APPENDIX L

CHEMISTRY DATA VALIDATION REPORTS

Chemistry Data Validation Summary Tables



Table L-1. 2018 RHMP Laboratory Data Validation Report Summary - Seawater

Compound Group	Qualification	Compound(s)	Compound(s)	Flag(s)	Issue	Stations Affected Count	Analytes Count	Samples Affected Count	Number of SDGs affected	% of RHMP Samples Affected (78 total [75 + 3 field reps])	% of SDGs affected (9 total)
		Silver (Ag), Dissolved	Silver (Ag), Dissolved	UJ	%R below acceptable limit	7	1	7	1	9%	11%
	CRM Recovery	Silver (Ag), Total	Silver (Ag), Total	UJ	%R below acceptable limit	7	1	7	1	9%	11%
	CRIVI Recovery	Zinc (Zn), Dissolved	Zinc (Zn), Dissolved	J	%R above acceptable limit	10	1	10	1	13%	11%
		Zinc (Zn), Total	Zinc (Zn), Total	J	%R above acceptable limit	10	1	10	1	13%	11%
	Holding Time Evenedones	Mercury (Hg), Dissolved	Mercury (Hg), Dissolved	UJ	Holding Time Exceedance	73	1	73	7	94%	78%
	Holding Time Exceedance	Mercury (Hg), Total	Mercury (Hg), Total	UJ	Holding Time Exceedance	73	1	73	7	94%	78%
		Aluminum (Al), Total	Aluminum (Al), Total	J	%R above acceptable limit	23	1	23	2	29%	22%
		Aluminum (AI), Total	Aluminum (Al), Total	J	%R below acceptable limit	14	1	14	2	18%	22%
Metals		Antimony (Sb), Dissolved	Antimony (Sb), Dissolved	J	%R above acceptable limit	7	1	7	1	9%	11%
ivietais		Antimony (Sb), Total	Antimony (Sb), Total	J	%R below acceptable limit	68	1	68	9	87%	100%
		Beryllium (Be), Total	Beryllium (Be), Total	J,UJ	%R below acceptable limit	40	1	40	4	51%	44%
	140/1405	Iron (Fe), Dissolved	Iron (Fe), Dissolved	J	%R above acceptable limit	1	1	1	1	1%	11%
	MS/MSD	Iron (Fe), Total	Iron (Fe), Total	J	%R below acceptable limit	42	1	42	6	54%	67%
		Manganese (Mn), Total	Manganese (Mn), Total	J	%R below acceptable limit	19	1	19	2	24%	22%
		Silver (Ag), Total	Silver (Ag), Total	J	%R below acceptable limit	13	1	13	2	17%	22%
		Tin (Sn), Total	Tin (Sn), Total	J	%R below acceptable limit	5	1	5	2	6%	22%
		Titanium (Ti), Total	Titanium (Ti), Total	J	%R above acceptable limit	12	1	12	3	15%	33%
		Titanium (Ti), Total	Titanium (Ti), Total	J	%R below acceptable limit	27	1	27	4	35%	44%
		1-Methylnaphthalene, Total	1-Methylnaphthalene, Total	UJ. J	%R below acceptable limit	29	1	29	3	37%	33%
		2,6-Dimethylnaphthalene	2,6-Dimethylnaphthalene	UJ, J	%R below acceptable limit	17	1	17	2	22%	22%
		2-Methylnaphthalene, Total	2-Methylnaphthalene, Total	UJ, J	%R below acceptable limit	29	1	29	3	37%	33%
	LCS/LCSD Recovery	Acenaphthene	Acenaphthene	J, ÚJ	%R below acceptable limit	17	1	17	2	22%	22%
DALL	•	Biphenyl	Biphenyl	J, UJ	%R below acceptable limit	17	1	17	2	22%	22%
PAHs		Naphthalene, Total	Naphthalene, Total	J	%R above acceptable limit	1	1	1	1	1%	11%
		Naphthalene, Total	Naphthalene, Total	J, UJ	%R below acceptable limit	33	1	33	4	42%	44%
ľ		1-Methylnaphthalene, Total	1-Methylnaphthalene, Total	ÚJ	%R below acceptable limit	1	1	1	1	1%	11%
	MS/MSD	2-Methylnaphthalene, Total	2-Methylnaphthalene, Total	UJ	%R below acceptable limit	1	1	1	1	1%	11%
		Naphthalene, Total	Naphthalene, Total	UJ (all non-detects)	%R below acceptable limit	2	1	2	2	3%	22%
14/ + 6/		Nitrate as N	Nitrate as N	J. R	Holding Time Exceedance	78	1	78	9	100%	100%
Wet Chemistry	Holding Time Exceedance	Total Orthophosphate as P	Total Orthophosphate as P	J. R	Holding Time Exceedance	77	1	77	8	99%	89%

Red Text indicates "R" Flag
Black Text with red highlight indicates those that affect 50% or more of the samples

Sediment

Table L-2.
2018 RHMP Laboratory Data Validation Report Summary - Sediment

Compund Group	Qualification	Compund(s)	Flag(s)	Issue	% of RHMP Samples Affected (78 total [75 + 3 field reps])	% of SDGs affected (9 total)
		gamma-Chlordane	J, NA	%R above acceptable limit	24%	56%
	CRM Recovery	gamma-Chlordane	NA, J	RPD above limit	4%	11%
		Endrin aldehyde	NA	RPD above limit	24%	22%
	Duplicate Sample Analysis	Endosulfan I, Endrin aldehyde	NA	RPD above limit	4%	11%
		Methoxychlor, Perthane	NA	%R above acceptable limit	95%	100%
		Endosulfan II, Endrin aldehyde, alpha-BHC, Hexachlorobenzene	UJ (all non-detects)	%R below acceptable limit	24%	44%
		Endosulfan II, Endrin aldehyde, alpha-Chlordane, cis-Nonachlor	J, UJ	%R below acceptable limit	24%	33%
		Dicofol, Endosulfan I, Endosulfan II, Endrin aldehyde	UJ (all non-detects)	%R below acceptable limit	26%	33%
	LCS/LCSD Recovery	Endosulfan II, Endrin aldehyde	UJ	%R below acceptable limit	26%	22%
Chlorinated Pesticides		Endosulfan I	R	%R below acceptable limit	74%	89%
		Endrin aldehyde	NA	RPD above limit	26%	33%
		Endosulfan II	NA	RPD above limit	6%	11%
		Endosulfan I, Endrin aldehyde	NA	RPD above limit	14%	11%
F		Methoxychlor, Perthane	NA	%R above acceptable limit	4%	33%
		Dicofol, Endosulfan I, Endosulfan II, Endrin aldehyde	UJ (all non-detects)	%R below acceptable limit	1%	11%
		Endosulfan I	R	%R below acceptable limit	1%	11%
	MS/MSD	Endosulfan II, Endrin aldehyde	UJ (all non-detects)	%R below acceptable limit	1%	11%
		Endosulfan I, Endosulfan II, Endrin aldehyde	UJ (all non-detects)	%R below acceptable limit	3%	22%
		Endrin aldehyde	NA	RPD above limit	5%	44%
Fipronyls	MS/MSD	Fipronil desulfinyl	NA	%R above acceptable limit	1%	11%
. q. e j. e	CRM Recovery	Aluminum	.1	%R above acceptable limit	27%	11%
		Iron	ı i	%R slightly above acceptable limit	21%	33%
		Aluminum	ı i	RPD slightly above limit	10%	11%
-		Chromium	i	RPD above limit	5%	11%
	Duplicate Sample Analysis	Barium	J J	RPD above limit	12%	11%
		Cadmium	J J	RPD slightly above limit	17%	11%
	Halding Time Everadance	Mercury	J	Holding Time Exceedance	100%	100%
Motolo	Holding Time Exceedance	Aluminum	J	· ·		
Metals	LCS/LCSD Recovery		J	%R above acceptable limit	22%	11%
		Barium	J .	%R above acceptable limit	17%	22%
		Mercury	J .	%R above acceptable limit	26%	22%
		Iron	J	%R below acceptable limit	12%	11%
	MS/MSD	Silver	UJ (all non-detects)	%R below acceptable limit	13%	11%
		Chromium	J .	%R slightly above acceptable limit	5%	11%
		Barium	J .	RPD above limit	18%	22%
		Aluminum, Iron	J	RPD above limit	22%	22%
	CRM Recovery	Benzo(k)fluoranthene	J	%R below acceptable limit	49%	67%
L	Grain receivery	2-Methylnaphthalene	J	%R slightly below acceptable limit	26%	33%
		Acenaphthene	NA	RPD above limit	1%	11%
		Benzo(a)pyrene, Benzo(e)pyrene, Benzo(k)fluoranthene, Chrysene,				
		Fluoranthene, Pyrene	J	RPD above limit	1%	11%
		Anthracene, Chrysene, Dibenzo(a,h)anthracene, Dibenzothiophene,				
	Duplicate Sample Analysis	Fluoranthene, Phenanthrene, Pyrene	J	RPD above limit	1%	11%
PAHs		1-Methylnaphthalene, 2,6-Dimethylnaphthalene, 2-Methylnaphthalene,				
		Acenaphthene, Dibenzo(a,h)anthracene, Fluorene, Naphthalene	J	RPD above limit	1%	11%
		1-Methylnaphthalene, 2-Methylnaphthalene	J	RPD slightly above limit	1%	11%
Ī		Benzo(a)anthracene, Indeno(1,2,3-cd)pyrene	J	%R above acceptable limit	26%	33%
	1 00/1 00D D -	1-Methylnaphthalene, 2-Methylnaphthalene, Biphenyl, Naphthalene, 2,6-				
	LCS/LCSD Recovery	Dimethylnaphthalene, Acenaphthene	J	%R below acceptable limit	76%	78%
		Anthracene	J	%R slightly below acceptable limit	24%	44%

Table L-2. 2018 RHMP Laboratory Data Validation Report Summary - Sediment

Compund Group	Qualification	Compund(s)	Flag(s)	Issue	% of RHMP Samples Affected (78 total [75 + 3 field reps])	% of SDGs affected (9 total)
		Benzo(a)anthracene, Benzo(b)fluoranthene, Indeno(1,2,3-cd)pyrene,				
		Dibenzo(a,h)anthracene, Fluoranthene	J	%R above acceptable limit	1%	11%
		Benzo(b)fluoranthene, Fluoranthene	J	%R above acceptable limit	1%	11%
		2-Methylnaphthalene	J	%R below acceptable limit	1%	11%
PAHs	MS/MSD	Naphthalene	J	%R below acceptable limit	4%	33%
		1-Methylnaphthalene	J	%R below acceptable limit	3%	22%
		Benzo(a)anthracene	J	%R slightly above acceptable limit	1%	11%
		Naphthalene	J	RPD above limit	1%	11%
		2-Methylnaphthalene	J	RPD slightly above limit	1%	11%
	Duplicate Sample Analysis	PBDE 099, PBDE 100, PBDE 153, PBDE 154, PBDE 209	J	RPD above limit	1%	11%
	LCS/LCSD Recovery	PBDE 190, PBDE 209	J, UJ	%R below acceptable limit	76%	56%
PBDEs -	LC3/LC3D Recovery	PBDE 209	J, NA	RPD above limit	32%	22%
PDDES		PBDE 183, PBDE 190, PBDE 209	J, UJ	%R below acceptable limit	5%	44%
	MS/MSD	PBDE 183, PBDE 209	NA, J	%R slightly above acceptable limit	3%	11%
		PBDE 190, PBDE 209	NA	RPD above limit	3%	22%
	CRM Recovery	PCB-105, PCB-118, PCB-128, PCB-156, PCB-206	J, UJ	%R below acceptable limit	35%	44%
		PCB-105, PCB-118, PCB-156	J, UJ	%R below acceptable limit	44%	67%
		PCB-128, PCB-156	J, UJ	RPD above limit	22%	11%
	Dunlingto Commis Analysis	PCB-099, PCB-180, PCB-209	J	RPD above limit	1%	11%
	Duplicate Sample Analysis	PCB-031	J	RPD slightly above limit	1%	11%
PCBs		PCB-180, PCB-206, PCB-209	J	%R above acceptable limit	24%	44%
	LCC/LCCD Decovery	PCB-169, PCB-189,PCB-195	NA, J	%R above acceptable limit	82%	89%
	LCS/LCSD Recovery	PCB-003, PCB-005	UJ (all non-detects)	%R below acceptable limit	24%	44%
		PCB-049	J	RPD slightly above limit	1%	11%
	MONAGE	PCB-189, PCB-194, PCB-195, PCB-206	NA	%R slighly above limit	1%	11%
	MS/MSD	PCB-099, PCB-118, PCB-138, PCB-158, PCB-177, PCB-206	J	RPD slightly above limit	1%	11%
	Duplicate Sample Analysis	Danitol (Fenpropathrin)	J	RPD slightly above limit	1%	11%
	•	Allethrin	UJ	%R above acceptable limit	1%	11%
		Cyhalothrin, total lambda	NA	%R above acceptable limit	4%	33%
Countle atia Domathusia		Permethrin, cis-	NA, UJ	%R above acceptable limit	3%	22%
Synthetic Pyrethroid Pesticides	MC/MCD	Deltamethrin/Tralomethrin, Prallethrin	UJ	%R below acceptable limit	1%	11%
Pesticides	MS/MSD	Prallethrin	NA, UJ	%R below acceptable limit	4%	33%
		Deltamethrin/Tralomethrin, Prallethrin	NA	RPD above limit	1%	11%
		Fluvalinate, Prallethrin	NA	RPD above limit	1%	11%
		Prallethrin	NA	RPD slightly above limit	1%	11%
	Dunligata Cample Analysis	Grain size (Phi 1.5)	J	RPD above limit	17%	11%
	Duplicate Sample Analysis	Grain size-Phi 2.0	J, UJ	RPD slightly above limit	22%	11%
Wet Chemistry	Halding Time Even deser	Total nitrogen	R	Holding Time Exceedance	3%	11%
·	Holding Time Exceedance	AVS, Ammonia as N, Total Nitrogen	J	Holding Time Exceedance	100%	100%
 	MS/MSD	AVS	J	%R below acceptable limit	45%	44%

