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Memorandum

To: Ray Hoy, Oregon Department of Environmental Quality

Copies: David Lacey, Oregon Department of Environmental Quality
Benjamin Leake, U.S. Environmental Protection Agency Region X
Harrison Holzgang and Alan Sprott, Vigor Industrial LLC

From: Adia Jumper, PE, Floyd|Snider

Date: April 10, 2024

Project No: Vigor Industrial – Swan Island Upland Facility – ECSI #271

Re: **Vigor Industrial LLC—Post-Phase 1 and Phase 2 EC System Sampling Work Plan**

INTRODUCTION

This Post-Phase 1 and Phase 2 EC System Sampling Work Plan (Work Plan) has been prepared by Floyd|Snider on behalf of Vigor Industrial LLC (Vigor) for its Portland Swan Island facility (facility) pursuant to the Order on Consent (Consent Order) issued by the Oregon Department of Environmental Quality (ODEQ) on December 19, 2016 (DEQ No. OPV-NWR-16-05). This Work Plan outlines the sampling requirements and methodology that will be used to confirm compliance and efficiency of the electrocoagulation stormwater treatment system (EC system) after completion of Phase 1 and Phase 2 stormwater source control measures (SCMs).

Phase 1 and Phase 2 SCMs rerouted stormwater runoff from Substantially Similar Basin Groups G, M1, and LD1-B to the facility's existing EC system. After completion of Phase 1 and Phase 2, the EC system treats approximately 33.9 acres of the facility, which includes 12.4 acres (Group Q) routed to the EC system prior to Phase 1; 11.7 acres (Groups G and M1) rerouted to the EC system during Phase 1; and 9.8 acres (Group LD1-B) rerouted to the EC system during Phase 2.

This memorandum presents the monitoring plan required to confirm compliance and efficiency of the EC system after implementation of Phase 1 and Phase 2 SCMs.

MONITORING APPROACH

A minimum of four separate storm events will be sampled for contaminants identified in Table 1, consistent with *Portland Harbor Joint Source Control Strategy* (JSCS) guidance (ODEQ and USEPA 2005). Grab samples will be collected directly from the EC system discharge point. In addition, Vigor will collect influent samples from the EC system feed tank prior to any additives or active

treatment for comparison to the effluent sample. Paired samples will be used to evaluate the performance of the EC system.

The proposed minimum sampling frequency is consistent with sampling currently conducted by Vigor under the facility's 1200-Z Permit. The facility collects two samples between July and December and two samples between January and June of each permit cycle year.

ANALYTICAL PARAMETERS FOR STORMWATER

The EC system will be analyzed for select Consent Order parameters to confirm compliance and efficiency. Analytical compliance will be based on comparison to the screening criteria, which consist of cleanup levels (CULs) presented in Table 17 of the U.S. Environmental Protection Agency Portland Harbor Record of Decision (USEPA 2017) or screening level values (SLVs) from Table 3-1 of the JSCS (ODEQ and USEPA 2005) where a CUL does not exist. The analytical schedule is based on data collected from Group Q, Group G, Group M1, and Group LD1-B in accordance with the SCM Monitoring Plan (Floyd|Snider 2020), which was implemented after contingency SCM implementation. The EC system will be sampled for parameters that may be attributed to facility activities as described in the SCM Monitoring Plan and that were detected at or greater than the screening criteria in stormwater from the basin groups collected and conveyed to the EC system. Additionally, samples were collected in March 2024 and analyzed for polychlorinated biphenyls (PCBs) to verify the absence of PCBs in stormwater conveyed to the EC system after implementation of Phase 2 SCMs. Analytical results confirmed PCBs were not detected in influent and effluent samples at the EC system. The analytical laboratory report for samples collected in March 2024 is provided as Attachment 1.

Table 1
Analytical Schedule and Exceedances, by Basin Group

Basin Group	Analyzed Parameters [(1)]	Parameters with Exceedances [(2)]
Phase 1 Group Q (including Group G and Group M1)	Arsenic,[(3)] copper, zinc, BEHP, and PAHs	Copper and zinc
Group LD1-B	Copper, zinc, and BEHP	Copper, lead,[(4)] and zinc

Notes:

1 Analyzed parameters were originally identified in Table G.1 of the SCM Monitoring Plan.
2 Parameters with exceedances were based on data collected and reported to ODEQ since implementation of the SCM Monitoring Plan.
3 Although arsenic exceedances have not occurred at Phase 1 Group Q, there have only been two rounds of arsenic sampling. Arsenic will be retained for analysis in future sampling.
4 Lead was sampled for 1200-Z Permit compliance and exceeds the Consent Order sampling criteria. Lead will be retained for analysis in future sampling.

Abbreviations:

BEHP Bis(2-ethylhexyl)phthalate
PAH Polycyclic aromatic hydrocarbon

Based on the results presented in Table 1, the EC system will be sampled for arsenic, copper, lead, and zinc to confirm that it is efficiently removing contaminants previously detected at or greater than the screening criteria in each rerouted basin group. Other parameters listed in the Consent Order will not continue to be analyzed at the EC system because recent and historical data have established that the parameter is either not attributed to facility activities or is controlled by existing SCMs and best management practices.

SAMPLING AND ANALYSIS PROTOCOLS

The SCM Monitoring Plan describes sample collection procedures, sampling techniques, and sampling equipment; analytical methods to be used on the stormwater samples; and reporting protocols that will be used to collect, analyze, and report data gathered under this Work Plan.

DATA QUALITY

Field and analytical quality assurance/quality control procedures; data reduction, validation, and reporting protocols; and corrective actions will be consistent with the SCM Monitoring Plan.

REFERENCES

Floyd|Snider. 2020. "Source Control Measures Monitoring Plan." Appendix G of *Vigor Shipyards—Swan Island Revised Monitoring and Performance Evaluation Report.* Prepared for Vigor Industrial, LLC. March.

Oregon Department of Environmental Quality (ODEQ) and U.S. Environmental Protection Agency (USEPA). 2005. *Portland Harbor Joint Source Control Strategy.* Final. December.

U.S. Environmental Protection Agency (USEPA). 2017. *Record of Decision: Portland Harbor Superfund Site, Portland Oregon.* Prepared by USEPA Region 10, Seattle, Washington. 3 January.

