.61	BRL	15	40-140		
C21-C36 Aromatic Hydrocarbons	**52.0**		mg/kg dry	12.9	68.9	BRL	75	40-140		
Naphthalene	**3.05**	QM7	mg/kg dry	0.517	8.61	BRL	35	40-140		
2-Methylnaphthalene	**3.04**	QM7	mg/kg dry	0.517	8.61	BRL	35	40-140		
Acenaphthylene	**3.67**		mg/kg dry	0.517	8.61	BRL	43	40-140		
Acenaphthene	**3.74**		mg/kg dry	0.517	8.61	BRL	43	40-140		
Fluorene	**4.89**		mg/kg dry	0.517	8.61	BRL	57	40-140		
Phenanthrene	**5.04**		mg/kg dry	0.517	8.61	BRL	58	40-140		
Anthracene	**4.74**		mg/kg dry	0.517	8.61	BRL	55	40-140		
Fluoranthene	**4.95**		mg/kg dry	0.517	8.61	BRL	58	40-140		
Pyrene	**4.88**		mg/kg dry	0.517	8.61	BRL	57	40-140		

Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1618309 - SW846 3546										
Matrix Spike (1618309-MS1)			**Source: SC27181-01**		Prepared: 21-Oct-16 Analyzed: 25-Oct-16					
Benzo (a) anthracene	**4.96**		mg/kg dry	0.517	8.61	BRL	58	40-140		
Chrysene	**4.74**		mg/kg dry	0.517	8.61	BRL	55	40-140		
Benzo (b) fluoranthene	**4.56**		mg/kg dry	0.517	8.61	BRL	53	40-140		
Benzo (k) fluoranthene	**4.83**		mg/kg dry	0.517	8.61	BRL	56	40-140		
Benzo (a) pyrene	**4.60**		mg/kg dry	0.517	8.61	BRL	53	40-140		
Indeno (1,2,3-cd) pyrene	**4.43**		mg/kg dry	0.517	8.61	BRL	51	40-140		
Dibenzo (a,h) anthracene	**4.49**		mg/kg dry	0.517	8.61	BRL	52	40-140		
Benzo (g,h,i) perylene	**4.47**		mg/kg dry	0.517	8.61	BRL	52	40-140		
Surrogate: 1-Chlorooctadecane	*3.01*		mg/kg dry		*4.31*		*70*	*40-140*		
Surrogate: Ortho-Terphenyl	*1.75*		mg/kg dry		*4.31*		*41*	*40-140*		
Surrogate: 2-Bromonaphthalene	*2.37*		mg/kg dry		*3.45*		*69*	*40-140*		
Surrogate: 2-Fluorobiphenyl	*4.20*		mg/kg dry		*3.45*		*122*	*40-140*		

General Chemistry Parameters - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1618032 - General Preparation										
Duplicate (1618032-DUP1)			**Source: SC27181-01**		Prepared & Analyzed: 18-Oct-16					
% Solids	**78.9**		%			77.3			2	5

Notes and Definitions

J	Detected above the Method Detection Limit but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
QM7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
U	Analyte included in the analysis, but not detected at or above the MDL.
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

SC27181 NRV

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CHAIN-OF-CUSTODY RECORD

WorkOrder : R0948
Project: Horseshoe Road Site
Report Type : LEVEL 4
Purchase Order : R0948

Due Date : 10/27/2016
FAX Due Date : 10/24/2016
Report To : Agnes R Huntley

EDD Types :
Please generate a Little PEL EDD

Subcontractor:
Eurofins Spectrum Analytical, Inc. - MA
11 Almgren Drive
Agawam, Massachusetts 01001

Phone: (413) 789-9018

Invoice To:
Eurofins Spectrum Analytical, Inc.
2425 New Holland Pike
Lancaster, PA 17601
Attention: Accounts Payable
AccountsPayable@EurofinsUS.com

EQuISFacilityCode: N/A

Please e-mail results in electronic format (PDF and/or EDD) to ESAI_RI_LabResults@EurofinsUS.com.

Requested Test

Client Sample ID		Collection Date	#	Matrix	DUP/MS/MSD	Mitkem Sample ID	NJEPH_S
HSR-BF-11-101416	SC27181-01	10/14/2016 10:45	1	Soil		R0948-01C	X

Please send notice immediatley and prior to the start of sample preperation and/or analysis if certification is not held for the requested analyses. Notice should be emailed to ESAI_RI_ClientServices

1) NJEPH_S, NJ EPH BY GC-FID

Use 'Client Sample IDs' when reporting data. If needed, truncate 'Client Sample IDs' to fit on reports. Use full 'Client Sample ID' when generating EDD. # = number of containers

Comments:

		Date/Time			Date/Time
Relinquished by:	Agnes R Huntley		**Received by:**		10-17-16 1348
Relinquished by:		10-17-16	**Received by:**		10/17/16 1610
				Fridge	2.5/0/2.5 12C1

10/17/2016
Page 1 of 1

Eurofins Spectrum Analytical, Inc. -- ESAI-RI

10/26/2016

Client: Sevenson Environmental Services Inc.
Client Sample ID: HSR-BF-11-101416 **Project:** Horseshoe Road Site
Lab ID: R0948-01 **Collection Date:** 10/14/2016 10:45

Analyses	Result	Qual	MDL	RL	Units	DF	Date Analyzed	Batch ID
SW846 8082A -- PCB BY GC-ECD							**SW8082_S**	
Aroclor-1016	ND		3.3	44	ug/Kg	1	10/22/2016 3:59	85684
Aroclor-1221	ND		5.8	44	ug/Kg	1	10/22/2016 3:59	85684
Aroclor-1232	ND		3.2	44	ug/Kg	1	10/22/2016 3:59	85684
Aroclor-1242	ND		3.3	44	ug/Kg	1	10/22/2016 3:59	85684
Aroclor-1248	ND		5.0	44	ug/Kg	1	10/22/2016 3:59	85684
Aroclor-1254	ND		5.8	44	ug/Kg	1	10/22/2016 3:59	85684
Aroclor-1260	ND		2.4	44	ug/Kg	1	10/22/2016 3:59	85684
Surrogate: Tetrachloro-m-xylene	47.9			34-147	%REC	1	10/22/2016 3:59	85684
Surrogate: Decachlorobiphenyl	49.6	S		60-125	%REC	1	10/22/2016 3:59	85684