Red Text indicates "R" Flag
Black Text with red highlight indicates those that affect 50% or more of the samples

Chemistry Data Validation Reports (LDC)



2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Wood Environment & Infrastructure 9210 Sky Park Ct San Diego, CA 92123 Attn: Ms. Corey Sheredy corey.sheredy@woodplc.com July 31, 2019

SUBJECT: 2018 Regional Harbor Monitoring Program, Data Validation

Dear Ms. Sheredy

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 27, 2019. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #45386:

SDG # Fraction

1807003-001, 1807003-003 1807003-005, 1807003-007 1807003-009, 1807003-011 1807003-013, 1807003-015 1807003-017 Polynuclear Aromatic Hydrocarbons, Metals, Wet Chemistry

The data validation was performed under Level II & IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California; August 2013
- USEPA National Functional Guidelines for Organic Superfund Methods Data Review, January 2017
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review;
 January 2017
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng

pgeng@lab-data.com

Project Manager/Senior Chemist

Attachment 1 1381pages-ADV LDC #45386 (Wood Environment & Infrastructure Solutions-San Diego, CA / Level II/IV - Client Select 2018 Regional Harbor Monitoring Program) Diss. Metals Metals (1640 (1640 Oil & PO, P. /200.8 MBAS NO,-N Grease TSS DATE DATE PAH /200.8 NH₂-N DOC (4500 (5310B) (5540C) (4500E) (1664B) SDG# REC'D DUE /245.7) /245.7) (4500)PE) (2540D) LDC (625)W W S s w s W S S S S W S W S W S W S S Matrix: Water/Sediment 5 06/27/19 07/19/19 5 0 5 5 5 5 5 5 0 5 1807003-001 07/19/19 13 13 В 13 0 13 13 0 13 0 0 13 13 1807003-003 06/27/19 10 0 10 0 10 0 0 10 10 0 10 0 10 10 10 1807003-005 06/27/19 07/19/19 10 0 9 0 9 0 9 D 1807003-007 06/27/19 07/19/19 0 9 D 1807003-007 06/27/19 07/19/19 8 0 8 0 8 0 0 8 8 8 Ε 12 0 0 12 12 0 12 06/27/19 07/19/19 12 12 0 12 0 12 0 12 0 12 0 0 1807003-009 0 6 0 6 0 6 07/19/19 6 1807003-011 06/27/19 G 1807003-013 07/19/19 11 0 0 0 0 0 06/27/19 11 11 11 Н 07/19/19 4 0 4 0 4 0 0 4 0 4 0 4 0 4 4 0 4 0 1807003-015 06/27/19 4 0 0 1807003-017 06/27/19 07/19/19 0 0 0 0 0 0 J/PG Γotal

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

July 10, 2019

Parameters:

Polynuclear Aromatic Hydrocarbons

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-001

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-SW-EB	56370	Water	07/10/18
B18-10065	56371	Water	07/10/18
B18-10066	56372	Water	07/10/18
B18-10067	56373	Water	07/10/18
B18-10068	56374	Water	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) Method 625

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to nonconformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

The chain-of-custodies were reviewed for documentation of cooler temperatures. Cooler temperatures all samples was reported at 10.9°C upon receipt by the laboratory.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample B18-SW-EB was identified as an equipment blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Replicates

No field replicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-001	Compound reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in five samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-001

Sample	Compound	Flag	A or P	Reason (Code)
B18-SW-EB B18-10065 B18-10066 B18-10067 B18-10068	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-001

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 1807003-001

No Sample Data Qualified in this SDG

	Validation Area			Co	mments	
l.	Sample receipt/Technical holding times	W/A	Temp	@ 10.90	e - 1/11	A Text
II.	GC/MS Instrument performance check	N	/			
11.	Initial calibration/ICV	N/N				To
V.	Continuing calibration	N.				
/	Laboratory Blanks	A				
/I.	Field blanks	NO	ZB=/			
11.	Surrogate spikes	A	,			
III.	Matrix spike/Matrix spike duplicates	\mathcal{N}	05			
Χ.	Laboratory control samples	A	Les/t	5		
ζ	Field duplicates	N				
(1.	Internal standards					
11.	Compound quantitation RL/LOQ/LODs	N				
	Target compound identification	N				
III. <u> </u>	<u> </u>					
	System performance	N				
V. V.	System performance Overall assessment of data	A				
V. V.	System performance Overall assessment of data A = Acceptable ND N = Not provided/applicable R = SW = See worksheet FB	N = No compound Rinsate = Field blank	s detected	D = Duplicate TB = Trip blank EB = Equipment	OTHER:	
v. v.	System performance Overall assessment of data A = Acceptable ND N = Not provided/applicable R = SW = See worksheet FB:	= No compound Rinsate	s detected	TB = Trip blank EB = Equipment Lab ID	OTHER:	Date
V. V.	System performance Overall assessment of data A = Acceptable ND N = Not provided/applicable R = SW = See worksheet FB: Client ID 318-SW-EB	= No compound Rinsate	s detected	TB = Trip blank EB = Equipment Lab ID 56370	OTHER: blank Matrix Water	Date 07/10/18
V. V.	System performance Overall assessment of data A = Acceptable ND N = Not provided/applicable R = SW = See worksheet FB : Client ID 318-SW-EB 318-10065	= No compound Rinsate	s detected	TB = Trip blank EB = Equipment Lab ID 56370 56371	Matrix Water Water	Date 07/10/18 07/10/18
V. V.	System performance Overall assessment of data A = Acceptable ND N = Not provided/applicable R = SW = See worksheet FB: Client ID 318-SW-EB 318-10065 318-10066	= No compound Rinsate	s detected	TB = Trip blank EB = Equipment Lab ID 56370 56371 56372	Matrix Water Water Water Water	Date 07/10/18 07/10/18 07/10/18
E	System performance Overall assessment of data A = Acceptable ND N = Not provided/applicable R = SW = See worksheet FB: Client ID 318-SW-EB 318-10065 318-10066 318-10067	= No compound Rinsate	s detected	TB = Trip blank EB = Equipment Lab ID 56370 56371 56372 56373	Matrix Water Water Water Water Water Water	Date 07/10/18 07/10/18 07/10/18
V. V. E:	System performance Overall assessment of data A = Acceptable ND N = Not provided/applicable R = SW = See worksheet FB: Client ID 318-SW-EB 318-10065 318-10066	= No compound Rinsate	s detected	TB = Trip blank EB = Equipment Lab ID 56370 56371 56372	Matrix Water Water Water Water	Date 07/10/18 07/10/18 07/10/18
IV. V.	System performance Overall assessment of data A = Acceptable ND N = Not provided/applicable R = SW = See worksheet FB: Client ID 318-SW-EB 318-10065 318-10066 318-10067	= No compound Rinsate	s detected	TB = Trip blank EB = Equipment Lab ID 56370 56371 56372 56373	Matrix Water Water Water Water Water Water	Date 07/10/18 07/10/18 07/10/18
V. V.	System performance Overall assessment of data A = Acceptable ND N = Not provided/applicable R = SW = See worksheet FB: Client ID 318-SW-EB 318-10065 318-10066 318-10067	= No compound Rinsate	s detected	TB = Trip blank EB = Equipment Lab ID 56370 56371 56372 56373	Matrix Water Water Water Water Water Water	Date 07/10/18 07/10/18 07/10/18 07/10/18
V. V.	System performance Overall assessment of data A = Acceptable ND N = Not provided/applicable R = SW = See worksheet FB: Client ID 318-SW-EB 318-10065 318-10066 318-10067 318-10068	= No compound Rinsate	s detected	TB = Trip blank EB = Equipment Lab ID 56370 56371 56372 56373	Matrix Water Water Water Water Water Water	Date 07/10/18 07/10/18 07/10/18

VALIDATION COMPLETENESS WORKSHEET

Level II

Reviewer: 2nd Reviewer:

LDC #: 45386A2b

SDG #: 1807003-001

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA Method 625)

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

July 16, 2019

Parameters:

Metals

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-001

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-SW-EB	56370	Water	07/10/18
B18-10065	56371	Water	07/10/18
B18-10066	56372	Water	07/10/18
B18-10067	56373	Water	07/10/18
B18-10068	56374	Water	07/10/18
B18-SW-EBF	56370F	Water	07/10/18
B18-10065F	56371F	Water	07/10/18
B18-10066F	56372F	Water	07/10/18
B18-10067F	56373F	Water	07/10/18
B18-10068F	56374F	Water	07/10/18
B18-10065MS	56371MS	Water	07/10/18
B18-10065MSD	56371MSD	Water	07/10/18
B18-10065DUP	56371DUP	Water	07/10/18
B18-10066MS	56372MS	Water	07/10/18
B18-10066MSD	56372MSD	Water	07/10/18
B18-10066DUP	56372DUP	Water	07/10/18
B18-10068MS	56374MS	Water	07/10/18
B18-10068MSD	56374MSD	Water	07/10/18
B18-10068DUP	56374DUP	Water	07/10/18
B18-10065FDUP	56371FDUP	Water	07/10/18
B18-10066FDUP	56372FDUP	Water	07/10/18
B18-10068FDUP	56374FDUP	Water	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Thallium, Tin, Titanium, Vanadium, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 1640 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-SW-EB B18-10065 B18-10066 B18-10067 B18-10068 B18-SW-EBF B18-10065F B18-10066F B18-10067F B18-10068F	Mercury	45	28	UJ (all non-detects)	Р

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Samples B18-SW-EB and B18-SW-EBF were identified as equipment blanks. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Analyte	Concentration	Associated Samples
B18-SW-EB	07/10/18	Cadmium Copper Lead Molybdenum Nickel Tin Zinc	0.0242 ug/L 0.0762 ug/L 0.0276 ug/L 0.034 ug/L 0.0206 ug/L 0.0303 ug/L 3.98 ug/L	B18-10065 B18-10066 B18-10067 B18-10068

Blank ID	Collection Date	Analyte	Concentration	Associated Samples
B18-SW-EBF	07/10/18	Antimony Cadmium Copper Iron Lead Tin Titanium Zinc	0.0125 ug/L 0.00412 ug/L 0.113 ug/L 2.75 ug/L 0.0101 ug/L 0.0191 ug/L 0.0443 ug/L 2.12 ug/L	B18-10065F B18-10066F B18-10067F B18-10068F

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated field blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
B18-10065	Cadmium	0.0432 ug/L	0.0432U ug/L
	Lead	0.0859 ug/L	0.0859U ug/L
	Zinc	13.3 ug/L	13.3U ug/L
B18-10066	Cadmium	0.0817 ug/L	0.0817U ug/L
	Lead	0.084 ug/L	0.084U ug/L
B18-10067	Cadmium	0.0469 ug/L	0.0469U ug/L
	Lead	0.115 ug/L	0.115U ug/L
	Zinc	18.2 ug/L	18.2U ug/L
B18-10068	Cadmium	0.0415 ug/L	0.0415U ug/L
	Lead	0.109 ug/L	0.109U ug/L
	Zinc	8.29 ug/L	8.29U ug/L
B18-10065F	Lead	0.0289 ug/L	0.0289U ug/L
	Tin	0.018 ug/L	0.018U ug/L
	Zinc	10.6 ug/L	10.6U ug/L
B18-10066F	Iron	0.538 ug/L	0.538U ug/L
B18-10067F	Iron	0.533 ug/L	0.533U ug/L
	Lead	0.0387 ug/L	0.0387U ug/L
B18-10068F	Lead	0.02 ug/L	0.02U ug/L
	Zinc	8.46 ug/L	8.46U ug/L

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10065MS/MSD (B18-10065 B18-10066 B18-10067 B18-10068)	Aluminum Antimony	2 (75-125) 10 (75-125)	33 (75-125) 10 (75-125)	J (all detects) J (all detects)	А
B18-10065MS/MSD (B18-10065 B18-10066 B18-10067 B18-10068)	Iron Titanium	51 (75-125) 30 (75-125)	50 (75-125) 62 (75-125)	J (all detects) J (all detects)	А

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

Spike ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10065MS/MSD (B18-10065 B18-10066 B18-10067 B18-10068)	Aluminum Titanium	177 (≤25) 70 (≤25)	J (all detects) J (all detects)	A

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10065DUP (B18-10065 B18-10066 B18-10067 B18-10068)	Lead	26 (≤25)	J (all detects)	А
B18-10065FDUP (B18-10065F B18-10066F B18-10067F B18-10068F)	Lead	27 (≤25)	J (all detects)	А

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Standard Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

XI. Field Replicates

No field replicates were identified in this SDG.