LIST OF ATTACHMENTS

Attachment 1 March 2024 EC System Analytical Laboratory Report

Attachment 1
March 2024 EC System Analytical Lab Report

Specialty Analytical

9011 SE Jannsen Rd
Clackamas, OR 97015
TEL: (503) 607-1331
Website: www.specialtyanalytical.com

March 29, 2024

Harrison Holzgang
Vigor Industrial LLC
5555 N Channel Ave
Portland, OR 97217
TEL: (503) 247-1974
FAX:

RE: 1200-Z Compliance/ 1396101500-61010 Order No.: 2403152

Dear Harrison Holzgang:

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Marty French
Lab Director

Specialty Analytical

WO#: **2403152**
Date Reported: **3/29/2024**

CLIENT: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

Lab ID: 2403152-001 **Matrix:** STORM WATER
Client Sample ID Q(007)-031324-Inf **Collection Date:** 3/13/2024 12:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP/MS METALS- TOTAL RECOVERABLE				**E200.8**	**E200.8**	Analyst: **AC**
Aluminum	0.0904	0.0100		mg/L	1	3/21/2024 1:19:07 PM
Arsenic	0.000223	0.000100		mg/L	1	3/21/2024 1:19:07 PM
Copper	0.0508	0.000500	BBC	mg/L	1	3/21/2024 1:19:07 PM
Iron	2.24	0.0500		mg/L	1	3/21/2024 1:19:07 PM
Lead	0.00131	0.000100		mg/L	1	3/21/2024 1:19:07 PM
Zinc	0.418	0.0200		mg/L	10	3/29/2024 12:32:11 PM
PCB'S BY EPA 608				**E608.3**	**E608.3**	Analyst: **BLM**
Aroclor 1016	ND	0.0000211		mg/L	1	3/19/2024 8:33:00 PM
Aroclor 1221	ND	0.0000211		mg/L	1	3/19/2024 8:33:00 PM
Aroclor 1232	ND	0.0000211		mg/L	1	3/19/2024 8:33:00 PM
Aroclor 1242	ND	0.0000211		mg/L	1	3/19/2024 8:33:00 PM
Aroclor 1248	ND	0.0000211		mg/L	1	3/19/2024 8:33:00 PM
Aroclor 1254	ND	0.0000211		mg/L	1	3/19/2024 8:33:00 PM
Aroclor 1260	ND	0.0000211		mg/L	1	3/19/2024 8:33:00 PM
Total PCBs	ND	0.0000211		mg/L	1	3/19/2024 8:33:00 PM
Surr: Decachlorobiphenyl	101	22 - 135		%Rec	1	3/19/2024 8:33:00 PM
NITRATE AND NITRITE				**SM4500-NO3-F**	**SM4500-NO3**	Analyst: **NK**
Nitrogen, Nitrate+Nitrite (As N)	0.0800	0.0150		mg/L	1	3/22/2024 1:31:57 PM
TOTAL SUSPENDED SOLIDS				**M2540 D**		Analyst: **AT**
Total Suspended Solids	11.0	10.0		mg/L	1	3/15/2024 4:55:28 PM
FIELD PARAMETERS				**FLD**		Analyst: **Clien**
pH, SM4500H+ B	6.83			S.U.		3/13/2024 12:40:00 PM

Specialty Analytical

WO#: **2403152**
Date Reported: **3/29/2024**

CLIENT: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

Lab ID: 2403152-002 **Matrix:** STORM WATER
Client Sample ID Q(007)-031324-Eff **Collection Date:** 3/13/2024 12:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP/MS METALS- TOTAL RECOVERABLE				**E200.8**	**E200.8**	Analyst: **AC**
Aluminum	0.0459	0.0100		mg/L	1	3/21/2024 1:22:27 PM
Arsenic	ND	0.000100		mg/L	1	3/21/2024 1:22:27 PM
Copper	0.0145	0.000500	BBC	mg/L	1	3/21/2024 1:22:27 PM
Iron	2.86	0.0500		mg/L	1	3/21/2024 1:22:27 PM
Lead	0.000394	0.000100		mg/L	1	3/21/2024 1:22:27 PM
Zinc	0.0958	0.00200		mg/L	1	3/21/2024 1:22:27 PM
PCB'S BY EPA 608				**E608.3**	**E608.3**	Analyst: **BLM**
Aroclor 1016	ND	0.000193		mg/L	1	3/19/2024 8:58:00 PM
Aroclor 1221	ND	0.000193		mg/L	1	3/19/2024 8:58:00 PM
Aroclor 1232	ND	0.000193		mg/L	1	3/19/2024 8:58:00 PM
Aroclor 1242	ND	0.000193		mg/L	1	3/19/2024 8:58:00 PM
Aroclor 1248	ND	0.000193		mg/L	1	3/19/2024 8:58:00 PM
Aroclor 1254	ND	0.000193		mg/L	1	3/19/2024 8:58:00 PM
Aroclor 1260	ND	0.000193		mg/L	1	3/19/2024 8:58:00 PM
Total PCBs	ND	0.000193		mg/L	1	3/19/2024 8:58:00 PM
Surr: Decachlorobiphenyl	98.4	22 - 135		%Rec	1	3/19/2024 8:58:00 PM
NITRATE AND NITRITE				**SM4500-NO3-F**	**SM4500-NO3**	Analyst: **NK**
Nitrogen, Nitrate+Nitrite (As N)	0.0860	0.0150		mg/L	1	3/22/2024 1:37:57 PM
TOTAL SUSPENDED SOLIDS				**M2540 D**		Analyst: **AT**
Total Suspended Solids	ND	10.0		mg/L	1	3/15/2024 4:55:28 PM
FIELD PARAMETERS				**FLD**		Analyst: **Clien**
pH, SM4500H+ B	6.91			S.U.		3/13/2024 12:50:00 PM

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **200.8**

Sample ID: **ICV**	SampType: **ICV**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **ICV**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/21/2024**	SeqNo: **688380**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.476	0.0100	0.500	0	95.2	90	110				
Arsenic	0.0478	0.000100	0.0500	0	95.5	90	110				
Copper	0.0493	0.000500	0.0500	0	98.6	90	110				B
Iron	4.94	0.0500	5.00	0	98.9	90	110				
Lead	0.0487	0.000100	0.0500	0	97.3	90	110				
Zinc	0.0489	0.00200	0.0500	0	97.7	90	110				

Sample ID: **CCB**	SampType: **CCB**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **CCB**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/21/2024**	SeqNo: **688383**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.0100									
Arsenic	ND	0.000100									
Copper	ND	0.000500									
Iron	ND	0.0500									
Lead	ND	0.000100									
Zinc	ND	0.00200									

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **200.8**

Sample ID: **CCV**	SampType: **CCV**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **CCV**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/21/2024**	SeqNo: **688387**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.479	0.0100	0.500	0	95.8	90	110				
Arsenic	0.0476	0.000100	0.0500	0	95.2	90	110				
Copper	0.0485	0.000500	0.0500	0	97.1	90	110				B
Iron	4.85	0.0500	5.00	0	96.9	90	110				
Lead	0.0476	0.000100	0.0500	0	95.2	90	110				
Zinc	0.0483	0.00200	0.0500	0	96.7	90	110				

Sample ID: **CCB**	SampType: **CCB**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **CCB**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/21/2024**	SeqNo: **688388**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.0100									
Arsenic	ND	0.000100									
Copper	ND	0.000500									
Iron	ND	0.0500									
Lead	ND	0.000100									
Zinc	ND	0.00200									

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **200.8**

Sample ID: **MB-23248**	SampType: **MBLK**	TestCode: **200.8**	Units: **mg/L**	Prep Date: **3/19/2024**	RunNo: **53269**
Client ID: **PBW**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/21/2024**	SeqNo: **688389**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.0100									
Arsenic	ND	0.000100									
Copper	0.000892	0.000500									
Iron	ND	0.0500									
Lead	ND	0.000100									
Zinc	ND	0.00200									