Qualifiers:
ND - Not Detected at the MDL
J - Analyte detected below Reporting Limit
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit
MDL - Method Detection Limit

Eurofins Spectrum Analytical, Inc. -- ESAI-RI

10/26/2016

Client: Sevenson Environmental Services Inc.
Client Sample ID: HSR-BF-11-101416 **Project:** Horseshoe Road Site
Lab ID: R0948-01 **Collection Date:** 10/14/2016 10:45

Analyses	Result	Qual	MDL	RL	Units	DF	Date Analyzed	Batch ID
SW846 8081B -- ORGANOCHLORINE PESTICIDES BY GC-ECD						**SW8081_S**		
alpha-BHC	ND		0.074	2.3	ug/Kg	1	10/22/2016 5:35	85686
beta-BHC	ND		0.083	2.3	ug/Kg	1	10/22/2016 5:35	85686
delta-BHC	ND		0.16	2.3	ug/Kg	1	10/22/2016 5:35	85686
gamma-BHC (Lindane)	ND		0.073	2.3	ug/Kg	1	10/22/2016 5:35	85686
Heptachlor	ND		0.095	2.3	ug/Kg	1	10/22/2016 5:35	85686
Aldrin	ND		0.15	2.3	ug/Kg	1	10/22/2016 5:35	85686
Heptachlor epoxide	ND		0.21	2.3	ug/Kg	1	10/22/2016 5:35	85686
Endosulfan I	ND		0.079	2.3	ug/Kg	1	10/22/2016 5:35	85686
Dieldrin	ND		0.21	4.4	ug/Kg	1	10/22/2016 5:35	85686
4,4´-DDE	5.4		0.33	4.4	ug/Kg	1	10/22/2016 5:35	85686
Endrin	ND		0.19	4.4	ug/Kg	1	10/22/2016 5:35	85686
Endosulfan II	ND		0.20	4.4	ug/Kg	1	10/22/2016 5:35	85686
4,4´-DDD	5.8		0.29	4.4	ug/Kg	1	10/22/2016 5:35	85686
Endosulfan sulfate	ND		0.17	4.4	ug/Kg	1	10/22/2016 5:35	85686
4,4´-DDT	ND		0.44	4.4	ug/Kg	1	10/22/2016 5:35	85686
Methoxychlor	ND		1.2	23	ug/Kg	1	10/22/2016 5:35	85686
Endrin ketone	ND		0.16	4.4	ug/Kg	1	10/22/2016 5:35	85686
Endrin aldehyde	ND		0.30	4.4	ug/Kg	1	10/22/2016 5:35	85686
Toxaphene	ND		12	230	ug/Kg	1	10/22/2016 5:35	85686
Surrogate: Tetrachloro-m-xylene	37.8			14-113	%REC	1	10/22/2016 5:35	85686
Surrogate: Decachlorobiphenyl	27.8	S		55-130	%REC	1	10/22/2016 5:35	85686

Qualifiers:
ND - Not Detected at the MDL
J - Analyte detected below Reporting Limit
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit
MDL - Method Detection Limit

Case Narrative

Lab No: 20161016

This report contains the analytical results for the 1 sample(s) received under chain of custody by ESC Lab Sciences on 10/18/2016 2:40:08 PM. These samples are associated with your Horseshoe Road Site project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

L866742
A non-standard, expedited turn of 5 business days was requested for this project.
Sample(s) were analyzed as is.

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 - EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

Client	:	Spectrum Analytical, Inc.
Client Project	:	Horseshoe Road Site
Lab Number	:	20161016
Date Reported	:	10/24/16
Date Received	:	10/18/16
Page Number	:	2 of 2

Analytical Report

Method		Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID	: **20161016-01**							
Client ID	: **HSR-BF-11-101416**							
Date Sampled	: **10/14/2016 10:45:00 AM**							
Matrix	: **SCM**							
Radiochemical Analyses								
Ra-226	DOE Ga-01-R*	0.622 +/- 0.320	0.879	pCi/g		10/18/16	10/18/16	AK

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Am-241		89.4	91.1	1.8						GS1669
Co-60		89.6	92.9	3.6						GS1669
Cs-137	0.066	99.2	101.0	1.9	NC	0.639				GS1669
Ra-226	0.061				2.8	0.231				GS1669

Lab Approval:

Ron Eidson
Director of Radiochemistry

*NELAC Certified Parameter BDL = Below Detection Limit

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CHAIN-OF-CUSTODY RECORD

eurofins | Spectrum Analytical

WorkOrder : R0948
Project: Horseshoe Road Site
Report Type : LEVEL 4
Purchase Order : R0948

Due Date : 10/27/2016
FAX Due Date : 10/24/2016
Report To : Agnes R Huntley

EDD Types :
Please generate a Little PEL EDD

Subcontractor:
ESC Lab Sciences Company
311 N Aspen Ave.
Broken Arrow, OK 74012

Phone: (918) 251-2525

Invoice To:
Eurofins Spectrum Analytical, Inc.
2425 New Holland Pike
Lancaster, PA 17601
Attention: Accounts Payable
AccountsPayable@EurofinsUS.com

EQuISFacilityCode: N/A

Please e-mail results in electronic format (PDF and/or EDD) to ESAI_RI_LabResults@EurofinsUS.com.

Requested Test

Client Sample ID	Collection Date	#	Matrix	DUP/MS/MSD	Mitkem Sample ID	RADIUM_226_S
HSR-BF-11-101416	10/14/2016 10:45	1	Soil		R0948-01G	X

Please send notice immediatley and prior to the start of sample preperation and/or analysis if certification is not held for the requested analyses. Notice should be emailed to ESAI_RI_ClientServices

1) RADIUM_226_S, RADIUM 226 (SOLID)

Use 'Client Sample IDs' when reporting data. If needed, truncate 'Client Sample IDs' to fit on reports. Use full 'Client Sample ID' when generating EDD.