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-001	Analyte reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, MS/MSD %R and RPD, DUP RPD, and results reported below the RL and above the MDL, data were qualified as estimated in ten samples.

Due to equipment blank contamination, data were qualified as not detected in eight samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-001

Sample	Analyte	Flag	A or P	Reason (Code)
B18-SW-EB B18-10065 B18-10066 B18-10067 B18-10068 B18-SW-EBF B18-10065F B18-10066F B18-10067F B18-10068F	Mercury	UJ (all non-detects)	Р	Technical holding times (H)
B18-10065 B18-10066 B18-10067 B18-10068	Aluminum Antimony Iron Titanium	J (all detects) J (all detects) J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10065 B18-10066 B18-10067 B18-10068	Aluminum Titanium	J (all detects) J (all detects)	Α	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10065 B18-10066 B18-10067 B18-10068 B18-10065F B18-10066F B18-10067F B18-10068F	Lead	J (all detects)	A	Duplicate sample analysis (RPD) (HD)
B18-SW-EB B18-10065 B18-10066 B18-10067 B18-10068 B18-SW-EBF B18-10065F B18-10066F B18-10067F B18-10068F	Analyte reported below the RL and above the MDL	J (all detects)	А	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-001

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program Metals - Field Blank Data Qualification Summary - SDG 1807003-001

Sample	Analyte	Modified Final Concentration	A or P	Code
B18-10065	Cadmium Lead Zinc	0.0432U ug/L 0.0859U ug/L 13.3U ug/L	Α	FB
B18-10066	Cadmium Lead	0.0817U ug/L 0.084U ug/L	Α	FB
B18-10067	Cadmium Lead Zinc	0.0469U ug/L 0.115U ug/L 18.2U ug/L	Α	FB
B18-10068	Cadmium Lead Zinc	0.0415U ug/L 0.109U ug/L 8.29U ug/L	A	FB
B18-10065F	Lead Tin Zinc	0.0289U ug/L 0.018U ug/L 10.6U ug/L	А	FB
B18-10066F	Iron	0.538U ug/L	Α	FB
B18-10067F	Iron Lead	0.533U ug/L 0.0387U ug/L	Α	FB
B18-10068F	Lead Zinc	0.02U ug/L 8.46U ug/L	А	FB

LDC #: 45386A4a VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-001

Level II

Reviewer: 2nd Reviewer:

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: Metals (EPA Method 1640/200.8/245.7)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	AAC	W
<u>II.</u>	ICP/MS Tune	N	
III.	Instrument Calibration	N	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Laboratory Blanks	A	_
VI.	Field Blanks	SW	EB=1,6
VII.	Matrix Spike/Matrix Spike Duplicates	SW,	
VIII.	Duplicate sample analysis	SW	
IX.	Serial Dilution	\mathcal{N}	
X.	Laboratory control samples	A	LCSD, SRM)/SRMD
XI.	Field Duplicates	ÌŃ	13)
XII.	Internal Standard (ICP-MS)	N	
XIII.	Sample Result Verification	N	
XIV	Overall Assessment of Data	1	

Note:

A = Acceptable

SW = See worksheet

N = Not provided/applicable

ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

Samples appended with "F" were analyzed as Dissolved

	Client ID	Lab ID	Matrix	Date
1	B18-SW-EB	56370	Water	07/10/18
2	B18-10065	56371	Water	07/10/18
3	B18-10066	56372	Water	07/10/18
4	B18-10067	56373	Water	07/10/18
5	B18-10068	56374	Water	07/10/18
6	B18-SW-EBF	56370F	Water	07/10/18
7	B18-10065F	56371F	Water	07/10/18
8	B18-10066F	56372F	Water	07/10/18
9	B18-10067F	56373F	Water	07/10/18
10	B18-10068F	56374F	Water	07/10/18
11	B18-10065MS	56371MS	Water	07/10/18
12	B18-10065MSD	56371MSD	Water	07/10/18
13	B18-10065DUP	56371DUP	Water	07/10/18
14	B18-10066MS	56372MS	Water	07/10/18
15	B18-10066MSD	56372MSD	Water	07/10/18

LDC #: 45386A4a VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-001

Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: Metals (EPA Method 1640/200.8/245.7)

Date: 7/5/9
Page: 2 of 2
Reviewer: 2nd Reviewer: 2

16	B18-10066DUP	56372DUP	Water	07/10/18
17	B18-10068MS	56374MS	Water	07/10/18
18_	B18-10068MSD	56374MSD	Water	07/10/18
19	B18-10068DUP	56374DUP	Water	07/10/18
20_	B18-10065FDUP	56371FDUP	Water	07/10/18
21	B18-10066FDUP	56372FDUP	Water	07/10/18
22	B18-10068FDUP	56374FDUP	Water	07/10/18
23				
24				
25				

Notes:

LDC#: 45386A42

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page:1	of1_
Reviewer:	¢ R ∕
2nd reviewer:	

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-10		Al, Sb, As, Ba, Be, Cd) Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni) K, Se, Ag) Na(Tl, V, Zn, Mo, B, Sn, Ti,
6011 10		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
Q:11-13	,20	Al, Sb, As) Ba, Be, Cd) Ca, Cr, Co, Cu, Fe, Pb, Mg, (Mn, Hg, (Ni, K, Se, Ag) Na (TI, V, Zn, Mo) B, (Sn, Ti,)
	12,21	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
17-A	22	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
1		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	<u>-</u>	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA		Al, Sh, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Ph, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,

Comments:	Mercury by CVAA if performed		

LDC #: 45386A4a

VALIDATION FINDINGS WORKSHEET Technical Holding Times

2nd reviewer:

Were samples preserved? Y N N/A All circled dates have exceeded the technical holding time.

METHOD:		Mercury Holding time = 28 days				
Sample ID:	Sampling Date	Analysis Date	Total Time until Analysis (days)	Qualifier Code:	Det/ND	
4-10- PII	7/10/18	8/24/18	45	J/UJ/P	Øet M	

Technical Holding Time Criteria

Mercury: 28 days All other metals: 180 days - 1 year if frozen

LDC #: 45386A4a

VALIDATION FINDINGS WORKSHEET Field Blanks

Page:__of__ Reviewer:____ 2nd Reviewer:____

METHOD: Trace Metals (EPA SW846 6010B/7000)

Blank units: ug/L Associated sample units: ug/L

Sampling date: 7/10/18

Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____2-5

FB

	Statik type: (Sirole Giro) Field Blank / Fathodie / Garon										
Analyte	Blank ID		Sample Identification								
	1	Action Limit	2	3	4	5					
Cd	0.0242	0.121	0.0432	0.0817	0.0469	0.0415					
Cu	0.0762	0.381									
Pb	0.0276	0.138	0.0859	0.084	0.115	0.109					
Мо	0.034	0.17	····								
Ni	0.0206	0.103									
Sn	0.0303	0.1515									
Zn	3.98	19.9	13.3		18.2	8.29					

Field blank type: (circle one) Field Blank / Rinsate / Other:_____ Associated Samples:_____7-10

Analyte	Blank ID		Sample Identification								
	6	Action Limit	7	8	9	10					
Sb	0.0125	0.0625									
Cd	0.00412	0.0206									
Cu	0.113	0.565									
Fe	2.75	13.75		0.538	0.533						
Pb	0.0101	0.0505	0.0289		0.0387	0.02					
Sn	0.0191	0.0955	0.018								
Ti	0.0443	0.2215									
Zn	2.12	10.6	10.6			8.46					

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:

Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC #: 45386A4a

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Reviewer: 2nd Reviewer:	

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Rease see qua	alifications below for all questions answered "N". Not applicable questions are identified as "N/A".
<u>y) N N/A</u>	Was a matrix spike analyzed for each matrix in this SDG?
Y) N N/A Y(N N/A	Were matrix spike percent recoveries (%R) within the control limits of 75-1253 If the sample concentration exceeded the spike concentration by a factor
_	of 4 or more, no action was taken.
YNNA L EVEL IV ON L	Were all duplicate sample relative percent differences (RPD) ≤ 25% for samples?
LEVEL IV ONL	.Y:
Y N N/A	Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications	
	11/12		Al	2	33		2-5	J/R/A (Det)	LM
			Sb	10	10			J/R/A (Det)	
			Fe	51	50			J/UJ/A (Det)	
			Ti	30	62			J/UJ/A (Det)	T
			Al			177		J/UJ/A (Det)	170
			Ti			70		J/UJ/A (Det)	الم
<u> </u>									
									,

Comments:		 		

LDC #: 45366A4

VALIDATION FINDINGS WORKSHEET Duplicate Analysis

Page:of <u>/</u>	
Reviewer:	
2nd Reviewer:	_

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(y)N N/A Was a duplicate sample analyzed for each matrix in this SDG? (25) Y(N)N/A

Were all duplicate sample relative percent differences (RPD) < 20% samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used

for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations. Y N N/A

#	Date	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications
		13		Pb	26		⊘ -5	JUJ (ACOct)
Ш								
			•					
		6.14. A 6.14.14.14.14.14.14.14.14.14.14.14.14.14.	10.17					
		11.00						
		-						
H		30	,	P5	a 7	A. V- 111	7-10	JUJA (Oct)
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comments:		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 16, 2019

Parameters: Wet Chemistry

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-001

Sample Identification	Laboratory Sample Identification	Matrix	Collection
			Date
B18-SW-EB	56370	Water	07/10/18
B18-10065	56371	Water	07/10/18
B18-10066	56372	Water	07/10/18
B18-10067	56373	Water	07/10/18
B18-10068	56374	Water	07/10/18
B18-10065MS	56371MS	Water	07/10/18
B18-10065MSD	56371MSD	Water	07/10/18
B18-10065DUP	56371DUP	Water	07/10/18
B18-10066MS	56372MS	Water	07/10/18
B18-10066MSD	56372MSD	Water	07/10/18
B18-10066DUP	56372DUP	Water	07/10/18
B18-10068MS	56374MS	Water	07/10/18
B18-10068MSD	56374MSD	Water	07/10/18
B18-10068DUP	56374DUP	Water	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Ammonia as Nitrogen by Standard Method 4500-NH3-D
Dissolved Organic Carbon by Standard Method 5310B
Methylene Blue Active Substances by Standard Method 5540C
Nitrate as Nitrogen by Standard Method 4500-NO3-E
Oil and Grease by Environmental Protection Agency (EPA) Method 1664B
Total Orthophosphate as Phosphorus by Standard Method 4500-P-E
Total Organic Carbon by Standard Method 5310B
Total Suspended Solids by Standard Method 2540D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
B18-SW-EB	Nitrate as N Total orthophosphate as P	58 days 43 days	2 days 2 days	R (all non-detects) R (all non-detects)	Р
B18-10065 B18-10066 B18-10067 B18-10068	Nitrate as N Total orthophosphate as P	58 days 43 days	2 days 2 days	J (all detects) J (all detects)	Р

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample B18-SW-EB was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Analyte	Concentration	Associated Samples
B18-SW-EB	07/10/18	Dissolved organic carbon	0.167 mg/L	B18-10065 B18-10066 B18-10067 B18-10068

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated field blanks.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10066DUP (B18-10065 B18-10066 B18-10067 B18-10068)	Total organic carbon	28 (≤25)	J (all detects)	А

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Replicates

No field replicates were identified in this SDG.

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-001	Analyte reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods.

Due to technical holding time, data were rejected in one sample.

Due to technical holding time, DUP RPD, and results reported below the RL and above the MDL, data were qualified as estimated in five samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-001

Sample	Analyte	Flag	A or P	Reason (Code)
B18-SW-EB	Nitrate as N Total orthophosphate as P	R (all non-detects) R (all non-detects)	Р	Technical holding times (H)
B18-10065 B18-10066 B18-10067 B18-10068	Nitrate as N Total orthophosphate as P	J (all detects) J (all detects)	Р	Technical holding times (H)
B18-10065 B18-10066 B18-10067 B18-10068	Total organic carbon	J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-SW-EB B18-10065 B18-10066 B18-10067 B18-10068	Analyte reported below the RL and above the MDL	J (all detects)	А	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-001

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-001

No Sample Data Qualified in this SDG

LDC #: 45386A6 VALIDATION COMPLETENESS WORKSHEET SDG #: 1807003-001 Level II Laboratory: Physis Environmental Laboratories, Inc.