Sample ID: **LCS-23248**	SampType: **LCS**	TestCode: **200.8**	Units: **mg/L**	Prep Date: **3/19/2024**	RunNo: **53269**
Client ID: **LCSW**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/21/2024**	SeqNo: **688390**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.490	0.0100	0.500	0	98.0	85	115				
Arsenic	0.0462	0.000100	0.0500	0	92.4	85	115				
Copper	0.0502	0.000500	0.0500	0	100	85	115				B
Iron	4.75	0.0500	5.00	0	95.0	85	115				
Lead	0.0494	0.000100	0.0500	0	98.9	85	115				
Zinc	0.0500	0.00200	0.0500	0	100	85	115				

Qualifiers:

B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **200.8**

Sample ID: **2403188-001ADUP** SampType: **DUP** TestCode: **200.8** Units: **mg/L** Prep Date: **3/19/2024** RunNo: **53269**

Client ID: **BatchQC** Batch ID: **23248** TestNo: **E200.8** **E200.8** Analysis Date: **3/21/2024** SeqNo: **688392**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0375	0.0100						0.0363	3.06	20	
Arsenic	0.000110	0.000100						0.000227	69.4	20	RMI
Copper	0.0110	0.000500						0.0109	0.445	20	B
Iron	ND	0.0500						0	0	20	
Zinc	0.00902	0.00200						0.00889	1.44	20	

Sample ID: **2403188-001AMS** SampType: **MS** TestCode: **200.8** Units: **mg/L** Prep Date: **3/19/2024** RunNo: **53269**

Client ID: **BatchQC** Batch ID: **23248** TestNo: **E200.8** **E200.8** Analysis Date: **3/21/2024** SeqNo: **688393**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.594	0.0100	0.500	0.0363	112	70	130				
Arsenic	0.0525	0.000100	0.0500	0.000227	105	70	130				
Copper	0.0562	0.000500	0.0500	0.0109	90.6	70	130				B
Iron	4.84	0.0500	5.00	0.0332	96.2	70	130				
Zinc	0.0511	0.00200	0.0500	0.00889	84.5	70	130				

Sample ID: **2403188-001AMSD** SampType: **MSD** TestCode: **200.8** Units: **mg/L** Prep Date: **3/19/2024** RunNo: **53269**

Client ID: **BatchQC** Batch ID: **23248** TestNo: **E200.8** **E200.8** Analysis Date: **3/21/2024** SeqNo: **688394**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

B Analyte detected in the associated Method Blank

E Value above quantitation range

H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **200.8**

Sample ID: **2403188-001AMSD** SampType: **MSD** TestCode: **200.8** Units: **mg/L** Prep Date: **3/19/2024** RunNo: **53269**

Client ID: **BatchQC** Batch ID: **23248** TestNo: **E200.8** **E200.8** Analysis Date: **3/21/2024** SeqNo: **688394**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.615	0.0100	0.500	0.0363	116	70	130	0.594	3.50	20	
Arsenic	0.0537	0.000100	0.0500	0.000227	107	70	130	0.0525	2.27	20	
Copper	0.0573	0.000500	0.0500	0.0109	92.7	70	130	0.0562	1.86	20	B
Iron	5.05	0.0500	5.00	0.0332	100	70	130	4.84	4.25	20	
Zinc	0.0524	0.00200	0.0500	0.00889	87.1	70	130	0.0511	2.54	20	

Sample ID: **CCV** SampType: **CCV** TestCode: **200.8** Units: **mg/L** Prep Date: RunNo: **53269**

Client ID: **CCV** Batch ID: **23248** TestNo: **E200.8** **E200.8** Analysis Date: **3/21/2024** SeqNo: **688398**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.546	0.0100	0.500	0	109	90	110				
Arsenic	0.0530	0.000100	0.0500	0	106	90	110				
Copper	0.0504	0.000500	0.0500	0	101	90	110				B
Iron	4.94	0.0500	5.00	0	98.8	90	110				
Lead	0.0479	0.000100	0.0500	0	95.8	90	110				
Zinc	0.0485	0.00200	0.0500	0	97.0	90	110				

Qualifiers:

B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **200.8**

Sample ID: **CCB**	SampType: **CCB**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **CCB**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/21/2024**	SeqNo: **688399**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.0100									
Arsenic	ND	0.000100									
Copper	ND	0.000500									
Iron	ND	0.0500									
Lead	ND	0.000100									
Zinc	ND	0.00200									

Sample ID: **CCV**	SampType: **CCV**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **CCV**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/21/2024**	SeqNo: **688410**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.541	0.0100	0.500	0	108	90	110				
Arsenic	0.0530	0.000100	0.0500	0	106	90	110				
Copper	0.0499	0.000500	0.0500	0	99.8	90	110				B
Iron	4.90	0.0500	5.00	0	98.1	90	110				
Lead	0.0482	0.000100	0.0500	0	96.4	90	110				
Zinc	0.0481	0.00200	0.0500	0	96.3	90	110				

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **200.8**

Sample ID: **CCB**	SampType: **CCB**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **CCB**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/21/2024**	SeqNo: **688412**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.0100									
Arsenic	ND	0.000100									
Copper	ND	0.000500									
Iron	ND	0.0500									
Lead	ND	0.000100									
Zinc	ND	0.00200									

Sample ID: **2403188-001ADUP**	SampType: **DUP**	TestCode: **200.8**	Units: **mg/L**	Prep Date: **3/19/2024**	RunNo: **53269**
Client ID: **BatchQC**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/21/2024**	SeqNo: **688521**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.00100						0	0	20	

Sample ID: **2403188-001AMS**	SampType: **MS**	TestCode: **200.8**	Units: **mg/L**	Prep Date: **3/19/2024**	RunNo: **53269**
Client ID: **BatchQC**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/21/2024**	SeqNo: **688522**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0492	0.00100	0.0500	0	98.4	70	130				

Qualifiers:

B Analyte detected in the associated Method Blank

E Value above quantitation range

H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **200.8**

Sample ID: **2403188-001AMSD**	SampType: **MSD**	TestCode: **200.8**	Units: **mg/L**	Prep Date: **3/19/2024**	RunNo: **53269**
Client ID: **BatchQC**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/21/2024**	SeqNo: **688523**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0507	0.00100	0.0500	0	101	70	130	0.0492	2.93	20	

Sample ID: **CCV**	SampType: **CCV**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **CCV**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/21/2024**	SeqNo: **688524**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0470	0.000100	0.0500	0	94.1	90	110				

Sample ID: **CCB**	SampType: **CCB**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **CCB**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/21/2024**	SeqNo: **688525**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.000100									

Sample ID: **ICV**	SampType: **ICV**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **ICV**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/29/2024**	SeqNo: **690025**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0505	0.000500	0.0500	0	101	90	110				B

Qualifiers:

B Analyte detected in the associated Method Blank

E Value above quantitation range

H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **200.8**

Sample ID: **ICV**	SampType: **ICV**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **ICV**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/29/2024**	SeqNo: **690025**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	0.0509	0.00200	0.0500	0	102	90	110				

Sample ID: **CCB**	SampType: **CCB**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **CCB**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/29/2024**	SeqNo: **690028**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	ND	0.000500									
Zinc	ND	0.00200									