= number of containers

Comments:

C866742
20161016

		Date/Time			Date/Time
Relinquished by:	Agnes R Huntley		**Received by:**		10/18/16 1408
Relinquished by:			**Received by:**		

10/17/2016

646 Camp Ave * North Kingstown * RI * 028524008 * 401-732-3400 * 401-732-3499
www.EurofinsUS.com/Spectrum

SAMPLE LOGIN

Date Received: 10/18/2016 2:40:0

Lab Number: 20161016

Due: 10/25/2016

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20161016-01 B	HSR-BF-11-10/14/16	SCM	10/14/16	Plastic	16 oz (C1)	None		Yes	Yes
20161016-01 A	HSR-BF-11-10/14/16	SCM	10/14/16	Plastic	Lg Zip Bag	None		Yes	Yes
Gamma Spec (NORM)			DOE Ga-01-R*						

CONTAINER INSPECTION

Coolers Box Custody Seals Broken Ø Temperature: Amb C Ice Radiation Survey: <300 cpm

SAMPLE INSPECTION

Sample Seal Broken Ø Chain of Custody Record ✓ Labels in Tact ✓ Radiation Survey Complete ✓

SN: 47767
4/28/17

Anomalies

Inspected By: [signature] DATE 10/18/16

QA or Designee Review: Raymond Thomas DATE 10/18/16

Sample Custodian Review: [signature] DATE 10/18/16

Project Notes:

Eurofins Spectrum Analytical, Inc. -- ESAI-RI

10/26/2016

Client: Sevenson Environmental Services Inc.
Client Sample ID: HSR-BF-11-101416 **Project:** Horseshoe Road Site
Lab ID: R0948-01 **Collection Date:** 10/14/2016 10:45

Analyses	Result	Qual	MDL	RL	Units	DF	Date Analyzed	Batch ID
SW846 8270D -- SVOA BY GC-MS						**SW8270_S**		
Phenol	ND		24	220	ug/Kg	1	10/21/2016 20:41	85685
Bis(2-chloroethyl)ether	ND		28	220	ug/Kg	1	10/21/2016 20:41	85685
2-Chlorophenol	ND		27	220	ug/Kg	1	10/21/2016 20:41	85685
1,3-Dichlorobenzene	ND		26	220	ug/Kg	1	10/21/2016 20:41	85685
1,4-Dichlorobenzene	ND		24	220	ug/Kg	1	10/21/2016 20:41	85685
1,2-Dichlorobenzene	ND		28	220	ug/Kg	1	10/21/2016 20:41	85685
2-Methylphenol	ND		25	220	ug/Kg	1	10/21/2016 20:41	85685
4-Methylphenol	ND		23	220	ug/Kg	1	10/21/2016 20:41	85685
N-Nitroso-di-n-propylamine	ND		21	220	ug/Kg	1	10/21/2016 20:41	85685
Hexachloroethane	ND		23	220	ug/Kg	1	10/21/2016 20:41	85685
Nitrobenzene	ND		25	220	ug/Kg	1	10/21/2016 20:41	85685
Isophorone	ND		22	220	ug/Kg	1	10/21/2016 20:41	85685
2,4-Dimethylphenol	ND		24	220	ug/Kg	1	10/21/2016 20:41	85685
2,4-Dichlorophenol	ND		25	220	ug/Kg	1	10/21/2016 20:41	85685
1,2,4-Trichlorobenzene	ND		30	220	ug/Kg	1	10/21/2016 20:41	85685
Naphthalene	ND		27	220	ug/Kg	1	10/21/2016 20:41	85685
Hexachlorobutadiene	ND		30	220	ug/Kg	1	10/21/2016 20:41	85685
2-Methylnaphthalene	ND		28	220	ug/Kg	1	10/21/2016 20:41	85685
Hexachlorocyclopentadiene	ND		63	220	ug/Kg	1	10/21/2016 20:41	85685
2,4,6-Trichlorophenol	ND		26	220	ug/Kg	1	10/21/2016 20:41	85685
2,4,5-Trichlorophenol	ND		24	440	ug/Kg	1	10/21/2016 20:41	85685
2-Nitroaniline	ND		14	440	ug/Kg	1	10/21/2016 20:41	85685
Acenaphthylene	ND		24	220	ug/Kg	1	10/21/2016 20:41	85685
2,6-Dinitrotoluene	ND		19	220	ug/Kg	1	10/21/2016 20:41	85685
Acenaphthene	ND		26	220	ug/Kg	1	10/21/2016 20:41	85685
2,4-Dinitrophenol	ND		120	440	ug/Kg	1	10/21/2016 20:41	85685
2,4-Dinitrotoluene	ND		15	220	ug/Kg	1	10/21/2016 20:41	85685
Diethylphthalate	ND		16	220	ug/Kg	1	10/21/2016 20:41	85685
Fluorene	ND		22	220	ug/Kg	1	10/21/2016 20:41	85685
4,6-Dinitro-2-methylphenol	ND		17	440	ug/Kg	1	10/21/2016 20:41	85685
N-Nitrosodiphenylamine	ND		19	220	ug/Kg	1	10/21/2016 20:41	85685
Hexachlorobenzene	ND		21	220	ug/Kg	1	10/21/2016 20:41	85685
Pentachlorophenol	ND		93	440	ug/Kg	1	10/21/2016 20:41	85685
Phenanthrene	ND		17	220	ug/Kg	1	10/21/2016 20:41	85685
Anthracene	ND		18	220	ug/Kg	1	10/21/2016 20:41	85685
Carbazole	ND		19	220	ug/Kg	1	10/21/2016 20:41	85685
Di-n-butylphthalate	160	J	19	220	ug/Kg	1	10/21/2016 20:41	85685
Fluoranthene	ND		19	220	ug/Kg	1	10/21/2016 20:41	85685

Qualifiers:
ND - Not Detected at the MDL
J - Analyte detected below Reporting Limit
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit
MDL - Method Detection Limit

Eurofins Spectrum Analytical, Inc. -- ESAI-RI

10/26/2016

Client: Sevenson Environmental Services Inc.
Client Sample ID: HSR-BF-11-101416 **Project:** Horseshoe Road Site
Lab ID: R0948-01 **Collection Date:** 10/14/2016 10:45