METHOD: (Analyte) Ammonia as N (SM4500-NH3 D), DOC(SM 5310 B), MBAS (SM 5540 C), Nitrate as N (SM 4500-NO3 E), Oil & Grease (EPA Method 1664B), Total Orthophosphate as P (SM 4500-P E), TOC (SM 5310 B), TSS (SM 2540 D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	1 A	5W
	Initial calibration	N	
III.	Calibration verification	N_	
IV	Laboratory Blanks	A	
V	Field blanks	<u>6W</u>	GB-1
VI.	Matrix Spike/Matrix Spike Duplicates	A,	
VII.	Duplicate sample analysis	SW	
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	\mathcal{N}	,
X.	Sample result verification	N	
xı	Overall assessment of data	A	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank
EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-SW-EB	56370	Water	07/10/18
2	B18-10065	56371	Water	07/10/18
3	B18-10066	56372	Water	07/10/18
4	B18-10067	56373	Water	07/10/18
5	B18-10068	56374	Water	07/10/18
6	B18-10065MS	56371MS	Water	07/10/18
7	B18-10065MSD	56371MSD	Water	07/10/18
8	B18-10065DUP	56371DUP	Water	07/10/18
9	B18-10066MS	56372MS	Water	07/10/18
10	B18-10066MSD	56372MSD	Water	07/10/18
11	B18-10066DUP	56372DUP	Water	07/10/18
12	B18-10068MS	56374MS	Water	07/10/18
13	B18-10068MSD	56374MSD	Water	07/10/18
14	B18-10068DUP	56374DUP	Water	07/10/18
15				
16				
17				

LDC#: 45366A6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: 1 of 1

Reviewer: CR
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter (a) AND TSC VO (
1-5	PH TDS CI F(NO3) NO2 SO O-PO4 AIK CN(NH3) TKN TOC Cr6+ CIO4 (DOC) MB/15 (155) (006)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
00.7.0	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	PH TDS CI F(NO3) NO2 SO4(O-PO) AIK CN(NH3) TKN TOC Cr6+ CIO4
4-10	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO (1) (1)
12-14	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4 MBAS
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
 	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
<u> </u>	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH_TDS_CLF_NO_NO_SO_O-PO_Alk_CN_NH_TKN_TOC_Cr6+ ClO_

Comments:			
			

LDC #: 45386A6

VALIDATION FINDINGS WORKSHEET Technical Holding Times

Page:_	(_of_)_
Reviewer:	C-
2nd reviewer:_	

All circled dates have exceeded the technical holding time.

Y N N/A

Were all samples preserved as applicable to each method?

Y N N/A

Were all cooler temperatures within validation criteria?

Method:			SM4500 NO3-E			SM4500 P-E		
Parameters	:	Nitrate as N			Total orthophosphate as P			
Technical holding time:		2 days			2 days			
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier	
1	7/10/18	9/6/18	58	J/R/P (ND)	8/22/18	43	J/R/P (ND)	
2-5	7/10/18	9/6/18	58	J/R/P (Det)	8/22/18	43	J/R/P (Det)	

LDC #: 45386A6

VALIDATION FINDINGS WORKSHEET Field Blanks

Page: _of _	
Reviewer:	
2nd Reviewer: (1)	

METHOD: Inorganics, EPA Method See Cover

Blank units: mg/L Associated sample units: mg/L

Sampling date: 7/10/18
Field blank type: (circle one) Field Blank / Rinsate / Other: Associated Samples: 2-5

iera Diame (per (enere ener, i leia Diame, i anicate, ettieri					p.00					
Analyte	Blank ID	Action Limit		Sample Identification						
	1		No Qualifiers (>5x)							
DOC	0.167	0.835								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:

Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC#: US366A6

VALIDATION FINDINGS WORKSHEET <u>Duplicate Analysis</u>

\ \	
Page:of_	
Reviewer:	_
2nd Reviewer:	
	_

METHOD: Inorganics, Method Sec Care

Rhease see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y(N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water and ≤ 35% for soil samples (≤ 10% for Method 300.0)? If no, see qualification below. A control limit of ±CRDL (±2X CRDL for soil) was used for samples that were ≤5X the CRDL, including when only one of the duplicate sample values

were ≤5X the CRDL. If field blanks were used for laboratory duplicates, see overall assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	Duplicate ID	Matrix	Analyte	RPD (I imits)	Difference (Limits)	Associated Samples	Qualifications
		11		TOC	a8(525)		2-5	JUJ/A(Bet)
)			/
	-	,						
				<u> </u>				
	·							-

Comments:	 	 	 		 	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 10, 2019

Parameters: Polynuclear Aromatic Hydrocarbons

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-003

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10015	56400	Water	07/12/18
B18-10016	56401	Water	07/12/18
B18-10438 (overdraw)	56402	Water	07/12/18
B18-10020	56403	Water	07/12/18
B18-10073	56404	Water	07/12/18
B18-10074	56405	Water	07/12/18
B18-10075	56406	Water	07/12/18
B18-10017	56407	Water	07/13/18
B18-10019	56408	Water	07/13/18
B18-10069	56409	Water	07/11/18
B18-10070	56410	Water	07/11/18
B18-10071	56411	Water	07/11/18
B18-10072	56412	Water	07/11/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) Method 625

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Replicates

No field replicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-003	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in thirteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-003

Sample	Compound	Flag	A or P	Reason (Code)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071 B18-10072	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-003

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 1807003-003

No Sample Data Qualified in this SDG

LDC #: 45386B2b VALIDATION COMPLETENESS WORKSHEET SDG #: 1807003-003 Level II Laboratory: Physis Environmental Laboratories, Inc.

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA Method 625)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1	Sample receipt/Technical holding times	*	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V	Laboratory Blanks	A	
VI.	Field blanks	\	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	<i>es</i>
IX.	Laboratory control samples	\triangleleft	109/0
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10015	56400	Water	07/12/18
2	B18-10016	56401	Water	07/12/18
3	B18-10438 (overdraw)	56402	Water	07/12/18
4	B18-10020	56403	Water	07/12/18
5	B18-10073	56404	Water	07/12/18
6	B18-10074	56405	Water	07/12/18
7	B18-10075	56406	Water	07/12/18
8	B18-10017	56407	Water	07/13/18
9	B18-10019	56408	Water	07/13/18
10	B18-10069	56409	Water	07/11/18
11	B18-10070	56410	Water	07/11/18
12	B18-10071	56411	Water	07/11/18
13	B18-10072	56412	Water	07/11/18

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 16, 2019

Parameters: Metals

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-003

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10015	56400	Water	07/12/18
B18-10016	56401	Water	07/12/18
B18-10438 (overdraw)	56402	Water	07/12/18
B18-10020	56403	Water	07/12/18
B18-10073	56404	Water	07/12/18
B18-10074	56405	Water	07/12/18
B18-10075	56406	Water	07/12/18
B18-10017	56407	Water	07/13/18
B18-10019	56408	Water	07/13/18
B18-10069	56409	Water	07/11/18
B18-10070	56410	Water	07/11/18
B18-10071	56411	Water	07/11/18
B18-10072	56412	Water	07/11/18
B18-10015F	56400F	Water	07/12/18
B18-10016F	56401F	Water	07/12/18
B18-10438 (overdraw)F	56402F	Water	07/12/18
B18-10020F	56403F	Water	07/12/18
B18-10073F	56404F	Water	07/12/18
B18-10074F	56405F	Water	07/12/18
B18-10075F	56406F	Water	07/12/18
B18-10017F	56407F	Water	07/13/18
B18-10019F	56408F	Water	07/13/18
B18-10069F	56409F	Water	07/11/18
B18-10070F	56410F	Water	07/11/18
B18-10071F	56411F	Water	07/11/18
B18-10072F	56412F	Water	07/11/18

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10015MS	56400MS	Water	07/12/18
B18-10015MSD	56400MSD	Water	07/12/18
B18-10015DUP	56400DUP	Water	07/12/18
B18-10074MS	56405MS	Water	07/12/18
B18-10074MSD	56405MSD	Water	07/12/18
B18-10074DUP	56405DUP	Water	07/12/18
B18-10069MS	56409MS	Water	07/11/18
B18-10069MSD	56409MSD	Water	07/11/18
B18-10069DUP	56409DUP	Water	07/11/18
B18-10070MS	56410MS	Water	07/11/18
B18-10070MSD	56410MSD	Water	07/11/18
B18-10070DUP	56410DUP	Water	07/11/18
B18-10072MS	56412MS	Water	07/11/18
B18-10072MSD	56412MSD	Water	07/11/18
B18-10072DUP	56412DUP	Water	07/11/18
B18-10015FDUP	56400FDUP	Water	07/12/18
B18-10074FDUP	56405FDUP	Water	07/12/18
B18-10069FDUP	56409FDUP	Water	07/11/18
B18-10070FDUP	56410FDUP	Water	07/11/18
B18-10072FDUP	56412FDUP	Water	07/11/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Thallium, Tin, Titanium, Vanadium, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 1640 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10015F B18-10016F B18-10438 (overdraw)F B18-10020F B18-10073F B18-10074F B18-10075F	Mercury	49	28	UJ (all non-detects)	P
B18-10017 B18-10019 B18-10017F B18-10019F	Mercury	48	28	UJ (all non-detects)	Р
B18-10069 B18-10070 B18-10071 B18-10072 B18-10069F B18-10070F B18-10071F	Mercury	50	28	UJ (all non-detects)	Р

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10015MS/MSD (B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069)	Aluminum	180 (75-125)	-	J (all detects)	А
B18-10015MS/MSD (B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069)	Antimony Manganese	7 (75-125) -5 (75-125)	7 (75-125) 46 (75-125)	J (all detects) J (all detects)	Α
B18-10015MS/MSD (B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10075 B18-10075 B18-10017 B18-10019 B18-10069)	Iron Beryllium	35 (75-125) -	50 (75-125) 72 (75-125)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
B18-10070MS/MSD (B18-10070 B18-10071 B18-10072)	Aluminum Iron	126 (75-125) -	- 126 (75-125)	J (all detects) J (all detects)	А
B18-10070MS/MSD (B18-10070 B18-10071 B18-10072)	Antimony	10 (75-125)	10 (75-125)	J (all detects)	А

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10070MS/MSD (B18-10070 B18-10071 B18-10072)	Beryllium Manganese Titanium	72 (75-125) 59 (75-125) 66 (75-125)	72 (75-125) 71 (75-125) 73 (75-125)	J (all detects) UJ (all non-detects)	Α

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

Spike ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10015MS/MSD (B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069)	Aluminum Iron Manganese	53 (≤25) 35 (≤25) 249 (≤25)	J (all detects) J (all detects) J (all detects)	A

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10015FDUP (B18-10015F B18-10016F B18-10438 (overdraw)F B18-10020F B18-10073F B18-10074F B18-10075F B18-10017F B18-10019F B18-10069F)	Cadmium Lead Nickel Zinc	61 (≤25) 43 (≤25) 37 (≤25) 71 (≤25)	J (all detects)	A
B18-10070FDUP (B18-10070F B18-10071F B18-10072F)	Lead	60 (≤25) 30 (≤25)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
B18-10072FDUP (B18-10070F B18-10071F B18-10072F)	Barium	29 (≤25)	J (all detects)	А

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10015DUP (B18-10015 B18-10016 B18-10438 (overdraw) B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10019 B18-10069)	Соррег	29 (≤25)	J (all detects)	A

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Standard Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

XI. Field Replicates

No field replicates were identified in this SDG.