Sample ID: **CCV**	SampType: **CCV**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **CCV**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/29/2024**	SeqNo: **690032**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0510	0.000500	0.0500	0	102	90	110				B
Zinc	0.0514	0.00200	0.0500	0	103	90	110				

Qualifiers:

B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **200.8**

Sample ID: **CCB**	SampType: **CCB**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **CCB**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/29/2024**	SeqNo: **690033**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	ND	0.000500									
Zinc	ND	0.00200									

Sample ID: **CCV**	SampType: **CCV**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **CCV**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/29/2024**	SeqNo: **690038**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0512	0.000500	0.0500	0	102	90	110				B
Zinc	0.0514	0.00200	0.0500	0	103	90	110				

Sample ID: **CCB**	SampType: **CCB**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **CCB**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/29/2024**	SeqNo: **690039**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	ND	0.000500									
Zinc	ND	0.00200									

Qualifiers:

B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **200.8**

Sample ID: **CCB**	SampType: **CCB**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **CCB**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/29/2024**	SeqNo: **690043**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	ND	0.000500									
Zinc	ND	0.00200									

Sample ID: **CCV**	SampType: **CCV**	TestCode: **200.8**	Units: **mg/L**	Prep Date:	RunNo: **53269**
Client ID: **CCV**	Batch ID: **23248**	TestNo: **E200.8**	**E200.8**	Analysis Date: **3/29/2024**	SeqNo: **690044**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0519	0.000500	0.0500	0	104	90	110				B
Zinc	0.0517	0.00200	0.0500	0	103	90	110				

Qualifiers:

B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **608PCB_W**

Sample ID: **CCV** **PS-1161**	SampType: **CCV**	TestCode: **608PCB_W**	Units: **mg/L**	Prep Date:	RunNo: **53239**
Client ID: **CCV**	Batch ID: **23251**	TestNo: **E608.3**	**E608.3**	Analysis Date: **3/19/2024**	SeqNo: **688030**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	0.00183	0.0000200	0.00200	0	91.5	75	125				
Total PCBs	0.0110	0.0000200									

Sample ID: **MB-23251**	SampType: **MBLK**	TestCode: **608PCB_W**	Units: **mg/L**	Prep Date: **3/19/2024**	RunNo: **53239**
Client ID: **PBW**	Batch ID: **23251**	TestNo: **E608.3**	**E608.3**	Analysis Date: **3/19/2024**	SeqNo: **688031**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.0000200									
Aroclor 1221	ND	0.0000200									
Aroclor 1232	ND	0.0000200									
Aroclor 1242	ND	0.0000200									
Aroclor 1248	ND	0.0000200									
Aroclor 1254	ND	0.0000200									
Aroclor 1260	ND	0.0000200									
Total PCBs	ND	0.0000200									
Surr: Decachlorobiphenyl	186		200.0		93.0	22	135				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **608PCB_W**

Sample ID: **LCS-23251**	SampType: **LCS**	TestCode: **608PCB_W**	Units: **mg/L**	Prep Date: **3/19/2024**	RunNo: **53239**
Client ID: **LCSW**	Batch ID: **23251**	TestNo: **E608.3**	**E608.3**	Analysis Date: **3/19/2024**	SeqNo: **688032**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	0.00151	0.0000200	0.00200	0	75.6	50	140				

Sample ID: **LCSD-23251**	SampType: **LCSD**	TestCode: **608PCB_W**	Units: **mg/L**	Prep Date: **3/19/2024**	RunNo: **53239**
Client ID: **LCSS02**	Batch ID: **23251**	TestNo: **E608.3**	**E608.3**	Analysis Date: **3/19/2024**	SeqNo: **688033**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	0.00144	0.0000200	0.00200	0	71.8	50	140	0.00151	5.16	20	

Sample ID: **CCV PS-1161**	SampType: **CCV**	TestCode: **608PCB_W**	Units: **mg/L**	Prep Date:	RunNo: **53239**
Client ID: **CCV**	Batch ID: **23251**	TestNo: **E608.3**	**E608.3**	Analysis Date: **3/19/2024**	SeqNo: **688037**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	0.00188	0.0000200	0.00200	0	94.0	75	125				
Total PCBs	0.0113	0.0000200									

Qualifiers:

B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **N2N3_CWA**

Sample ID: **ICV-R53287**	SampType: **ICV**	TestCode: **N2N3_CWA**	Units: **mg/L**	Prep Date:	RunNo: **53287**
Client ID: **ICV**	Batch ID: **23267**	TestNo: **SM4500-NO3-**	**SM4500-NO3-**	Analysis Date: **3/22/2024**	SeqNo: **688755**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	0.264	0.0150	0.2500	0	106	90	110				

Sample ID: **ICB-R53287**	SampType: **ICB**	TestCode: **N2N3_CWA**	Units: **mg/L**	Prep Date:	RunNo: **53287**
Client ID: **ICB**	Batch ID: **23267**	TestNo: **SM4500-NO3-**	**SM4500-NO3-**	Analysis Date: **3/22/2024**	SeqNo: **688756**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	ND	0.0150									

Sample ID: **MB-R53287**	SampType: **MBLK**	TestCode: **N2N3_CWA**	Units: **mg/L**	Prep Date:	RunNo: **53287**
Client ID: **PBW**	Batch ID: **23267**	TestNo: **SM4500-NO3-**	**SM4500-NO3-**	Analysis Date: **3/22/2024**	SeqNo: **688758**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	ND	0.0150									

Sample ID: **LCS-R53287**	SampType: **LCS**	TestCode: **N2N3_CWA**	Units: **mg/L**	Prep Date:	RunNo: **53287**
Client ID: **LCSW**	Batch ID: **23267**	TestNo: **SM4500-NO3-**	**SM4500-NO3-**	Analysis Date: **3/22/2024**	SeqNo: **688759**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	0.517	0.0150	0.5000	0	103	90	110				

Qualifiers:

B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **N2N3_CWA**

Sample ID: **LCS-R53287**	SampType: **LCS**	TestCode: **N2N3_CWA**	Units: **mg/L**	Prep Date:	RunNo: **53287**
Client ID: **LCSW**	Batch ID: **23267**	TestNo: **SM4500-NO3-**	**SM4500-NO3-**	Analysis Date: **3/22/2024**	SeqNo: **688759**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **2403152-001CMS**	SampType: **MS**	TestCode: **N2N3_CWA**	Units: **mg/L**	Prep Date: **3/22/2024**	RunNo: **53287**
Client ID: **Q(007)-031324-Inf**	Batch ID: **23267**	TestNo: **SM4500-NO3-**	**SM4500-NO3-**	Analysis Date: **3/22/2024**	SeqNo: **688762**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	0.610	0.0150	0.5000	0.08000	106	75	120				

Sample ID: **2403152-001CMSD**	SampType: **MSD**	TestCode: **N2N3_CWA**	Units: **mg/L**	Prep Date: **3/22/2024**	RunNo: **53287**
Client ID: **Q(007)-031324-Inf**	Batch ID: **23267**	TestNo: **SM4500-NO3-**	**SM4500-NO3-**	Analysis Date: **3/22/2024**	SeqNo: **688763**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	0.610	0.0150	0.5000	0.08000	106	75	120	0.6100	0	20	