Analyses	Result	Qual	MDL	RL	Units	DF	Date Analyzed	Batch ID
SW846 8270D -- SVOA BY GC-MS							**SW8270_S**	
Pyrene	ND		21	220	ug/Kg	1	10/21/2016 20:41	85685
Butylbenzylphthalate	ND		17	220	ug/Kg	1	10/21/2016 20:41	85685
3,3´-Dichlorobenzidine	ND		23	220	ug/Kg	1	10/21/2016 20:41	85685
Benzo(a)anthracene	ND		22	220	ug/Kg	1	10/21/2016 20:41	85685
Chrysene	ND		19	220	ug/Kg	1	10/21/2016 20:41	85685
Bis(2-ethylhexyl)phthalate	400		19	220	ug/Kg	1	10/21/2016 20:41	85685
Di-n-octylphthalate	ND		19	220	ug/Kg	1	10/21/2016 20:41	85685
Benzo(b)fluoranthene	ND		26	220	ug/Kg	1	10/21/2016 20:41	85685
Benzo(k)fluoranthene	ND		28	220	ug/Kg	1	10/21/2016 20:41	85685
Benzo(a)pyrene	ND		20	220	ug/Kg	1	10/21/2016 20:41	85685
Indeno(1,2,3-cd)pyrene	ND		24	220	ug/Kg	1	10/21/2016 20:41	85685
Dibenzo(a,h)anthracene	ND		23	220	ug/Kg	1	10/21/2016 20:41	85685
Benzo(g,h,i)perylene	ND		25	220	ug/Kg	1	10/21/2016 20:41	85685
1,1´-Biphenyl	ND		28	220	ug/Kg	1	10/21/2016 20:41	85685
Acetophenone	ND		20	220	ug/Kg	1	10/21/2016 20:41	85685
Atrazine	ND		31	220	ug/Kg	1	10/21/2016 20:41	85685
Azobenzene	ND		21	220	ug/Kg	1	10/21/2016 20:41	85685
Benzaldehyde	ND		29	220	ug/Kg	1	10/21/2016 20:41	85685
Benzidine	ND		86	220	ug/Kg	1	10/21/2016 20:41	85685
Bis(2-chloroisopropyl)ether	ND		22	220	ug/Kg	1	10/21/2016 20:41	85685
Caprolactam	ND		14	220	ug/Kg	1	10/21/2016 20:41	85685
N-Nitrosodimethylamine	ND		22	220	ug/Kg	1	10/21/2016 20:41	85685
Surrogate: Nitrobenzene-d5	56.4			35-100	%REC	1	10/21/2016 20:41	85685
Surrogate: 2-Fluorobiphenyl	59.7			45-105	%REC	1	10/21/2016 20:41	85685
Surrogate: Terphenyl-d14	63.7			30-125	%REC	1	10/21/2016 20:41	85685
Surrogate: Phenol-d5	62.7			40-100	%REC	1	10/21/2016 20:41	85685
Surrogate: 2-Fluorophenol	65.5			35-105	%REC	1	10/21/2016 20:41	85685
Surrogate: 2,4,6-Tribromophenol	65.9			35-125	%REC	1	10/21/2016 20:41	85685

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Eurofins Spectrum Analytical, Inc. -- ESAI-RI

10/26/2016

Client: Sevenson Environmental Services Inc.
Client Sample ID: HSR-BF-11-101416 **Project:** Horseshoe Road Site
Lab ID: R0948-01 **Collection Date:** 10/14/2016 10:45

Analyses	Result	Qual	MDL	RL	Units	DF	Date Analyzed	Batch ID
SW846 8260C -- VOC BY GC-MS							**SW8260_LOW_S**	
Dichlorodifluoromethane	ND		1.6	8.1	ug/Kg	1	10/22/2016 2:05	85715
Chloromethane	ND		1.3	8.1	ug/Kg	1	10/22/2016 2:05	85715
Vinyl chloride	ND		1.0	8.1	ug/Kg	1	10/22/2016 2:05	85715
Bromomethane	ND		1.8	8.1	ug/Kg	1	10/22/2016 2:05	85715
Chloroethane	ND		1.6	8.1	ug/Kg	1	10/22/2016 2:05	85715
Trichlorofluoromethane	ND		0.68	8.1	ug/Kg	1	10/22/2016 2:05	85715
1,1-Dichloroethene	ND		1.5	8.1	ug/Kg	1	10/22/2016 2:05	85715
Acetone	ND		2.6	8.1	ug/Kg	1	10/22/2016 2:05	85715
Carbon disulfide	ND		0.49	8.1	ug/Kg	1	10/22/2016 2:05	85715
Methylene chloride	ND		2.1	8.1	ug/Kg	1	10/22/2016 2:05	85715
trans-1,2-Dichloroethene	ND		0.86	8.1	ug/Kg	1	10/22/2016 2:05	85715
Methyl tert-butyl ether	ND		0.99	8.1	ug/Kg	1	10/22/2016 2:05	85715
1,1-Dichloroethane	ND		1.1	8.1	ug/Kg	1	10/22/2016 2:05	85715
2-Butanone	ND		3.2	8.1	ug/Kg	1	10/22/2016 2:05	85715
cis-1,2-Dichloroethene	ND		1.2	8.1	ug/Kg	1	10/22/2016 2:05	85715
Chloroform	ND		1.0	8.1	ug/Kg	1	10/22/2016 2:05	85715
1,1,1-Trichloroethane	ND		0.86	8.1	ug/Kg	1	10/22/2016 2:05	85715
Carbon tetrachloride	ND		0.54	8.1	ug/Kg	1	10/22/2016 2:05	85715
1,2-Dichloroethane	ND		0.88	8.1	ug/Kg	1	10/22/2016 2:05	85715
Benzene	ND		0.99	8.1	ug/Kg	1	10/22/2016 2:05	85715
Trichloroethene	ND		1.0	8.1	ug/Kg	1	10/22/2016 2:05	85715
1,2-Dichloropropane	ND		1.1	8.1	ug/Kg	1	10/22/2016 2:05	85715
Bromodichloromethane	ND		1.6	8.1	ug/Kg	1	10/22/2016 2:05	85715
cis-1,3-Dichloropropene	ND		1.1	8.1	ug/Kg	1	10/22/2016 2:05	85715
Toluene	ND		0.76	8.1	ug/Kg	1	10/22/2016 2:05	85715
trans-1,3-Dichloropropene	ND		1.1	8.1	ug/Kg	1	10/22/2016 2:05	85715
1,1,2-Trichloroethane	ND		0.78	8.1	ug/Kg	1	10/22/2016 2:05	85715
Tetrachloroethene	ND		1.0	8.1	ug/Kg	1	10/22/2016 2:05	85715
Dibromochloromethane	ND		1.1	8.1	ug/Kg	1	10/22/2016 2:05	85715
1,2-Dibromoethane	ND		1.2	8.1	ug/Kg	1	10/22/2016 2:05	85715
Chlorobenzene	ND		0.83	8.1	ug/Kg	1	10/22/2016 2:05	85715
Ethylbenzene	ND		0.81	8.1	ug/Kg	1	10/22/2016 2:05	85715
m,p-Xylene	ND		2.6	8.1	ug/Kg	1	10/22/2016 2:05	85715
Xylene (Total)	ND		0.76	8.1	ug/Kg	1	10/22/2016 2:05	85715
Styrene	ND		0.84	8.1	ug/Kg	1	10/22/2016 2:05	85715
Bromoform	ND		3.2	8.1	ug/Kg	1	10/22/2016 2:05	85715
1,1,2,2-Tetrachloroethane	ND		1.1	8.1	ug/Kg	1	10/22/2016 2:05	85715
1,2-Dibromo-3-chloropropane	ND		2.1	8.1	ug/Kg	1	10/22/2016 2:05	85715