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-003	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, MS/MSD %R and RPD, DUP RPD, and results reported below the RL and above the MDL, data were qualified as estimated in twenty-six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-003

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10074 B18-10075 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10072 B18-10015F B18-10016F B18-10016F B18-10075F B18-10079F B18-10079F B18-10079F B18-10019F B18-10019F B18-10019F B18-10079F B18-10079F B18-10079F B18-10079F B18-10070F B18-10070F B18-10070F	Mercury	UJ (all non-detects)	Р	Technical holding times (H)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069	Aluminum	J (all detects)	Α	Matrix spike/Matrix spike duplicate (%R) (HM)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069	Antimony Manganese	J (all detects) J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069	Iron Beryllium	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10070 B18-10071 B18-10072	Aluminum Iron	J (all detects) J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (HM)
B18-10070 B18-10071 B18-10072	Antimony	J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10070 B18-10071 B18-10072	Beryllium Manganese Titanium	J (all detects) UJ (all non-detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069	Aluminum Iron Manganese	J (all detects) J (all detects) J (all detects)	А	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10015F B18-10016F B18-10438 (overdraw)F B18-10020F B18-10073F B18-10074F B18-10075F B18-10019F B18-10019F B18-10069F	Cadmium Lead Nickel Zinc Copper	J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10070F B18-10071F B18-10072F	Lead Titanium Barium	J (all detects) UJ (all non-detects)	А	Duplicate sample analysis (RPD) (HD)

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10015	Analyte reported below the RL and	J (all detects)	Α	Sample result verification
B18-10016	above the MDL			(DL)
B18-10438 (overdraw)	!			
B18-10020	ļ			
B18-10073	!			
B18-10074	!	!		
B18-10075	!			
B18-10017	!	İ		
B18-10019	1			
B18-10069				
B18-10070				
B18-10071	1			
B18-10072	1			
B18-10015F	1			
B18-10016F	1			
B18-10438 (overdraw)F	!			
B18-10020F	1			
B18-10073F	ļ			
B18-10074F	1			
B18-10075F	1			
B18-10017F				
B18-10019F				
B18-10069F				
B18-10070F				
B18-10071F				
B18-10072F				
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2018 Regional Harbor Monitoring Program
Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-003

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-003

No Sample Data Qualified in this SDG

LDC #: 45386B4a VALIDATION COMPLETENESS WORKSHEET SDG #: 1807003-003 Level II F Laboratory: Physis Environmental Laboratories, Inc. Revi

Page: of Z Reviewer: 2nd Reviewer:

METHOD: Metals (EPA Method 1640/200.8/245.7)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	ASV	
II.	ICP/MS Tune	, , N	
III.	Instrument Calibration	N	
IV.	ICP Interference Check Sample (ICS) Analysis	N_	
V.	Laboratory Blanks	A_{i}	
VI.	Field Blanks	\mathcal{N}	
VII.	Matrix Spike/Matrix Spike Duplicates	SW_	
VIII.	Duplicate sample analysis	SW_	
IX.	Serial Dilution	\/	
X.	Laboratory control samples	A	LOSID SAMIN
XI.	Field Duplicates	\mathcal{N}	
XII.	Internal Standard (ICP-MS)	N	
XIII.	Sample Result Verification	N	
XIV	Overall Assessment of Data	1	

Note:

A = Acceptable

N = Not provided/applicable

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank

OTHER:

SW = See worksheet FB =
Samples appended with "F" were analyzed as Dissolved

	Client ID	Lab ID	Matrix	Date
1	B18-10015	56400	Water	07/12/18
2	B18-10016	56401	Water	07/12/18
3	B18-10438 (overdraw)	56402	Water	07/12/18
4	B18-10020	56403	Water	07/12/18
5	B18-10073	56404	Water	07/12/18
6	B18-10074	56405	Water	07/12/18
7	B18-10075	56406	Water	07/12/18
8	B18-10017	56407	Water	07/13/18
9	B18-10019	56408	Water	07/13/18
10	B18-10069	56409	Water	07/11/18
11	B18-10070	56410	Water	07/11/18
12	B18-10071	56411	Water	07/11/18
13	B18-10072	56412	Water	07/11/18
14	B18-10015F	56400F	Water	07/12/18
15	B18-10016F	56401F	Water	07/12/18

LDC #: 45386B4a VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-003

Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: Metals (EPA Method 1640/200.8/245.7)

Date: 7(S(9)
Page: of 2
Reviewer: 2
2nd Reviewer: 2

			<u> </u>	 1
16	B18-10438 (overdraw)F	56402F	Water	07/12/18
17	B18-10020F	56403F	Water	07/12/18
18	B18-10073F	56404F	Water	07/12/18
19	B18-10074F	56405F	Water	07/12/18
20	B18-10075F	56406F	Water	07/12/18
21	B18-10017F	56407F	Water	07/13/18
22	B18-10019F	56408F	Water	07/13/18
23	B18-10069F	56409F	Water	07/11/18
24	B18-10070F	56410F	Water	07/11/18
25	B18-10071F	56411F	Water	07/11/18
26	_B18-10072F	56412F	Water	07/11/18
27	B18-10015MS	56400MS	Water	07/12/18
28	B18-10015MSD	56400MSD	Water	07/12/18
29	B18-10015DUP	56400DUP	Water	07/12/18
30	B18-10074MS	56405MS	Water	07/12/18
31	B18-10074MSD	56405MSD	Water	07/12/18
32	B18-10074DUP	56405DUP	Water	07/12/18
33	B18-10069MS	56409MS	Water	07/11/18
34	B18-10069MSD	56409MSD	Water	07/11/18
35	B18-10069DUP	56409DUP	Water	07/11/18
36	B18-10070MS	56410MS	Water	07/11/18
37	B18-10070MSD	56410MSD	Water	07/11/18
38	B18-10072MS	56412MS	Water	07/11/18
39	B18-10072MSD	56412MSD	Water	07/11/18
40	B18-10072DUP	56412DUP	Water	07/11/18
41	B18-10015DUP	56400DUP	Water	07/12/18
42	B18-10074DUP	56405DUP	Water	07/12/18
43	B18-10069DUP	56409DUP	Water	07/11/18
44	B18-10072DUP	56412DUP	Water	07/11/18
45	多この			
46	\$24 DP			
47				
Note:	S:			

LDC #: 453663 K

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page:_	_1	_of_	1_
Reviewer:_		ÇR	
2nd review	er:_		

All circled elements are applicable to each sample.

Г					
Sample ID Ma	trix	Target Analyte List (TAL)			
1-26	\downarrow	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na (TI, V, Zn, Mo) B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
Q: 27-29,413		Al, Sb, As) Ba, Re, Cd) Ca, Cr, Co, Cu, Fe, Pb, Mg, (Mn), Hg, (li,)K, Se, Ag, Na, (Tl, V, Zn, Mo, B, Sn, Ti,			
30-20;		Al, Sb, As(Bà, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
33-35,0	· 2	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
45,46		Al, Sb, Ag, Ba, Re, Cd, Ca, Cr, Co, Cu, Fe, Pb) Mg, Mn, Hg, (Ni) K, (Se, Ag, Na(Tl, V, Zn, Mo) B, (Sn, Ti,)			
36-40,4	u II	Al, Sb, As (Ba) Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
	[Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
Analysis Method					
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,			
GFAA		Al Sh As Ba Be Cd Ca Cr Co Cu Fe Ph Mg Mn Hg Ni K Se Ag Na Tl V Zn Mo B Sn Ti			

Comments: Mercury by CVAA if performed

LDC #: 45386B4a

VALIDATION FINDINGS WORKSHEET <u>Technical Holding Times</u>

Page: of Reviewer: 2nd reviewer:

Were samples preserved? Y N N/A
All circled dates have exceeded the technical holding time.

METHOD:		Mercury Holding time = 28 days				
Sample ID:	Sampling Date	Analysis Date	Total Time until Analysis (days)	Qualifier Code:	Det/ND	
1-7, 14-20	7/12/18	8/30/18	49	J/UJ/P	Def ND	
8, 9, 21, 22	7/13/18	8/30/18	48	J/UJ/P	Det	
10-13, 23-26	7/11/18	8/30/18	50	J/UJ/P	pet V	
			·			

Technical Holding Time Criteria

Mercury:

28 days

All other metals: 180 days - 1 year if frozen

LDC #: 45386B4a

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page: of Of Page: Of Of Page: 2nd Reviewer: Of Office Page: Office Pag

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qua	ulifications below for all questions answered "N". Not applicable questions a <u>re</u> -identified as "N/A".
Y /N N/A	Was a matrix spike analyzed for each matrix in this SDG?
Y N N/A Y N N/A	Were matrix spike percent recoveries (%R) within the control limits of (75-125? If the sample concentration exceeded the spike concentration by a factor
_	of 4 or more, no action was taken.
Y N N/A	Were all duplicate sample relative percent differences (RPD() ≤ 25% før samples?
LEVEL IV ONL	Y:
Y N N/A	Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
	27/28		Al	180			1-10	Jack (A (Bet) HM
			Sb	7	7			JIRIA LM
			Fe	35	50			JUSIA
			Mn	-5	46			JRA L
			Be		72			JUJA (DetIM)L
L			AI			53		JUSTA GET HO
			Fe			35		
			Mn			249		
	36/37		Al	126			11-13	Jdet A (Act) Itm
			Sb		10			JIRIA LM
Ш			Be		72			J(U) A) TU) T
L			Mn	-	71			JIVIA (Bet)
L				66	73			
Ш			Fe		126			Jdet A COck HM
)
Ш								

Comments:_	 			
-		<u></u>		

LDC#: 45366134a

VALIDATION FINDINGS WORKSHEET Duplicate Analysis

Page:of	_
Reviewer:	
2nd Reviewer:(-

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A

Was a duplicate sample analyzed for each matrix in this SDG?/25

Y N N/A

Were all duplicate sample relative percent differences (RPD) \leq 20% samples? If no, see qualifications below. A control limit of \pm R.L. (\pm 2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications
		41		Cd	61		14-2623	JUJA (Det)
				Pb	43			
\parallel				Ni	37		 	
\mathbb{H}		46		20 Pb	71 60		24-26	(De+IMD)
H		70	·	TI	30		I	Det)
H		44		Ba	30 29			
		29		Cu	29		+-131-10	JUJA (Dee)
								/
\mathbb{H}								
H								
H		<u> </u>		1				
Ш								
	***					·		
\parallel								
H								
H								

Comments:				 	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

July 16, 2019

Parameters:

Wet Chemistry

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-003

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10015	56400	Water	07/12/18
B18-10016	56401	Water	07/12/18
B18-10438 (overdraw)	56402	Water	07/12/18
B18-10020	56403	Water	07/12/18
B18-10073	56404	Water	07/12/18
B18-10074	56405	Water	07/12/18
B18-10075	56406	Water	07/12/18
B18-10017	56407	Water	07/13/18
B18-10019	56408	Water	07/13/18
B18-10069	56409	Water	07/11/18
B18-10070	56410	Water	07/11/18
B18-10071	56411	Water	07/11/18
B18-10072	56412	Water	07/11/18
B18-10015MS	56400MS	Water	07/12/18
B18-10015MSD	56400MSD	Water	07/12/18
B18-10015DUP	56400DUP	Water	07/12/18
B18-10075MS	56406MS	Water	07/12/18
B18-10075MSD	56406MSD	Water	07/12/18
B18-10075DUP	56406DUP	Water	07/12/18
B18-10072MS	56412MS	Water	07/11/18
B18-10072MSD	56412MSD	Water	07/11/18
B18-10072DUP	56412DUP	Water	07/11/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Ammonia as Nitrogen by Standard Method 4500-NH3-D
Dissolved Organic Carbon by Standard Method 5310B
Methylene Blue Active Substances by Standard Method 5540C
Nitrate as Nitrogen by Standard Method 4500-NO3-E
Oil and Grease by Environmental Protection Agency (EPA) Method 1664B
Total Orthophosphate as Phosphorus by Standard Method 4500-P-E
Total Organic Carbon by Standard Method 5310B
Total Suspended Solids by Standard Method 2540D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
B18-10020	Nitrate as N	56 days	2 days	J (all detects)	Р
B18-10015 B18-10016 B18-10438 (overdraw) B18-10073 B18-10074 B18-10075	Nitrate as N	56 days	2 days	R (all non-detects)	Р
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075	Total orthophosphate as P	41 days	2 days	J (all detects)	Р
B18-10017 B18-10019	Nitrate as N	55 days	2 days	R (all non-detects)	Р
B18-10017 B18-10019	Total orthophosphate as P	40 days	2 days	J (all detects)	Р
B18-10069 B18-10072	Nitrate as N	57 days	2 days	J (all detects)	Р
B18-10070 B18-10071	Nitrate as N	57 days	2 days	R (all non-detects)	Р
B18-10069 B18-10070 B18-10071 B18-10072	Total orthophosphate as P	42 days	2 days	J (all detects)	Р

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Replicates

No field replicates were identified in this SDG.

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-003	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods.

Due to technical holding time, data were rejected in ten samples.