Sample ID: **CCV1-R53287**	SampType: **CCV**	TestCode: **N2N3_CWA**	Units: **mg/L**	Prep Date:	RunNo: **53287**
Client ID: **CCV**	Batch ID: **23267**	TestNo: **SM4500-NO3-**	**SM4500-NO3-**	Analysis Date: **3/22/2024**	SeqNo: **688766**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	0.494	0.0150	0.5000	0	98.8	90	110				

Qualifiers:

B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **N2N3_CWA**

Sample ID: **CCB1-R53287**	SampType: **CCB**	TestCode: **N2N3_CWA**	Units: **mg/L**	Prep Date:	RunNo: **53287**
Client ID: **CCB**	Batch ID: **23267**	TestNo: **SM4500-NO3-**	**SM4500-NO3-**	Analysis Date: **3/22/2024**	SeqNo: **688767**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	ND	0.0150									

Sample ID: **2403209-002BMS**	SampType: **MS**	TestCode: **N2N3_CWA**	Units: **mg/L**	Prep Date: **3/22/2024**	RunNo: **53287**
Client ID: **BatchQC**	Batch ID: **23267**	TestNo: **SM4500-NO3-**	**SM4500-NO3-**	Analysis Date: **3/22/2024**	SeqNo: **688768**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	0.886	0.0150	0.5000	0.3770	102	75	120				

Sample ID: **2403209-002BMSD**	SampType: **MSD**	TestCode: **N2N3_CWA**	Units: **mg/L**	Prep Date: **3/22/2024**	RunNo: **53287**
Client ID: **BatchQC**	Batch ID: **23267**	TestNo: **SM4500-NO3-**	**SM4500-NO3-**	Analysis Date: **3/22/2024**	SeqNo: **688769**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	0.905	0.0150	0.5000	0.3770	106	75	120	0.8860	2.12	20	

Sample ID: **CCV4-R53287**	SampType: **CCV**	TestCode: **N2N3_CWA**	Units: **mg/L**	Prep Date:	RunNo: **53287**
Client ID: **CCV**	Batch ID: **23267**	TestNo: **SM4500-NO3-**	**SM4500-NO3-**	Analysis Date: **3/22/2024**	SeqNo: **688783**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	0.497	0.0150	0.5000	0	99.4	90	110				

Qualifiers:

B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **N2N3_CWA**

Sample ID: **CCV4-R53287**	SampType: **CCV**	TestCode: **N2N3_CWA**	Units: **mg/L**	Prep Date:	RunNo: **53287**
Client ID: **CCV**	Batch ID: **23267**	TestNo: **SM4500-NO3-**	**SM4500-NO3-**	Analysis Date: **3/22/2024**	SeqNo: **688783**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **CCB4-R53287**	SampType: **CCB**	TestCode: **N2N3_CWA**	Units: **mg/L**	Prep Date:	RunNo: **53287**
Client ID: **CCB**	Batch ID: **23267**	TestNo: **SM4500-NO3-**	**SM4500-NO3-**	Analysis Date: **3/22/2024**	SeqNo: **688784**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	ND	0.0150									

Qualifiers:

B Analyte detected in the associated Method Blank

E Value above quantitation range

H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **TSS_WW**

Sample ID: **MB-R53203** SampType: **MBLK** TestCode: **TSS_WW** Units: **mg/L** Prep Date: RunNo: **53203**

Client ID: **PBW** Batch ID: **R53203** TestNo: **M2540 D** Analysis Date: **3/15/2024** SeqNo: **687482**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	ND	10.0									

Sample ID: **LCS-R53203** SampType: **LCS** TestCode: **TSS_WW** Units: **mg/L** Prep Date: RunNo: **53203**

Client ID: **LCSW** Batch ID: **R53203** TestNo: **M2540 D** Analysis Date: **3/15/2024** SeqNo: **687483**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	41.0	10.0	100.0	0	41.0	80	120				S

Sample ID: **2403120-001BDUP** SampType: **DUP** TestCode: **TSS_WW** Units: **mg/L** Prep Date: RunNo: **53203**

Client ID: **BatchQC** Batch ID: **R53203** TestNo: **M2540 D** Analysis Date: **3/15/2024** SeqNo: **687487**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	ND	10.0						0	0	20	RRF

Sample ID: **2403122-001ADUP** SampType: **DUP** TestCode: **TSS_WW** Units: **mg/L** Prep Date: RunNo: **53203**

Client ID: **BatchQC** Batch ID: **R53203** TestNo: **M2540 D** Analysis Date: **3/15/2024** SeqNo: **687490**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	ND	10.0						0	0	20	RRF

Qualifiers:

B Analyte detected in the associated Method Blank

E Value above quantitation range

H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: **2403152**

3/29/2024

Client: Vigor Industrial LLC

Project: 1200-Z Compliance/ 1396101500-61010 **TestCode:** **TSS_WW**

Sample ID: **2403122-001ADUP** SampType: **DUP** TestCode: **TSS_WW** Units: **mg/L** Prep Date: RunNo: **53203**

Client ID: **BatchQC** Batch ID: **R53203** TestNo: **M2540 D** Analysis Date: **3/15/2024** SeqNo: **687490**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

Sample Receipt Checklist

Client Name VIGOR Work Order Number 2403152

RcptNo: 1 Date and Time Receive 3/13/2024 3:20:38 PM Received by: Julie Clay

Completed by Reviewed by:

Completed Date: 3/13/2024 3:21:15 PM Reviewed Date: 3/13/2024 4:20:34 PM

Carrier name: Client

Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	Not Present ☐
Are matrices correctly identified on Chain of custody?	Yes ☑	No ☐	
Is it clear what analyses were requested?	Yes ☑	No ☐	
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Samples in proper container/bottle?	Yes ☑	No ☐	
Were correct preservatives used and noted?	Yes ☑	No ☐	NA ☐
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
Were container lables complete (ID, Pres, Date)?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
All samples received at a temp. of > 0° C to 6.0° C?	Yes ☐	No ☑	NA ☐
Response when temperature is outside of range:	Samples were collected the same day and chilled.		
Preservative added to bottles:			
Sample Temp. taken and recorded upon receipt?	Yes ☑	No ☐	To 7.4 ºC
Water - Were bubbles absent in VOC vials?	Yes ☐	No ☐	No Vials ☑
Water - Was there Chlorine Present?	Yes ☐	No ☐	NA ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	NA ☐
Are Samples considered acceptable?	Yes ☑	No ☐	
Custody Seals present?	Yes ☐	No ☑	
Traffic Report or Packing Lists present?	Yes ☐	No ☑	
Airbill or Sticker?	Air Bill ☐	Sticker ☐	Not Present ☑
Airbill No:			
Sample Tags Present?	Yes ☐	No ☑	
Sample Tags Listed on COC?	Yes ☐	No ☑	
Tag Numbers:			
Sample Condition?	Intact ☑	Broken ☐	Leaking ☐

Case Number: SDG: SAS:

Adjusted? _____ Checked by

Any No and/or NA (not applicable) response must be detailed in the comments section be

Specialty Analytical
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Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

Sample Receipt Checklist

Client Contacted? ☐ Yes ☑ No ☐ NA Person Contacted: Comments:

Contact Mode: ☐ Phone: ☐ Fax: ☐ Email: ☐ In Person:

Client Instructions:

Date Contacted: Contacted By:

Regarding:

CorrectiveAction:

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Specialty Analytical
Project Manager
9011 SE Jannsen Rd
Clackamas, OR 97015

RE: 2403152
Work Order Number: 2403271

March 29, 2024

Attention Project Manager:

Fremont Analytical, Inc. received 2 sample(s) on 3/15/2024 for the analyses presented in the following report.