Qualifiers:
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S - Spike Recovery outside accepted recovery limits
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Eurofins Spectrum Analytical, Inc. -- ESAI-RI

10/26/2016

Client: Sevenson Environmental Services Inc.
Client Sample ID: HSR-BF-11-101416 **Project:** Horseshoe Road Site
Lab ID: R0948-01 **Collection Date:** 10/14/2016 10:45

Analyses	Result	Qual	MDL	RL	Units	DF	Date Analyzed	Batch ID
SW846 8260C -- VOC BY GC-MS							**SW8260_LOW_S**	
Acrolein	ND		8.3	41	ug/Kg	1	10/22/2016 2:05	85715
Acrylonitrile	ND		1.9	8.1	ug/Kg	1	10/22/2016 2:05	85715
Methyl acetate	ND		2.3	8.1	ug/Kg	1	10/22/2016 2:05	85715
tert-Butyl Alcohol	ND		8.1	16	ug/Kg	1	10/22/2016 2:05	85715
Surrogate: Dibromofluoromethane	102			76-128	%REC	1	10/22/2016 2:05	85715
Surrogate: 1,2-Dichloroethane-d4	92.1			88-110	%REC	1	10/22/2016 2:05	85715
Surrogate: Toluene-d8	101			85-115	%REC	1	10/22/2016 2:05	85715
Surrogate: Bromofluorobenzene	95.6			85-120	%REC	1	10/22/2016 2:05	85715

Qualifiers:
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J - Analyte detected below Reporting Limit
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
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E - Value above quantitation range
RL - Reporting Limit
MDL - Method Detection Limit

RUTGERS
New Jersey Agricultural Experiment Station

Soil Testing Laboratory
Rutgers, The State University
ASB II
57 US Highway 1 South
New Brunswick, NJ 08901-8554

Soil Test Report
Lab #: 2017-57186

Sevenson Envorinmental Services
Joel Italian
400 Horseshoe Road
Sayreville, NJ 08872

jitalian@sevenson.com
(856)745-7747

Date Received: 2017-02-01
Date Reported: 2017-02-03

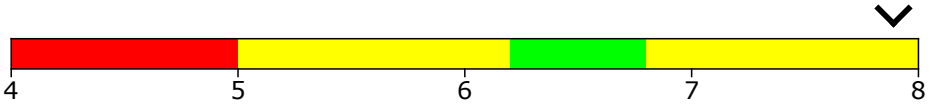
Crop or Plant
NewOrnamental shrubs and small trees, non-acid-loving

Sample ID: Wetland Topsoil

Results and Interpretations

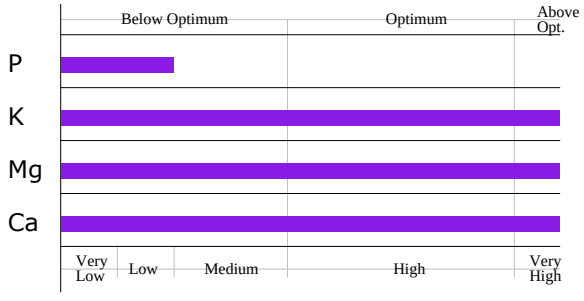
Sandy Loam

pH: 7.89 Moderately alkaline; above optimum pH for most plants.



Macronutrients (pounds per acre)

Phosphorus:	44	(Below Optimum)
Potassium:	547	(Above Optimum)
Magnesium:	482	(Above Optimum)
Calcium:	16022	(Above Optimum)



by Mehlich 3 extraction

Micronutrients (parts per million)

Zinc(Zn)	Copper(Cu)	Manganese(Mn)	Boron(B)	Iron(Fe)
5.53 (Adequate)	1.83 (Adequate)	37.00 (High)	1.10 (Adequate)	396.90 (High)

Special Tests Results

No special test data available

pH, Calcium, and Magnesium Recommendations

The soil pH is higher than the optimum range of 6.20 to 6.80 for the growth of most Ornamental shrubs and small trees, non-acid-loving. Do not apply any limestone, compost or wood ashes to the area.

Prior to new seeding/planting, soil pH should be adjusted by application and thorough mixing of powdered elemental sulfur into the root zone (8-10 inches deep). Apply the elemental sulfur at a rate of 12 pounds per 1000 square feet.

Till or otherwise mix to distribute the sulfur as uniformly as possible. Follow amendment by watering and keep soil moist over the subsequent several weeks to promote the acidification process.

Fertilizer Recommendations

BEFORE PLANTING
Target ratio for fertilizer product is: 1-1-0 ,which represents the fertilizer's relative amounts of nitrogen (N), phosphorus as P_2O_5, and potassium as K_2O.

Nitrogen requirement is 2 pounds per 1000 square feet (or, equivalent to 0.2 pound per 100 square feet). Low soil phosphorus level indicates importance of supplementing soil fertility as indicated. New plantings provide opportunity to amend the whole root zone of soil for long term fertility and tilth; subsequent management for established plantings will be limited to surface applications.

DO THIS: Broadcast a fertilizer with the indicated N:P:K ratio at a rate to achieve the desired Nitrogen requirement, and mix into the surface 6- to 8-inches. On soils that are low in organic matter or in poor tilth, amend with 4 to 5 cubic feet of organic matter, such as peat moss or compost, for each 100 square feet of area. Blend into the soil. Do not include dry fertilizer in the backfill hole; young, tender roots are especially susceptible to tissue burn. Delay surface fertilization until after the first growing season.

WHAT ABOUT NEXT YEAR?

The fertilizer prescription above is intended to bring soil nutrients to optimal or near-optimal conditions, and subsequent management recommendations are intended to maintain soil nutrients levels near optimum. The best nutrient ratio for maintenance fertilization of the ornamental shrubs and small trees beyond 2 years is best determined by another soil test.