Due to technical holding time and results reported below the RL and above the MDL, data were qualified as estimated in thirteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-003

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10020 B18-10069 B18-10072	Nitrate as N	J (all detects)	P	Technical holding times (H)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10073 B18-10074 B18-10017 B18-10017 B18-10019 B18-10070 B18-10071	Nitrate as N	R (all non-detects)	Р	Technical holding times (H)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10017 B18-10019 B18-10019 B18-10070 B18-10070 B18-10071 B18-10072	Total orthophosphate as P	J (all detects)	Р	Technical holding times (H)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071	Analyte reported below the RL and above the MDL	J (all detects)	Α	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-003

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-003

No Sample Data Qualified in this SDG

LDC #: 45386B6 VALIDATION COMPLETENESS WORKSHEET

SDG #:__1807003-003_____

Level II

Reviewer:_ 2nd Reviewer:_

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: (Analyte) Ammonia as N (SM4500-NH3 D), DOC SM 5310 B), MBAS (SM 5540 C), Nitrate as N (SM 4500-NO3 E), Oil & Grease (EPA Method 1664B), Total Orthophosphate as P (SM 4500-P E), TOC (SM 5310 B), TSS (SM 2540 D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	A SW	
	Initial calibration	N	
III.	Calibration verification	N	
IV	Laboratory Blanks	A	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	A	
VII.	Duplicate sample analysis	A	
VIII.	Laboratory control samples	A	LCSID
IX.	Field duplicates	\mathcal{N}	
X.	Sample result verification	N	
LXL	Overall assessment of data	1 A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10015	56400	Water	07/12/18
2	B18-10016	56401	Water	07/12/18
3	B18-10438 (overdraw)	56402	Water	07/12/18
	B18-10020	56403	Water	07/12/18
<u> </u>	B18-10073	56404	Water	07/12/18
6	B18-10074	56405	Water	07/12/18
,	B18-10075	56406	Water	07/12/18
3	B18-10017	56407	Water	07/13/18
)	B18-10019	56408	Water	07/13/18
0	B18-10069	56409	Water	07/11/18
1	B18-10070	56410	Water	07/11/18
2	B18-10071	56411	Water	07/11/18
3	B18-10072	56412	Water	07/11/18
4	B18-10015MS	56400MS	Water	07/12/18
5	B18-10015MSD	56400MSD	Water	07/12/18
6	B18-10015E-	56400DUP	Water	07/12/18
7	B18-10075MS	56406MS	Water	07/12/18

LDC #: 45386B6 VALIDATION COMPLETENESS WORKSHEET SDG #: 1807003-003 Level II Laboratory: Physis Environmental Laboratories, Inc. Date: 7 Page: 20 Reviewer: 2 2nd Reviewer:							
	HOD: (Analyte) Ammonia as N (SM4500-NH3 E il & Grease (EPA Method 1664B), Total Orthoph						
18	B18-10075MSD	56406MSD	Water	07/12/18			
19	B18-10075DUP	56406DUP	Water	07/12/18			
20	B18-10072MS	56412MS	Water	07/11/18			
21	B18-10072MSD	56412MSD	Water	07/11/18			
22	B18-10072DUP	56412DUP	Water	07/11/18			
23							
24							
25							

LDC #: 45356B6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: 1 of 1

Reviewer: CR

2nd reviewer: U

All circled methods are applicable to each sample.

Sample ID	Parameter C C C A A C C C C A A C C C C C A A C
1-13	PH TDS CI F (NO) NO2 SO (O-PO4) AIK CN(NH3) TKN TOC Cr6+ CIO(OCC) MBHS (ISS) (OB6)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN(TOC) Cr6+ CIO4 (DOC)
17-19	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN(NH) TKN TOC Cr6+ CIO ₄
20-64	pH TDS CI F(NO) NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH_TDS_CL_F_NO ₂ _NO ₂ _SO ₄ _O-PO ₄ _Alk_CN_NH ₂ _TKN_TOC_Cr6+ ClO ₄

Comments:_			

LDC #: 45386B6

VALIDATION FINDINGS WORKSHEET Technical Holding Times

2nd reviewer:

All circled dates have exceeded the technical holding time.

Y N N/A Were all samples preserved as applicable to each method?

Y N N/A Were all cooler temperatures within validation criteria?

Method:		SM4500 NO3-E		E	SM4500 P-E Total orthophosphate as P		
Parameters	Parameters:		Nitrate as N				
Technical h	olding time:		2 days			2 days	
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier
1-7	7/12/18	9/6/18	56	J/R/P (ND=1-3, 5-7)	8/22/18	41	J/R/P (Det)
8, 9	7/13/18	9/6/18	55	J/R/P (ND)	8/22/18	40	J/R/P (Det)
10-13	7/11/18	9/6/18	57	J/R/P (ND=11, 12)	8/22/18	42	J/R/P (Det)

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

July 10, 2019

Parameters:

Polynuclear Aromatic Hydrocarbons

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-005

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10023	56500	Water	07/16/18
B18-10030	56501	Water	07/16/18
B18-10078	56502	Water	07/16/18
B18-10079	56503	Water	07/16/18
B18-10117	56504	Water	07/16/18
B18-10080	56505	Water	07/17/18
B18-10081	56506	Water	07/17/18
B18-10082	56507	Water	07/17/18
B18-10083	56508	Water	07/17/18
B18-10084	56509	Water	07/17/18
B18-10023MS	56500MS	Water	07/16/18
B18-10023MSD	56500MSD	Water	07/16/18
B18-10023DUP	56500DUP	Water	07/16/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) Method 625

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to nonconformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10023MS/MSD (B18-10023)	Naphthalene	40 (50-150)	-	UJ (all non-detects)	Α

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10023MS/MSD (B18-10023)	1-Methylnaphthalene Naphthalene	36 (≤25) 55 (≤25)	NA	-
B18-10023MS/MSD (B18-10023)	2-Methylnaphthalene	38 (≤25)	J (all detects)	А

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Replicates

No field replicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-005	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R and RPD and results reported below the RL and above the MDL, data were qualified as estimated in ten samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-005

Sample	Compound	Flag	A or P	Reason (Code)
B18-10023	Naphthalene	UJ (all non-detects)	Α	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10023	2-Methylnaphthalene	J (all detects)	Α	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-005

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary SDG 1807003-005

No Sample Data Qualified in this SDG

חר ז	#:45386C2b VALIDATIO I	N COMP	PLETENESS WORKSHEET		Date: Hali
	#: 1807003-005		Level II		Page: /sof
	atory: Physis Environmental Laboratories				Date: // / // Page: /of // Reviewer:
METU	IOD: CC/MS Polypuologr Aromatic Hydro	oorbone (l	EDA Mothod 625)	2nd	Reviewer:
VIC I F	IOD: GC/MS Polynuclear Aromatic Hydro	carbons (i	EPA Method 625)		
	amples listed below were reviewed for each	ch of the fo	ollowing validation areas. Validation	findings are	noted in attache
/alidat	tion findings worksheets.				
	Validation Area		Comme	nts	
1.	Sample receipt/Technical holding times	A			
II.	GC/MS Instrument performance check	N			
III.	Initial calibration/ICV	N/N			
IV.	Continuing calibration	N			
V.	Laboratory Blanks	A			
VI.	Field blanks	N			
VII.	Surrogate spikes	A			
VIII.	Matrix spike/Matrix spike duplicates	MY	4		
IX.	Laboratory control samples	#	205/6		
X.	Field duplicates	\sim	/		
XI.	Internal standards	N			
XII.	Compound quantitation RL/LOQ/LODs	N			
XIII.	Target compound identification	N			
XIV.	System performance	N			
XV.	Overall assessment of data	\triangle			
lote:	N = Not provided/applicable R = Rin	o compound sate eld blank	s detected D = Duplicate TB = Trip blank EB = Equipment blank	OTHER	ırce blank :
	Client ID		Lab ID	Matrix	Date
	B18-10023		56500	Water	07/16/18
	B18-10030		56501	Water	07/16/18
	B18-10078		56502	Water	07/16/18
-			****		

	Client ID	Lab ID	Matrix	Date	
1	B18-10023	56500	Water	07/16/18	
<u> </u>	B18-10030	56501	Water	07/16/18	
3	B18-10078	56502	Water	07/16/18	
1	B18-10079	56503	Water	07/16/18	
<u> </u>	B18-10117	56504	Water	07/16/18	
3	B18-10080	56505	Water	07/17/18	
,	B18-10081	56506	Water	07/17/18	
3	B18-10082	56507	Water	07/17/18	
	B18-10083	56508	Water	07/17/18	
10	B18-10084	56509	Water	07/17/18	
1	B18-10023MS	56500MS	Water	07/16/18	
2	B18-10023MSD	56500MSD	Water	07/16/18	
3	B18-10023DUP	56500DUP	Water	07/16/18	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

WETTIOD. CONVICTOR				
A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o"-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	_/of_/_
Reviewer:_	9
2nd Reviewer:	

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

Ė	<u>N/A</u> Were the M	Torrior percent receive	ries (%R) and the relative		T Within the QO		
#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	11/12	S	40 (50-150)	()	()	1 (NP)	1/M/A(L
		777	()	()	36(575)	1/	lets / h / +
		S W	()	()	55 ()) 38 ())		
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

July 16, 2019

Parameters:

Metals

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-005

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10023	56500	Water	07/16/18
B18-10030	56501	Water	07/16/18
B18-10078	56502	Water	07/16/18
B18-10079	56503	Water	07/16/18
B18-10117	56504	Water	07/16/18
B18-10080	56505	Water	07/17/18
B18-10081	56506	Water	07/17/18
B18-10082	56507	Water	07/17/18
B18-10083	56508	Water	07/17/18
B18-10084	56509	Water	07/17/18
B18-10023F	56500F	Water	07/16/18
B18-10030F	56501F	Water	07/16/18
B18-10078F	56502F	Water	07/16/18
B18-10079F	56503F	Water	07/16/18
B18-10117F	56504F	Water	07/16/18
B18-10080F	56505F	Water	07/17/18
B18-10081F	56506F	Water	07/17/18
B18-10082F	56507F	Water	07/17/18
B18-10083F	56508F	Water	07/17/18
B18-10084F	56509F	Water	07/17/18
B18-10023MS	56500MS	Water	07/16/18
B18-10023MSD	56500MSD	Water	07/16/18
B18-10023DUP	56500DUP	Water	07/16/18
B18-10084MS	56509MS	Water	07/17/18
B18-10084MSD	56509MSD	Water	07/17/18
B18-10084DUP	56509DUP	Water	07/17/18

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10023FDUP	56500FDUP	Water	07/16/18
B18-10084FDUP	56509FDUP	Water	07/17/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Thallium, Tin, Titanium, Vanadium, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 1640 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10023F B18-10030F B18-10078F B18-10079F B18-10079F	Mercury	45	28	UJ (all non-detects)	Р
B18-10080 B18-10081 B18-10082 B18-10083 B18-10084 B18-10080F B18-10081F B18-10082F B18-10083F B18-10084F	Mercury	44	28	UJ (all non-detects)	Р

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10023MS/MSD (B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084)	Aluminum	131 (75-125)	-	J (all detects)	A
B18-10023MS/MSD (B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084)	Antimony	14 (75-125)	13 (75-125)	J (all detects) J (all detects)	А
B18-10023MS/MSD (B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084)	Beryllium Titanium	65 (75-125) 65 (75-125)	63 (75-125) -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

Relative percent differences (RPD) were within QC limits.

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10023FDUP (B18-10023F B18-10030F B18-10078F B18-10079F B18-10117F B18-10080F B18-10081F B18-10082F B18-10083F B18-10084F)	Copper Zinc	88 (≤25) 56 (≤25)	J (all detects) J (all detects)	А
B18-10023DUP (B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084)	Titanium	66 (≤25)	J (all detects)	Α

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Standard Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

XI. Field Replicates

No field replicates were identified in this SDG.