Polyaromatic Hydrocarbons by EPA Method 625.1(SIM)

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *03/29/2024*

CLIENT: Specialty Analytical
Project: 2403152
Work Order: 2403271

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2403271-001	Q(007)-031324-Inf	03/13/2024 12:40 PM	03/15/2024 9:16 AM
2403271-002	Q(007)-031324-Eff	03/13/2024 12:50 PM	03/15/2024 9:16 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **2403271**
Date: **3/29/2024**

CLIENT: Specialty Analytical
Project: 2403152

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Note: LCSD exhibited low recovery for all analytes, some below acceptance criteria. The sample data are necessarily qualified; however, the results are consistent with a prep error limited to the LCSD. The LCS-LL, a low-level spike prepared at the level of quantitation, also recovered slightly below 50% for some analytes; however the analyte responses exceeded 3x signal-to-noise ratio, indicating sufficient sensitivity at the concentration of interest.

Qualifiers:

* - Associated LCS is outside of control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Method Detection Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2403271**
Date Reported: **3/29/2024**

Client: Specialty Analytical
Collection Date: 3/13/2024 12:40:00 PM
Project: 2403152
Lab ID: 2403271-001
Matrix: Stormwater
Client Sample ID: **Q(007)-031324-Inf**

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 625.1(SIM)				Batch ID: 43342			Analyst: RG
Naphthalene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
2-Methylnaphthalene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
1-Methylnaphthalene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Acenaphthene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Acenaphthylene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Fluorene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Phenanthrene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Anthracene	ND	0.00999	0.00999	H	µg/L	1	03/25/24 12:33:36
Fluoranthene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Pyrene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Benz(a)anthracene	ND	0.00999	0.00999	H	µg/L	1	03/25/24 12:33:36
Chrysene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Bis(2-ethylhexyl) phthalate	ND	0.999	0.333	H	µg/L	1	03/25/24 12:33:36
Benzo(b)fluoranthene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Benzo(k)fluoranthene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Benzo(a)pyrene	ND	0.00999	0.00999	H	µg/L	1	03/25/24 12:33:36
Indeno(1,2,3-cd)pyrene	ND	0.00999	0.00999	H	µg/L	1	03/25/24 12:33:36
Dibenz(a,h)anthracene	ND	0.00999	0.00999	H	µg/L	1	03/25/24 12:33:36
Benzo(g,h,i)perylene	ND	0.00999	0.00999	H	µg/L	1	03/25/24 12:33:36
Surr: 2-Fluorobiphenyl	82.9	22.3 - 126		H	%Rec	1	03/25/24 12:33:36
Surr: Terphenyl-d14	94.1	20.3 - 148		H	%Rec	1	03/25/24 12:33:36

NOTES:
* - Associated LCSD is below acceptance criteria. Refer to case narrative.

Client: Specialty Analytical
Collection Date: 3/13/2024 12:50:00 PM
Project: 2403152
Lab ID: 2403271-002
Matrix: Stormwater
Client Sample ID: **Q(007)-031324-Eff**

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 625.1(SIM)				Batch ID: 43342			Analyst: RG
Naphthalene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
2-Methylnaphthalene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
1-Methylnaphthalene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Acenaphthene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Acenaphthylene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Fluorene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Phenanthrene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Anthracene	ND	0.00997	0.00997	H	µg/L	1	03/25/24 13:03:15
Fluoranthene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Pyrene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Benz(a)anthracene	ND	0.00997	0.00997	H	µg/L	1	03/25/24 13:03:15
Chrysene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Bis(2-ethylhexyl) phthalate	ND	0.997	0.332	H	µg/L	1	03/25/24 13:03:15
Benzo(b)fluoranthene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Benzo(k)fluoranthene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Benzo(a)pyrene	ND	0.00997	0.00997	H	µg/L	1	03/25/24 13:03:15
Indeno(1,2,3-cd)pyrene	ND	0.00997	0.00997	H	µg/L	1	03/25/24 13:03:15
Dibenz(a,h)anthracene	ND	0.00997	0.00997	H	µg/L	1	03/25/24 13:03:15
Benzo(g,h,i)perylene	ND	0.00997	0.00997	H	µg/L	1	03/25/24 13:03:15
Surr: 2-Fluorobiphenyl	83.6	22.3 - 126		H	%Rec	1	03/25/24 13:03:15
Surr: Terphenyl-d14	89.9	20.3 - 148		H	%Rec	1	03/25/24 13:03:15

NOTES:
* - Associated LCSD is below acceptance criteria. Refer to case narrative.

Work Order: 2403271
CLIENT: Specialty Analytical
Project: 2403152

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 625.1(SIM)

Sample ID: **MB-43342**	SampType: **MBLK**	Units: **µg/L**	Prep Date: **3/21/2024**	RunNo: **90615**	
Client ID: **MBLKW**	Batch ID: **43342**		Analysis Date: **3/25/2024**	SeqNo: **1890009**	

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	0.00886									*
2-Methylnaphthalene	ND	0.00886									*
1-Methylnaphthalene	ND	0.00886									*
Acenaphthene	ND	0.00886									*
Acenaphthylene	ND	0.00886									*
Fluorene	ND	0.00886									*
Phenanthrene	ND	0.00886									*
Anthracene	ND	0.00886									
Fluoranthene	ND	0.00886									*
Pyrene	ND	0.00886									*
Benz(a)anthracene	ND	0.00886									
Chrysene	ND	0.00886									*
Bis(2-ethylhexyl) phthalate	ND	0.886									
Benzo(b)fluoranthene	ND	0.00886									*
Benzo(k)fluoranthene	ND	0.00886									*
Benzo(a)pyrene	ND	0.00886									*
Indeno(1,2,3-cd)pyrene	ND	0.00886									*
Dibenz(a,h)anthracene	ND	0.00886									*
Benzo(g,h,i)perylene	ND	0.00886									*
Surr: 2-Fluorobiphenyl	0.360		1.107		32.5	29	110				
Surr: Terphenyl-d14	0.583		1.107		52.7	39	124				

NOTES:
* - Associated LCS is below acceptance criteria. Result may be low-biased.