DO THIS: Broadcast a fertilizer with 2-1-1 ratio of N:P:K at a rate to achieve 1 pound Nitrogen per 1000 square feet (or/equivalent to 0.1 pound Nitrogen per 100 square feet) on the soil surface. Rake to improve contact with soil and water lightly.

How do I find the proper fertilizer product?
For help finding appropriate fertilizers and rates, consult the Rutgers Soil Testing Laboratory website: rci.rutgers.edu/~soilslab/FertProducts/. The website lists commercially available products according to their nutrient analyses to assist you with product selection and calculation of amount required.

Select a fertilizer that has a nutrient grade (also known as guaranteed minimum analysis) the same as or a multiple of the values recommended, or select a close match to that ratio. When no single fertilizer product matches or approximates the recommended $N:P_2O_5:K_2O$ nutrient ratio, it will be necessary to use two or more fertilizers to reach the correct balance of nutrients. The proper amount of fertilizer to apply in a single application depends on the actual fertilizer grade of the fertilizer product selected, the total area (square feet) to be treated, and the total number of fertilizer applications to be made throughout the year.

Micronutrient Statements

Zinc does not appear to be a limiting factor. For information about zinc in soil for plant nutrition, see FS721.

Copper does not appear to be a limiting factor. As with most other micronutrients, copper availability is related to soil pH. Do not over-lime. For more information about soil copper, see FS720.

Manganese may be toxic to sensitive crops when grown on low pH soil. Adding lime to the soil raises the pH and decreases manganese toxicity. Liming is generally not recommended for acid-loving plants, which are more tolerant of high levels of manganese. In excessive amounts, soil manganese can cause plant damage. This occurs primarily in low pH soil. Lime soil as recommended to decrease availability of manganese to plants. Avoid fertilizers that contain manganese. See FS973 for more information.

Boron would not be a limiting factor for most plants. Plant types differ in their requirement for boron, however; certain fruit, vegetables, and field crops have greater need for boron (up to 0.75 ppm). For more information, see FS873.

Plant availability to iron is highly dependent on soil pH. Although soil iron appears plentiful, high soil pH could limit its availability. On the other hand, plant damage due to iron toxicity, though not common, could occur at low soil pH (acidic soil). Maintain soil pH in the optimum range as described in Recommendations. See FS971 for more information.

Comments:

Find Rutgers Cooperative Extension Fact Sheets at www.njaes.rutgers.edu/pubs

Soil Program 2015
NAPT
Participating Laboratory

RUTGERS
New Jersey Agricultural
Experiment Station

Soil Testing Laboratory
Rutgers, The State University
ASB II
57 US Highway 1 South
New Brunswick, NJ 08901-8554

Compost Test Report

Lab #: 2016- 56332

Sevenson Envorinmental Services
Joel Italian
1 Horseshoe Road
Sayreville, NJ 08872

jitalian@sevenson.com
(856)745-7747

Date Received: 2016-12-16
Date Reported: 2017-01-03

Sample ID: WLTS-Compost 1

Results and Interpretations

pH: 7.13 Near neutral, in the expected pH range for cured compost.

Visual Description: Moist Color: Black. As received: Moist, Loose, Composted Organic Material. Coarse rock fragments: Few (maximum size less than 1/2 inch). Organic detritus: Common Stem fragments, Sticks.

Soluble Salts- Electrical conductivity= 0.46 mmho/cm
(Very Low; may indicate lack of available minerals.)

Organic matter by loss on ignition- Organic Matter= 33.2%

Total Carbon by Carbon Analysis: Total Carbon=27.8%

Water Content-wet basis: 53.6% Solids: 46.4%

Total Nitrogen= 1.09%

Inorganic Nitrogen- Nitrate-N: <1 ppm (Low) Ammonium-N: 2 ppm (Low)

Carbon to Nitrogen Ratio: 26:1
Good; indicates adequate organic nitrogen to plants during long-term compost decomposition.

Maturity Index: 7 on a scale of 1 (raw) to 8 (fully cured)
Finished Compost, well matured, aged compost, cured; few limitations for usage

Comments: *Special Test Request: Custom Sieve. 2.9% retained on 3/8-inch sieve (97.1% passing).*

EXCAVATING MATERIALS & EQUIPMENT, INC.
849 ROUTE 539 • NEW EGYPT, NJ 08533 • 609.758.3400 • FAX: 609.758.5545

Sevenson Environmental

2749 Lockport Rd

Niagara Falls NY. 14305

Attn. Joel Italian

Dear Mr. Italian,

Please be advised that your Wetland Topsoil is made by combining our screened Topsoil with a Leaf Compost product. The Leaf Compost is made at our location by importing raw leaves and windrowing them till they are finished compost. We use a scarab windrow turner to aerate the windrows in order to make our aerobic decomposed compost product.

I hope this answers your questions.

Sincerely,

Keith Prince

Vice President

RUTGERS
New Jersey Agricultural
Experiment Station

Soil Testing Laboratory
Rutgers, The State University
ASB II
57 US Highway 1 South
New Brunswick, NJ 08901-8554

Compost Test Report

Lab #: 2016-56332

Sevenson Envorinmental Services
Joel Italian
1 Horsesshoe Road
Sayreville, NJ 08871

jitalian@sevenson.com
(856)745-7747

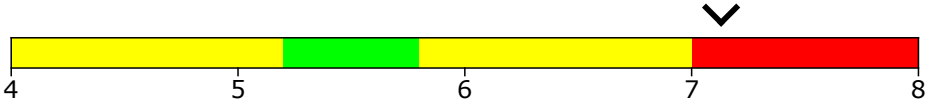
Date Received: 2016-12-16
Date Reported: 2017-01-03

Ornamental shrubs and small trees, acid-loving

Sample ID: WLTS-Compost 1

Results and Interpretations

pH: 7.13 Near neutral, in the expected pH range for cured compost.



Soluble Salts- Electrical conductivity= 0.46 mmho/cm
(Very Low; may indicate lack of available minerals.)

Organic matter by loss on ignition- Organic Matter= 33.2%

Total Carbon by Carbon Analysis: Total Carbon=27.8%

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Inorganic Nitrogen- Nitrate-N: <1 ppm (Low) Ammonium-N: 2 ppm (Low)

Carbon to Nitrogen Ratio: 26:1
Good; indicates adequate organic nitrogen to plants during long-term compost decomposition.