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-005	Analyte reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, MS/MSD %R, DUP RPD, and results reported below the RL and above the MDL, data were qualified as estimated in twenty samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-005

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10023F B18-10023F B18-10079F B18-10117F B18-10117F B18-10080F B18-10081F B18-10082F B18-10083F B18-10083F B18-10083F	Mercury	UJ (all non-detects)	Р	Technical holding times (H)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Aluminum	J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (HM)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Antimony	J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Beryllium Titanium	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10023F B18-10030F B18-10078F B18-10079F B18-10117F B18-10080F B18-10081F B18-10082F B18-10083F B18-10084F	Copper Zinc	J (all detects) J (all detects)	Α.	Duplicate sample analysis (RPD) (HD)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Titanium	J (all detects)	Α	Duplicate sample analysis (RPD) (HD)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084 B18-10023F B18-10079F B18-10117F B18-1017F B18-10080F B18-10081F B18-10081F B18-10083F B18-10083F B18-10083F B18-10084F	Analyte reported below the RL and above the MDL	J (all detects)	A	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-005

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-005

No Sample Data Qualified in this SDG

LDC #: 45386C4a VALIDATION COMPLETENESS WORKSHEET SDG #: 1807003-005 Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: Metals (EPA Method 1640/200.8/245.7)

Date: 7/15/19
Page: ___of__
Reviewer: ____
2nd Reviewer: ____

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	ASW	
II.	ICP/MS Tune	N	
III.	Instrument Calibration	N	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Laboratory Blanks	A	
VI.	Field Blanks	\mathcal{N}	
VII.	Matrix Spike/Matrix Spike Duplicates	SW	
VIII.	Duplicate sample analysis	SW	
IX.	Serial Dilution	\mathcal{N}	,
X.	Laboratory control samples	A	LCS/D, SRM/D
XI.	Field Duplicates	\mathcal{N}	, , , , , ,
XII.	Internal Standard (ICP-MS)	N	
XIII.	Sample Result Verification	N	
XIV	Overall Assessment of Data	1	

Note:

A = Acceptable

ND = No compounds detected

D = Duplicate TB = Trip blank SB=Source blank OTHER:

N = Not provided/applicable SW = See worksheet R = Rinsate FB = Field blank

EB = Equipment blank

Samples appended with "F" were analyzed as Dissolved

	Client ID	Lab ID	Matrix	Date
1	B18-10023	56500	Water	07/16/18
2	B18-10030	56501	Water	07/16/18
3	B18-10078	56502	Water	07/16/18
ļ.	B18-10079	56503	Water	07/16/18
<u>. </u>	B18-10117	56504	Water	07/16/18
	B18-10080	56505	Water	07/17/18
	B18-10081	56506	Water	07/17/18
	B18-10082	56507	Water	07/17/18
	B18-10083	56508	Water	07/17/18
0	B18-10084	56509	Water	07/17/18
1	B18-10023F	56500F	Water	07/16/18
2	B18-10030F	56501F	Water	07/16/18
3	B18-10078F	56502F	Water	07/16/18
4	B18-10079F	56503F	Water	07/16/18
5	B18-10117F	56504F	Water	07/16/18

LDC #: 45386C4a VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-005 Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: Metals (EPA Method 1640/200.8/245.7)

16	B18-10080F	56505F	Water	07/17/18
17	B18-10081F	56506F	Water	07/17/18
18	B18-10082F	56507F	Water	07/17/18
19	B18-10083F	56508F	Water	07/17/18
20	B18-10084F	56509F	Water	07/17/18
21	B18-10023MS	56500MS	Water	07/16/18
22	B18-10023MSD	56500MSD	Water	07/16/18
23	B18-10023DUP	56500DUP	Water	07/16/18
24	B18-10084MS	56509MS	Water	07/17/18
25	B18-10084MSD	56509MSD	Water	07/17/18
26	B18-10084 DUP	56509FDUP	Water	07/17/18
27	B18-10023FDUP	56500FDUP	Water	07/16/18
28	B18-10084FDUP	56509FDUP	Water	07/17/18
29				
30				
31				

LDC#: 45366C4

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: 1 of 1

Reviewer: CR
2nd reviewer: CR

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-00		(Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag Na, Tl, V, Zn, Mo, B(Sn, Ti,)
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
Q:21-21	<u> 527 </u>	Al, Sb, As, Ba, Be, Cd) Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn Hg, Ni) K, Se, Ad, Na, Tl, V, Zn, Mo, B, Sn, Ti,
24-26	,28	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	·	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Ì	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA .		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,

Comments: Mercury by CVAA if performed

LDC #: 45386C4a

VALIDATION FINDINGS WORKSHEET Technical Holding Times

2nd reviewer:

Were samples preserved? $\underline{Y} \underline{N} \underline{N/A}$ All circled dates have exceeded the technical holding time.

METHOD:		Mercury Holding time = 28 days				
Sample ID:	Sampling Date	Analysis Date	Total Time until Analysis (days)	Qualifier Code:	Det/ND	
1-5, 11-15	7/16/18	8/30/18	45	J/UJ/P	ND	
6-10, 16-20	7/17/18	8/30/18	44	J/UJ/P	ND	
	71/04="					

Technical Holding Time Criteria

Mercury: 28 days All other metals: 180 days - 1 year if frozen

LDC #: 45386C4a

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	<u></u> of_	
Reviewer:	6	
2nd Reviewer:		

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

{	Please see qua Y N N/A Y N N/A Y N N/A Y N N/A EVEL IV ONL Y N N/A	Was a Were r of 4 or Were a	matrix spike natrix spike p more, no act all duplicate s	analyzed for eac percent recoverion ion was taken. ample relative p	wered "N". Not apoch matrix in this Ses (%R) within the ercent difference	SDG? e control limits of s (RPD) \leq 25% f	75-125? If the	e sample concentration e	xceeded the s	pike concentration	by a factor
	# MS/MSF	LID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples		Qualifications	
	21/22			Al	131			1-10	Jdet/A	(Det)	HW
				Sb	14	13			J/R/A		LM
				Be	65	63			J/UJ/A	Det IND	
				Ti	65				J/UJ/A	Det	Y
Ш			I	I	i .	1		1			•

					-

Comments:				

LDC #: 453860

VALIDATION FINDINGS WORKSHEET Duplicate Analysis

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of_/_
9

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Rease see qualifications below for all questions answered "N". Not applicable guestions are identified as "N/A".

<u>(N)) (A</u>

Was a duplicate sample analyzed for each matrix in this SD($\frac{1}{2}$) Were all duplicate sample relative percent differences (RPD) \leq 20% samples? If no, see qualifications below. A control limit of \pm R.L. (\pm 2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications
		27		Cu	88 56		11-20	JIVJIA (Det)
\blacksquare	-			Zn	56			4
\vdash	-						·	
П								
-	-			-				
H		23		7:	66		1-10	JUJ A (Det)
				,	100		1.10	3(0) (13(130))
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1								

Comments:			
			 1.44

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 16, 2019

Parameters: Wet Chemistry

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-005

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10023	56500	Water	07/16/18
B18-10030	56501	Water	07/16/18
B18-10078	56502	Water	07/16/18
B18-10079	56503	Water	07/16/18
B18-10117	56504	Water	07/16/18
B18-10080	56505	Water	07/17/18
B18-10081	56506	Water	07/17/18
B18-10082	56507	Water	07/17/18
B18-10083	56508	Water	07/17/18
B18-10084	56509	Water	07/17/18
B18-10023MS	56500MS	Water	07/16/18
B18-10023MSD	56500MSD	Water	07/16/18
B18-10023DUP	56500DUP	Water	07/16/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Ammonia as Nitrogen by Standard Method 4500-NH3-D
Dissolved Organic Carbon by Standard Method 5310B
Methylene Blue Active Substances by Standard Method 5540C
Nitrate as Nitrogen by Standard Method 4500-NO3-E
Oil and Grease by Environmental Protection Agency (EPA) Method 1664B
Total Orthophosphate as Phosphorus by Standard Method 4500-P-E
Total Organic Carbon by Standard Method 5310B
Total Suspended Solids by Standard Method 2540D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117	Nitrate as N	56 days	2 days	R (all non-detects)	Р
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117	Total orthophosphate as P	38 days	2 days	J (all detects)	Р
B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Nitrate as N	55 days	2 days	R (all non-detects)	Р
B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Total orthophosphate as P	37 days	2 days	J (all detects)	Р

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10023DUP (All samples in SDG 1807003-005)	Total suspended solids	46 (≤25)	J (all detects)	А

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Replicates

No field replicates were identified in this SDG.

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-005	Analyte reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods.

Due to technical holding time, data were rejected in ten samples.

Due to technical holding time, DUP RPD, and results reported below the RL and above the MDL, data were qualified as estimated in ten samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-005

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Nitrate as N	R (all non-detects)	Р	Technical holding times (H)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Total orthophosphate as P	J (all detects)	Р	Technical holding times (H)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Total suspended solids	J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Analyte reported below the RL and above the MDL	J (all detects)	А	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-005

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-005

No Sample Data Qualified in this SDG

LDC #: 45386C6	VALIDATION COMPLETENESS WORKSHEET
SDG #: 1807003-005	Level II

Reviewer: 2nd Reviewer:

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: (Analyte) Ammonia as N (SM4500-NH3 D), DOC SM 5310 B), MBAS (SM 5540 C), Nitrate as N (SM 4500-NO3 E), Oil & Grease (EPA Method 1664B), Total Orthophosphate as P (SM 4500-P E), TOC (SM 5310 B), TSS (SM 2540 D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
Ι.	Sample receipt/Technical holding times	ASW	
II	Initial calibration	N_	
III.	Calibration verification	N_	
IV	Laboratory Blanks	A _	
V	Field blanks	\mathcal{N}	
VI.	Matrix Spike/Matrix Spike Duplicates	A	
VII.	Duplicate sample analysis	Sw	
VIII.	Laboratory control samples	A _	LOSID
IX.	Field duplicates	\mathcal{N}	
X.	Sample result verification	N	
xı	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate TB = Trip blank

OTHER: EB = Equipment blank

SB=Source blank

	Client ID	Lab ID	Matrix	Date
1	B18-10023	56500	Water	07/16/18
2	B18-10030	56501	Water	07/16/18
3	B18-10078	56502	Water	07/16/18
4	B18-10079	56503	Water	07/16/18
5	B18-10117	56504	Water	07/16/18
6	B18-10080	56505	Water	07/17/18
7	B18-10081	56506	Water	07/17/18
8	B18-10082	56507	Water	07/17/18
9	B18-10083	56508	Water	07/17/18
10	B18-10084	56509	Water	07/17/18
11	B18-10023MS	56500MS	Water	07/16/18
12	B18-10023MSD	56500MSD	Water	07/16/18
13	B18-10023DUP	56500DUP	Water	07/16/18
14_				

LDC#: 45366C6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:	1_of	<u>1_</u>
Reviewer:	CR	
2nd review		

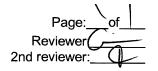
All circled methods are applicable to each sample.

Sample ID	Parameter
	pH TDS CI F (NO) NO2 SO4 6-PO4 AIK CN(NH) TKN/TOO Cr6+ CIO (DOC) MPAS (TSS) (OGG)
((0	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
01-13	ph tds ci f(No ₃) No ₂ SO ₄ O-PO ₄ Aik CN(NH ₃)TKN (TOC) Cr6+ CIO, DOC (MPA) (TOC)
13	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄ TS
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
71 - 71 - 111	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CI F NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₂ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₂ TKN TOC Cr6+ ClO ₄

Comments:				

LDC #: 45386C6

VALIDATION FINDINGS WORKSHEET Technical Holding Times



All circled dates have exceeded the technical holding time.

Y N N/A

Were all samples preserved as applicable to each method?

Y N N/A

Were all cooler temperatures within validation criteria?



Method:			SM4500 NO3-I	<u> </u>	SM4500 P-E		
Parameters	:		Nitrate as N		Total	orthophosphat	e as P
Technical h	olding time:		2 days			2 days	
Sample ID	Sampling date	Analysis date			Analysis date	Total Time (days)	Qualifier
1-5	7/16/18	9/10/18	56	J/R/P (ND)	8/23/18	38	J/R/P (Det)
6-10	7/17/18	9/10/18	55	J/R/P (ND)	8/23/18	37	J/R/P (Det)

LDC #: 4536666

VALIDATION FINDINGS WORKSHEET <u>Duplicate Analysis</u>

Page:of	
Reviewer:	
2nd Reviewer:	

METHOD: Inorganics, Method___Seo_Cover_

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A

Was a duplicate sample analyzed for each matrix in this SDG?

Y (N N/A

Were all duplicate sample relative percent differences (RPD) <20% for

Were all duplicate sample relative percent differences (RPD) $\leq 20\%$ for water and $\leq 35\%$ for soil samples ($\leq 10\%$ for Method 300.0)? If no, see qualification below. A control limit of ±CRDL (±2X CRDL for soil) was used for samples that were $\leq 5X$ the CRDL, including when only one of the duplicate sample values were $\leq 5X$ the CRDL. If field blanks were used for laboratory duplicates, see overall assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications
	 13		Analyte	46(425)		Associated Samples	JUJ/A(Oct
				7			
\vdash	 						
			<u> </u>				
-			<u> </u>				
	 ·						

Comments:		<u> </u>	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 11, 2019

Parameters: Polynuclear Aromatic Hydrocarbons

Validation Level: Level II & IV

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-007

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10022**	56561**	Water	07/18/18
B18-10076**	56562**	Water	07/18/18
B18-10077**	56563**	Water	07/18/18
B18-10112	56564	Water	07/18/18
B18-10113**	56565**	Water	07/18/18
B18-10024**	56566**	Water	07/19/18
B18-10029	56567	Water	07/19/18
B18-10114**	56568**	Water	07/19/18
B18-10115**	56569**	Water	07/19/18
B18-10116**	56570**	Water	07/19/18
B18-20116	56571	Water	07/19/18
B18-10031	56572	Water	07/20/19
B18-10032	56573	Water	07/20/19
B18-10119	56574	Water	07/20/19
B18-10121	56575	Water	07/20/19
B18-10123	56576	Water	07/20/19
B18-10178	56577	Water	07/20/19
B18-10076MS	56562MS	Water	07/18/18
B18-10076MSD	56562MSD	Water	07/18/18
B18-10076DUP	56562DUP	Water	07/18/18

^{**}Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) Method 625

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r²) was greater than or equal to 0.990.