Sample ID: **LCS-43342**	SampType: **LCS**	Units: **µg/L**	Prep Date: **3/21/2024**	RunNo: **90615**	
Client ID: **LCSW**	Batch ID: **43342**		Analysis Date: **3/25/2024**	SeqNo: **1890010**	

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1.19	0.00965	2.412	0	49.2	36.3	99.6				
2-Methylnaphthalene	1.21	0.00965	2.412	0	50.3	35.9	101				
1-Methylnaphthalene	1.20	0.00965	2.412	0	49.9	37.4	103				
Acenaphthene	1.30	0.00965	2.412	0	54.0	41.7	105				

Work Order: 2403271
CLIENT: Specialty Analytical
Project: 2403152

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 625.1(SIM)

Sample ID: **LCS-43342** SampType: **LCS** Units: **µg/L** Prep Date: **3/21/2024** RunNo: **90615**
Client ID: **LCSW** Batch ID: **43342** Analysis Date: **3/25/2024** SeqNo: **1890010**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthylene	1.21	0.00965	2.412	0	50.3	41.2	108				
Fluorene	1.35	0.00965	2.412	0	55.9	46.5	109				
Phenanthrene	1.34	0.00965	2.412	0	55.5	44.7	111				
Anthracene	1.36	0.00965	2.412	0	56.4	35.4	105				
Fluoranthene	1.44	0.00965	2.412	0	59.9	48	115				
Pyrene	1.45	0.00965	2.412	0	60.1	47.3	115				
Benz(a)anthracene	1.40	0.00965	2.412	0	58.2	44.5	112				
Chrysene	1.23	0.00965	2.412	0	51.2	43.2	113				
Bis(2-ethylhexyl) phthalate	.800	0.965	2.412	0	33.2	7.52	113				J
Benzo(b)fluoranthene	1.23	0.00965	2.412	0	51.1	43.2	109				
Benzo(k)fluoranthene	0.981	0.00965	2.412	0	40.7	39.6	106				
Benzo(a)pyrene	1.10	0.00965	2.412	0	45.6	34.4	103				
Indeno(1,2,3-cd)pyrene	0.884	0.00965	2.412	0	36.7	24.4	106				
Dibenz(a,h)anthracene	0.707	0.00965	2.412	0	29.3	5.92	107				
Benzo(g,h,i)perylene	0.713	0.00965	2.412	0	29.6	15.1	105				
Surr: 2-Fluorobiphenyl	0.675		1.206		55.9	22.3	126				
Surr: Terphenyl-d14	0.791		1.206		65.6	20.3	148				

Sample ID: **LCSD-43342** SampType: **LCSD** Units: **µg/L** Prep Date: **3/21/2024** RunNo: **90615**
Client ID: **LCSW02** Batch ID: **43342** Analysis Date: **3/25/2024** SeqNo: **1890011**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	0.758	0.00953	2.384	0	31.8	36.3	99.6	1.186	44.0	30	RS
2-Methylnaphthalene	0.786	0.00953	2.384	0	33.0	35.9	101	1.213	42.8	30	RS
1-Methylnaphthalene	0.781	0.00953	2.384	0	32.8	37.4	103	1.205	42.7	30	RS
Acenaphthene	0.868	0.00953	2.384	0	36.4	41.7	105	1.304	40.1	30	RS
Acenaphthylene	0.795	0.00953	2.384	0	33.4	41.2	108	1.213	41.6	30	RS
Fluorene	0.932	0.00953	2.384	0	39.1	46.5	109	1.349	36.6	30	RS
Phenanthrene	0.986	0.00953	2.384	0	41.4	44.7	111	1.339	30.3	30	RS
Anthracene	0.990	0.00953	2.384	0	41.5	35.4	105	1.360	31.4	30	R
Fluoranthene	1.07	0.00953	2.384	0	45.0	48	115	1.444	29.5	30	S

Work Order: 2403271
CLIENT: Specialty Analytical
Project: 2403152

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 625.1(SIM)

Sample ID: **LCSD-43342** SampType: **LCSD** Units: **µg/L** Prep Date: **3/21/2024** RunNo: **90615**
Client ID: **LCSW02** Batch ID: **43342** Analysis Date: **3/25/2024** SeqNo: **1890011**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Pyrene	1.07	0.00953	2.384	0	45.1	47.3	115	1.450	29.7	30	S
Benz(a)anthracene	1.08	0.00953	2.384	0	45.1	44.5	112	1.403	26.5	30	
Chrysene	0.942	0.00953	2.384	0	39.5	43.2	113	1.235	26.9	30	S
Bis(2-ethylhexyl) phthalate	.568	0.953	2.384	0	23.8	7.52	113	0.7999	33.9	30	J
Benzo(b)fluoranthene	0.954	0.00953	2.384	0	40.0	43.2	109	1.233	25.5	30	S
Benzo(k)fluoranthene	0.746	0.00953	2.384	0	31.3	39.6	106	0.9808	27.2	30	S
Benzo(a)pyrene	0.832	0.00953	2.384	0	34.9	34.4	103	1.099	27.6	30	
Indeno(1,2,3-cd)pyrene	0.650	0.00953	2.384	0	27.3	24.4	106	0.8843	30.6	30	R
Dibenz(a,h)anthracene	0.493	0.00953	2.384	0	20.7	5.92	107	0.7066	35.7	30	R
Benzo(g,h,i)perylene	0.504	0.00953	2.384	0	21.1	15.1	105	0.7134	34.4	30	R
Surr: 2-Fluorobiphenyl	0.470		1.192		39.4	22.3	126		0		
Surr: Terphenyl-d14	0.643		1.192		54.0	20.3	148		0		

NOTES:
S - Outlying spike recovery observed (low bias). Samples will be qualified with a *.
R - High RPD observed.

Sample ID: **LCS-LL-43342** SampType: **LCS-LL** Units: **µg/L** Prep Date: **3/21/2024** RunNo: **90615**
Client ID: **BATCH** Batch ID: **43342** Analysis Date: **3/25/2024** SeqNo: **1890012**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	0.00692	0	0.009603	0	72.1	50	150				
2-Methylnaphthalene	0.00484	0	0.009603	0	50.4	50	150				
1-Methylnaphthalene	0.00489	0	0.009603	0	50.9	50	150				
Acenaphthene	0.00723	0	0.009603	0	75.3	50	150				
Acenaphthylene	0.00413	0	0.009603	0	43.0	50	150				S
Fluorene	0.00482	0	0.009603	0	50.2	50	150				
Phenanthrene	0.00595	0	0.009603	0	62.0	50	150				
Anthracene	0.00448	0	0.009603	0	46.7	50	150				S
Fluoranthene	0.00642	0	0.009603	0	66.9	50	150				
Pyrene	0.00661	0	0.009603	0	68.8	50	150				
Benz(a)anthracene	0.0109	0	0.009603	0	113	50	150				
Chrysene	0.00528	0	0.009603	0	55.0	50	150				

Work Order: 2403271
CLIENT: Specialty Analytical
Project: 2403152

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 625.1(SIM)

Sample ID: **LCS-LL-43342** SampType: **LCS-LL** Units: **µg/L** Prep Date: **3/21/2024** RunNo: **90615**
Client ID: **BATCH** Batch ID: **43342** Analysis Date: **3/25/2024** SeqNo: **1890012**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bis(2-ethylhexyl) phthalate	0.0434	0	0.009603	0	452	50	150				S
Benzo(b)fluoranthene	0.00484	0	0.009603	0	50.4	50	150				
Benzo(k)fluoranthene	0.00510	0	0.009603	0	53.1	50	150				
Benzo(a)pyrene	0.00376	0	0.009603	0	39.2	50	150				S
Indeno(1,2,3-cd)pyrene	0.00410	0	0.009603	0	42.7	50	150				S
Dibenz(a,h)anthracene	0.00403	0	0.009603	0	42.0	50	150				S
Benzo(g,h,i)perylene	0.00429	0	0.009603	0	44.7	50	150				S
Surr: 2-Fluorobiphenyl	0.595		1.200		49.6	29	110				
Surr: Terphenyl-d14	0.859		1.200		71.6	29	124				

NOTES:
S - Outlying spike recovery observed; signal-to-noise check passes. Non-detects will be reported without qualification.