Maturity Index: 7 on a scale of 1 (raw) to 8 (fully cured)
Finished Compost, well matured, aged compost, cured; few limitations for usage

Comments: *Special Test Request: Custom Sieve. 2.9% retained on 3/8-inch sieve (97.1% passing).*

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ATC Group Services LLC
3 Terri Lane
Burlington, New Jersey 08016
tel. 609-386-8800 · fax 609-386-7951

MOISTURE and ORGANIC CONTENT REPORT

(ASTM D2974)

Project:	Horseshoe Road Superfund Site	**Job #:**	01030 00002
Location:	Sayerville, NJ	**Client:**	Sevenson Environmental Services, Inc.
Tech.:	S McLaughlin	**Date(s):**	10/24/2016

Moisture Content as a Percentage of Total Mass

Sample #	BS-19			
Moisture (%)	23.6%			

Organic Content

Sample #	BS-19			
Organic Content	12.2%			

Client Sample HSR-BF-11-101416

Comments:

Date: 12-17-2008
Revised:

ATC Group Services LLC
3 Terri Lane
Burlington, New Jersey 08016
tel. 609-386-8800 · fax 609-386-7951

SIEVE ANALYSIS WORKSHEET (ASTM C117 & C136)

Project:	Horseshoe Road Superfund Site	**Job #:**	01030 00002
Location:	Sayreville, NJ	**Client:**	Sevenson Environmental Services, Inc.
Technician:	Scott McLaughlin	**Date:**	10/25/2016

Sample: HSR-BF-11-101416 (BS-19) Wetland Topsoil

Mechanical Analysis

Grain Size Analysis (ASTM C117/C136)

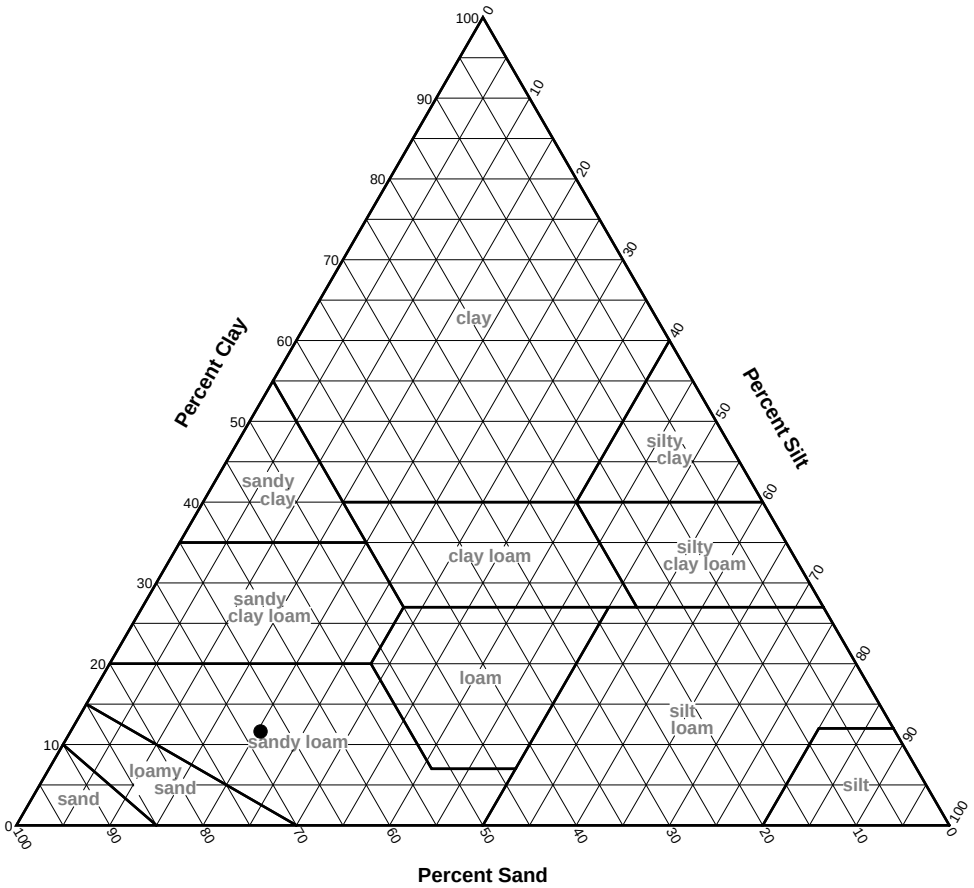
Sieve Size	% Passing
1"	100.0
3/4"	99.8
1/2"	98.6
3/8"	97.1
#4	87.1
#8	85.2
#10	84.2
#16	79.8
#30	71.9
#40	64.7
#50	53.8
#100	34.0
#200	24.8

Hydrometer Analysis (ASTM D422)

% Sand (2.000 to 0.050 mm):	68.0
% Silt (0.050 to 0.002 mm):	20.5
% Clay (finer than 0.002 mm):	11.5
USDA Classification:	Sandy Loam
Specific Gravity (ASTM D854):	2.573
Organic Content (ASTM D2974):	12.20%

Received moisture content: 23.6%

USDA Soil Classification



SOIL DATA

	Source	Sample No.	Depth	Percentages From Material Passing a #10 Sieve			Classification
				Sand	Silt	Clay	
●		HSR-BF-11-		68.0	20.5	11.5	Sandy loam
		101416					

ATC Group Services LLC
3 Terri Lane
Burlington, New Jersey 08016
tel. 609-386-8800 · fax 609-386-7951

Client: Sevenson Environmental Services, Inc.

Project: Horseshoe Road Superfund Site
Sayreville, NJ

Project No.: 01030 00002

Figure

E.M.E., Inc.

Excavating Materials and Equipment, Inc.

Joel,

EME will blend two components of sand material together to create the
Clean Sand Backfill material per Specification Section 02150 – Materials for Earthwork, Part 2, Para. 2.1 B.

This blend will be used for the Clean Sand Backfill as well as the base material for the Vegetative Cover Material which will be blended with 12-15% organic matter per Specification Section 02150 – Materials for Earthwork, Part 2, Para. 2.1 C.
.

Thanks Keith

Keith Prince
Vice President
EME Inc.
849 route 539
New Egypt, NJ 08533
609-758-3400 phone
609-758-5545 fax
keithprince.dirt@yahoo.com

SUBMITTAL FOR ACCEPTANCE

Date submitted:	Project Name and Contract No.	Location	Submittal No.
3/14/19	**Hatco Corporation Site Woodbridge Pond Remediation** Project No.: 1215	Woodbridge, NJ	018

Weston Solutions, Inc. 205 Campus Drive Edison, NJ 08837 Attn: Kinjal Shah	**Sevenson Environmental Services, Inc.** 2749 Lockport Road Niagara Falls, New York 14305
Attn: John Pyle	Contractor/Vendor Job No.:

Spec. Sect. No.	Item No.	Full Description (Name, Type, Size, Capacity Use)	Manufacturer/ Designer	Date Submittal Return Required:	Action Code*
02150	1.3; A	E.M.E. – New Egypt, NJ Borrow Source – Clean Fill Certification			1
02300	1.3; A	EME – Clean Sand Backfill and Vegetative Cover Sieve Analysis and Chemical Analysis of source			1

Special Instructions or Variances by Contractor/Vendor:

Checked by Contractor for Project Conformance
Name:/Title: Joel Czachorowski/ Project Manager/QC

Comments (or see attached sheet if needed):

Proposed source of Clean Sand Backfill and Vegetative Cover materials for use in Wetlands Restoration. EME's Fine Sand Fill will be blended at their facility with another sand material to comply with Clean Sand Backfill specifications (bring up #4 sieve percentage retained). The blended Clean Sand Backfill materials will then be utilized as the base for the Vegetative Cover materials and will be mixed with 12-15% organic matter to meet those respective material specifications.

***Acceptance Action Codes and Explanation:**

1. No exceptions taken
2. Make corrections noted
3. Amend and resubmit
4. Rejected - see comments on this page or see attached.

- Installation shall proceed only when acceptance code is #1 or #2.
- Acceptance does not relieve Contractor from responsibility of compliance with all requirements of the Subcontract documents.
- Acceptance coded 3 or 4 shall be resubmitted unless otherwise indicated.

Date Returned: 3/25/2019

By: Jason Schindler

Shop Drawing and Vendor Submittal Review

Discipline	Individual	Initial	Date	Comments

EXCAVATING MATERIALS & EQUIPMENT, INC.
849 ROUTE 539 • NEW EGYPT, NJ 08533 • 609.758.3400 • FAX: 609.758.5545

GENERAL CONTRACTOR : Sevenson Environmental **3-11-19**

CERTIFICATION: Clean Sand

PROJECT. Hatco Woodbridge NJ.

Please accept this letter as our certification that the Clean Sand to be supplied to you through EME for the above referenced project is produced at our plant located at 849 route 539 New Egypt NJ. 08533 Block 80 Lot 4.

The material provided from our pit is:
Excavated from undisturbed geologic formations;
Obtained from a licensed quarry/mine;
Not been subject to a discharged hazardous substance at any time;
Not located on or impacted by other contaminant sources;
Not comingled with any other materials;
Not known or suspected of being contaminated.
Not adversely impacted by discharges of hazardous materials or chemical applications;
Not affected by conditions or processes that would result in the introduction of contaminates into the licensed quarry/mine material in concentrations above regulatory concern; and
Not affected by conditions or processes that would increase the concentrations of contaminants already present in the licensed quarry/mine to concentrations above regulatory concern.
Also please find a copy of our state mine registration.

If you need any further assistance, please feel free to contact me.

Sincerely,

Keith Prince VP.
EME Inc.

EXCAVATING MATERIALS & EQUIPMENT, INC.
849 ROUTE 539 • NEW EGYPT, NJ 08533 • 609.758.3400 • FAX: 609.758.5545

GENERAL CONTRACTOR : Sevenson Environmental **3-11-19**

CERTIFICATION: Clean Compost

PROJECT. Hatco Woodbridge NJ.

Please accept this letter as our certification that the Clean Compost to be supplied to you through EME for the above referenced project is produced at our plant located at 849 route 539 New Egypt NJ. 08533 Block 80 Lot 4.

The material provided from our pit is:
Excavated from undisturbed geologic formations;
Obtained from a licensed quarry/mine;
Not been subject to a discharged hazardous substance at any time;
Not located on or impacted by other contaminant sources;
Not comingled with any other materials;
Not known or suspected of being contaminated.
Not adversely impacted by discharges of hazardous materials or chemical applications;
Not affected by conditions or processes that would result in the introduction of contaminates into the licensed quarry/mine material in concentrations above regulatory concern; and
Not affected by conditions or processes that would increase the concentrations of contaminants already present in the licensed quarry/mine to concentrations above regulatory concern.
Also please find a copy of our state mine registration.

If you need any further assistance, please feel free to contact me.

Sincerely,

Keith Prince VP.
EME Inc.

State of New Jersey
Department of Labor and Workforce Development

Certificate No. 004582
Expiration Date 3/31/2020

MINE REGISTRATION CERTIFICATE

ISSUED TO: E.M.E. INC

LOCATION: 849 ROUTE #539
NEW EGYPT, NJ

BLK NO(S): 80
LOT NO(S): 4
COUNTY: OCEAN

Issued pursuant to the provisions of N.J.S.A. 34:6-98.1 et. seq. Failure to comply with the provisions of the Act, and the Rules promulgated thereunder, shall be good cause for the revocation of this Certificate.

Robert Asaro-Angelo
Commissioner

THIS CERTIFICATE MUST BE POSTED AT ALL TIMES

ES-148 (R-1-05)

EMF Fine Sand fill

Screen Size				W	608
	Amt. Ret	Amt Retained	% Passing	D	587.6
Material				L	20.4
Sample Size	587.6			MOIST	3.5
1 1/2"	0.0	0.0	100.1	WASH	579.1
1"	0.0	0.0	100.1	L	8.5
3/4"	0.0	0.0	100.1		
1/2"	0.0	0.0	100.1		
3/8"	0.0	0.0	100.1		
No. 4	0.0	0.0	100.1		100
No.8	2.4	0.4	99.7	95	100
No. 10	1.1	0.2	99.5	80	100
No. 16	7.9	1.3	98.1	50	85
No. 30	24.5	4.2	94.0	25	65
No. 50	98.7	16.8	77.2	5	30
No. 100	340.1	57.9	19.3	0	10
No. 200	102.0	17.4	1.9	0	3
Pan	11.4	1.9			
2.9					
Total	588.1				
		FM	1.12		

Common Borrow