Fremont Analytical
An Alliance Technical Group Company

Sample Log-In Check List

Client Name:	SPECIAL	Work Order Number:	2403271
Logged by:	Morgan Wilson	Date Received:	3/15/2024 9:16:00 AM

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	UPS		

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☑	No ☐	Not Present ☐
4.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☑	No ☐	NA ☐
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all hold times (except field parameters, pH e.g.) able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

Item Information

Item #	Temp ºC
Sample	2.2

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Chain of Custody Record

Date: 03/13/2024 | Page: 1 of: 1 | Laboratory Project No (internal): 2403271

Project Name: 2403152 | Temperature on Receipt: °C

Client: Specialty Analytical | Project No: | PO No: | Cooling: | Shipped Via:

Address: 9011 SE Jannsen Rd | Collected by: Client | Custody Seal: Y / N Intact / Broken Cooler / Bottle

City, State, Zip: Clackamas, OR, 97015 | State Collected: OR ☑ WA ☐ OTHER | MDL ☑ TIER IV ☐ EDD ☑

Telephone: 503-607-1331 | Report To (PM): PM / Mandy Wehe | Sample Disposal: ☐ Return to client ☑ Disposal by lab (after 60 days)

AP Email: mandy@specialtyanalytical.com | PM Email: PM@specialtyanalytical.com / mandy@specialtyanalytical.com

	Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Requested Tests: LL 625***	Comments
1	Q(007)-031324-Inf	3/13/24	1240	SW	1	✓	*** Standard PAH List +
2	Q(007)-031324-Eff	3/13/24	1250	SW	1	✓	Bis(2-ethylhexyl) phthalate
3							
4							
5							
6							
7							
8							
9							
10							

*Matrix: A = Air, AQ = Aqueous, L=Liquid, O = Oil, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water, M = Miscellaneous

Turn-around Time: Standard (5-7 Business): ☑ 3 Day: ☐ 2 Day: ☐ Next Day: ☐ Same Day: ☐

Expedited turn-around requests should be coordinated in advance

Relinquished	Date/Time	Received	Date/Time
x [signature]	3-13-24 1600	x [signature] 3115	9:16AM
x		x	
x		x	

Specialty Analytical
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Clackamas, OR 97015
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Fax: 503-607-1336

Chain of Custody Record

Date: 03/13/2024 | Page: 1 of: 1 | Laboratory Project No (internal): 2403152

Project Name: 1200-Z Compliance | Temperature on Receipt: 7.4 °C

Project No: 1396101500-61010 PO No: 214912 | Cooling: ICE | Shipped Via: Client

Collected by: S. Eubanks, H. Holzgang | Custody Seal: Y / N Intact / Broken Cooler / Bottle

State Collected: OR ✓ WA ☐ OTHER | MDL ☐ TIER IV ☐ EDD ✓

Report To (PM): S. Eubanks, H. Holzgang | Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 60 days)

Client: Vigor Industrial LLC

Address: 5555 N Channel Ave

City, State, Zip: Portland, OR 97217

Telephone: 503-839-5471

AP Email: apallco@vigor.net

PM Email: harrison.holzgang@vigor.net; shannon.eubanks@vigor.net

	Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Total CU, Pb, Zn, Al, Fe, As	TSS	Nitrate + Nitrite Nitrogen	BEHP (625.1 SIM)	PAH (625.1SIM)	PCBs (608.3)							Comments
						Requested Tests												
1	Q(007)-031324-Inf	3/13/24	12:40	SW	6	✓	✓	✓	✓	✓	✓							pH= 6.83
2	Q(007)-031324-Eff	3/13/24	12:50	SW	6	✓	✓	✓	✓	✓	✓							pH= 6.91
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

*Matrix: A=Air, AQ=Aqueous, L=Liquid, O=Oil, P=Product, S=Soil, SD=Sediment, SL=Solid, W=Water, DW=Drinking Water, GW=Ground Water, SW=Storm Water, WW=Waste Water, M=Miscellaneous

Turn-around Time: Standard (5-7 Business): ✓ 3 Day: ☐ 2 Day: ☐ Next Day: ☐ Same Day: ☐

Expedited turn-around requests should be coordinated in advance

Relinquished	Date/Time	Received	Date/Time
x	3/13/24 15:17	x	3/13/24 15:17
x		x	
x		x	

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Website: www.specialtyanalytical.com

Definition Only

WO#: **2403152**
Date: **3/29/2024**

Definitions:

KEY TO FLAGS

A: This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was qualified against gasoline calibration standards.

A1: This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was qualified against diesel calibration standards.

A2: This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was qualified against lube oil calibration standards.

A3: The results was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.

A4: The product appears to be aged or degraded.

B: The blank exhibited a positive result greater than the reporting limit for this compound.

BC: Sample concentration is >10x positive result in blank. Data is considered acceptable.

CN: See Case Narrative.

E: Result exceeds the calibration range for this compound. The result should be considered an estimate.

F: The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.

FS: Follow-up testing is suggested.

G: Result may be biased high due to biogenic interferences. Clean up is recommended.

H: Sample was analyzed outside recommended holding time.

HT: At client's request, samples was analyzed outside of recommended holding time.

HP: Sample was analyzed outside recommended holding time due to VOA having pH >2.

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Date: **3/29/2024**

Definitions:

J: The results for this analyte is between the MDL and the PQL and should be considered an estimated concentration.

K: Diesel result is biased high due to amount of Oil contained in the sample.

L: Diesel result is biased high due to amount of Gasoline contained in the sample.

M: Oil result is biased high due to amount of Diesel contained in the sample.

N: Gasoline result is biased high due to amount of Diesel contained in the sample.

MC: Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.

MI: Result is outside control limits due to matrix interference.

NH: Sample matrix is non-homogeneous

MSA: Value determined by Method of Standard Addition.

O: Laboratory Control Standard (LCS) exceeded laboratory control limits but meets CCV criteria. Data meets EPA requirements.

Q: Detection levels elevated due to sample matrix.

R: RPD control limits were exceeded

RF: Duplicate failed due to result being at or near the method-reporting limit.

RP: Matrix spike values exceed established QC limits; post digestion spike is in control.

S: Recovery is outside control limits.

SC: CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.

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Definition Only

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Date: **3/29/2024**

Definitions:

SL: LCS exceeded recovery control limits, but associated MS/MSD passing. Data meets EPA requirements.

SV: CCV exceded low recovery control limits. ND as reported evaluated using EPA method 8260D section 11.4.3.2

TA: Sample treated with ascorbic acid for the removal of thiocyanates.

TS: Sample treated with Sodium Sulfite for the removal of chlorine.