Date	Compound	r²	Associated Samples	Flag	A or P
08/06/18	Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene 2,6-Dimethylnaphthalene Acenaphthene	0.9816 0.9860 0.9853 0.9888 0.9891	B18-10022** B18-10076** B18-10077** B18-10113** B18-10114** B18-10115** B18-10116**	J (all detects) UJ (all non-detects)	А

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
08/07/18	Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene Biphenyl 2,6-Dimethylnaphthalene Acenaphthylene Acenaphthene Fluorene Dibenzothiophene Phenanthrene Anthracene 1-Methylphenanthrene Fluoranthene Pyrene Benzo(a)anthracene Chrysene Benzo(g,h,i)perylene	36 30 34 28 27 34 38 35 34 37 42 31 31 25 29 29 24	B18-10022** B18-10076** B18-10077** B18-10113** B18-10024** B18-10114** B18-10115** B18-10116**	J (all detects) UJ (all non-detects)	A

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
08/08/18	Fluoranthene Pyrene Benzo(b)fluoranthene Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene	23 26 38 41 37	B18-10022** B18-10076** B18-10077** B18-10113** B18-10114** B18-10115** B18-10116**	J (all detects) UJ (all non-detects)	А

All of the continuing calibration relative response factors (RRF) were within validation criteria.

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

Relative percent differences (RPD) were within QC limits.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076DUP (B18-10076)	Benzo(b)fluoranthene	31 (≤25)	J (all detects)	A

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Replicates

Samples B18-10116** and B18-20116 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

-	Concentra		
Compound	B18-10116**	B18-20116	RPD
Benzo(b)fluoranthene	1.82	2.36	26
Fluoranthene	3.12	3.06	2
Pyrene	1.96	2.04	4
Acenaphthylene	5U	1.22	Not calculable

XI. Internal Standards

All internal standard areas and retention times were within QC limits for samples which underwent Level IV validation with the following exceptions:

Sample	Internal Standards	Area (Limits)	Affected Compound	Flag	A or P
B18-10114**	d10-Anthracene	2708837 (4818849-8949291)	Fluoranthene Pyrene	J (all detects)	Р
B18-10114**	d10-Anthracene	2708837 (4818849-8949291)	Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene 1-Methylnaphthalene 2,6-Dimethylnaphthalene 2,3,5-Trimethylnaphthalene Dibenzothiophene Biphenyl 1-Methylphenanthrene	NA	-
B18-10076**	d12-Benzo(a)pyrene	4666325 (1075347-4301390)	Benzo(a)anthracene Chrysene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Benzo(e)pyrene Perylene	J (all detects) UJ (all non-detects)	A

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation.

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-007	Compound reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level II validation.

XIV. System Performance

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to initial calibration r², ICV %D, continuing calibration %D, DUP RPD, internal standard area, and results reported below the RL and above the MDL, data were qualified as estimated in seventeen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-007

			· · · · · · · · · · · · · · · · · · ·	
Sample	Compound	Flag	A or P	Reason (Code)
B18-10022** B18-10076** B18-10077** B18-10113** B18-10114** B18-10115** B18-10116**	Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene 2,6-Dimethylnaphthalene Acenaphthene	J (all detects) UJ (all non-detects)	А	Initial calibration (r²) (BC)
B18-10022** B18-10076** B18-10077** B18-10113** B18-10114** B18-10115** B18-10116**	Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene Biphenyl 2,6-Dimethylnaphthalene Acenaphthylene Acenaphthene Fluorene Dibenzothiophene Phenanthrene Anthracene 1-Methylphenanthrene Fluoranthene Pyrene Benzo(a)anthracene Chrysene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A	Initial calibration verification (%D) (HV)
B18-10022** B18-10076** B18-10077** B18-10113** B18-10024** B18-10114** B18-10115**	Fluoranthene Pyrene Benzo(b)fluoranthene Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D) (CH)
B18-10076	Benzo(b)fluoranthene	J (all detects)	Α	Duplicate sample analysis (RPD) (HD)
B18-10114**	Fluoranthene Pyrene	J (all detects)	Р	Internal standards (area) (*XI)
B18-10076**	Benzo(a)anthracene Chrysene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Benzo(e)pyrene Perylene	J (all detects) UJ (all non-detects)	Α	Internal standards (area) (*XI)

Sample	Compound	Flag	A or P	Reason (Code)
B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10029 B18-10114** B18-10115** B18-20116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-007

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 1807003-007

No Sample Data Qualified in this SDG

LDC #: 45386D2b VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-007

Level II/IV

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA Method 625)

Date: 7/19/19
Page: 10f 7
Reviewer: 1

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
ı.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	A	Not reviewed for Level II validation
111.	Initial calibration/ICV	SAINW	Not reviewed for Level II validation \(\), \(\) \(\
IV.	Continuing calibration	w	Not reviewed for Level II validation
V.	Laboratory Blanks	A	/ -
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	A/W	
IX.	Laboratory control samples	*	205/8
X.	Field duplicates	W	D=10+1
XI.	Internal standards	w	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level II validation
XIII.	Target compound identification	A	Not reviewed for Level II validation
XIV.	System performance	\triangle	Not reviewed for Level II validation
XV.	Overall assessment of data	<u> </u>	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

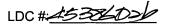
TB = Trip blank
EB = Equipment blank

SB=Source blank OTHER:

**Indicates samples underwent Level IV review

	Client ID	Lab ID	Matrix	Date
1	B18-10022**	56561**	Water	07/18/18
2	B18-10076**	56562**	Water	07/18/18
3	B18-10077**	56563**	Water	07/18/18
4	B18-10112	56564	Water	07/18/18
5	B18-10113**	56565**	Water	07/18/18
6	B18-10024**	56566**	Water	07/19/18
7	B18-10029	56567	Water	07/19/18
8	B18-10114**	56568**	Water	07/19/18
9	B18-10115**	56569**	Water	07/19/18
10	B18-10116**	56570**	Water	07/19/18
11	B18-20116	56571	Water	07/19/18
12	B18-10031	56572	Water	07/20/19
13	B18-10032	56573	Water	07/20/19

SDG Labo	#:45386D2b #:1807003-007 oratory:_Physis Environmenta #HOD: GC/MS Polynuclear A		Date: 7/0/19 Page: 2 of 2 Reviewer: Reviewer: 4		
14	B18-10119		56574	Water	07/20/19
15	B18-10121		56575	Water	07/20/19
16	B18-10123		56576	Water	07/20/19
17	B18-10178		56577	Water	07/20/19
18_	B18-10076MS	 	56562MS	Water	07/18/18
19	B18-10076MSD		56562MSD	Water	07/18/18
20	B18-10076DUP		56562DUP	Water	07/18/18
21					
22					
23					
Note	S:				
					,

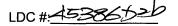


VALIDATION FINDINGS CHECKLIST

Page: /of // Reviewer: 9

Method: Semivolatiles (EPA Method 625)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	/			
Was cooler temperature criteria met?			_	
II. GC/MS Instrument performance check				
Was a tune check performed prior to establishing and/or re-establishing an initial calibration?				
Were the DFTPP performance results reviewed and found to be within the specified criteria?				
III. Initial calibration				
Did the laboratory perform at least 5 point calibration prior to sample analysis?				
Were all percent relative standard deviations (%RSD) \leq 35%? $\gamma \leq D.99$?				
IIIa. Initial Calibration Verification calibration				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?				
Were all percent differences (%D) ≤ 20%?				
IV. Continuing calibration				
Was a continuing calibration standard analyzed at the beginning of each analysis batch?				
Were all percent differences (%D) of continuing calibration ≤ 20%?				
V.Laboratory Blanks		1		
Was a laboratory blank associated with every sample in this SDG?				
Was a laboratory blank analyzed with each analysis batch?		<u> </u>		
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.				
VI. Field blanks			,	
Field blanks were identified in this SDG.			<u> </u>	
Target compounds were detected in the field blanks.			/	
VII. Surrogate spikes				
Were all surrogate %R within the QC limits?				
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?				
VIII. Matrix spike/Matrix spike duplicates				
Was a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for this SDG?			<u>L</u> _	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		D	<u> </u>	
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	/			



VALIDATION FINDINGS CHECKLIST

Page: of Reviewer: 2nd Reviewer:

Validation Area	Yes	. No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?				
Were the LCS percent recoveries (%R) within 70-130%?				
X. Field duplicates				ni 1500 Pilong Lengt south de
Field duplicate pairs were identified in this SDG.		-		
Target compounds were detected in the field duplicates.				
XI. Internal standards				
Were internal standard area counts within +/-30% of the area of the most recent continuing calibration standard and +/-50% of the average peak area in the initial calibration?	`		i	
Were retention times within +/-30 seconds of the associated calibration standard?				
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) or regression equations used to quantitate the compound?	/	<u></u>		
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?				
Did compound spectra meet specified EPA "Functional Guidelines" criteria?				
Were chromatogram peaks verified and accounted for?				
XIV. System performance				
System performance was found to be acceptable.				
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.				

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

WETHOD. GC/MS 3VOA				
A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG.Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o"-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine

110- VV 0- 212-11/



VALIDATION FINDINGS WORKSHEET Initial Calibration

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

/ N N/A Did the laboratory conduct an acceptable 5 point calibration prior to sample analysis?

YN N/A Were all percent relative standard deviations (%RSD) ≤ 15 and relative response factors (RRF) within method criteria?

Was a curve fit used for evaluation?

Did the initial calibration meet the curve fit acceptance criteria of > 0.990?

YW	/N/A	Did the initial calibration r	meet the curve fit accep	tance criteria of ≥ 0.990?	?		
#	Date	Standard ID	Compound	Finding %RSD (Limit: <u><</u> 15.0%)	Finding RRF (Limit: <u>≥</u> 0.05)	Associated Samples	Qualifications
	8/4/18	10AL	3	$\begin{array}{c} \text{(Limit: <15.0\%)} \\ \gamma^2 = 0.9816 \\ = 0.9860 \\ = 0.9853 \\ = 0.9888 \\ = 0.9881 \end{array}$		1-3.5-6.8-10 MB	J/W/A (Be)
	/ /	,	W	1 = 0.9860		(ND)	
			TTT	=0.9853		' /	
			XXX	=0.9888	-		/
			44	1 =0.9891			V
			/	/			
		,					
				<i>'</i>			

LDC#4538660h

VALIDATION FINDINGS WORKSHEET Initial Calibration Verification

Page: ___of__ Reviewer: ____ 2nd Reviewer: ____

METHOD: GC/MS BNA (EPA SW-846 Method 8270D) 6 >5

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was an initial calibration verification standard analyzed after each ICAL for each instrument?

Y N N/A

Was an initial calibration verification standard analyzed after each ICAL for each instrument?

Were all %D within the validation criteria of ≤30 %D?

Date	Standard ID	Compound	Finding %D (Limit: ≤3 0.0%) ⋜⋜(0)	Associated Samples	Qualifications (HV)
87/18	PAHEV	3	36	All I Sole + NO)	J/W/A (A)
			30	1-3.5-6 8-10, ME	
			34		
			≥ ₹		
			27		
		D D	34		
		44			
		N	35		
		AAA	3534		
		UU	37 '		
		VV.	45		
		サ カサナ	W		
		YY	3/		
		22	25		
		ac			
		7000			I
		444	24		
			,		
	Date \$7/18		87/18 PAHLEV S W TITT EEEC XXX DD AAAA NN HHHH YY ZZ DDD CC DDD	81/18 PAHLEV S 36 W 30 TTT 34 EEEE 28 XXX 27 DD 34 AAA 35 AAA 35 VV 45 HHHH 31 YY 31 ZZ 25 ZC 29 7000 29	87/8 PAHLEY S 36 AT (10/2+NO) W 30 13.5-6.8-10, ME TITT 34 EEEC 28 XXX 27



VALIDATION FINDINGS WORKSHEET <u>Continuing Calibration</u>

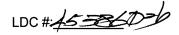
METHOD: GC/MS BNA (EPA SW 846 Method 8270D)ービング

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?

Y[N]N/A Were percent differences (%D) ≤20 % and relative response factors (RRF) within the method criteria?

#	Date Date	Standard ID	Compound	Finding %D (Limit: <20.0%)	Finding RRF (Limit)	Associated Samples	Qualifications
	38/18	PAHECY	$\lambda\lambda$	23		1-3.5-6,8+0.MB	V(N/A (=H)
	7 /		22	26 38		(Set=+NO)	
			444	38			
<u> </u>				4			
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VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:	$\angle Qf \angle$
Reviewer:	7
2nd Reviewer:_	R

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Was a MS/MSD analyzed every 20 samples of each matrix?

N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	20	444	()	()	3/ (5/25)	2 (dets)	blets/A(HO)
			()	()	()		
			()	()	()		
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LDC#453860

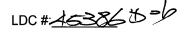
VALIDATION FINDINGS WORKSHEET <u>Field Duplicates</u>

Page:__/of / Reviewer:_____ 2nd Reviewer:_____

METHOD: GCMS PAH 8270D

Concentration (ng/L)			
Compound	10	11	RPD
GGG	1.82	2.36	26
YY	3.12	3.06	2
zz	1.96	2.04	4
DD	5U	1.22	NC

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2019\45386D2b_RHMP.wpd



VALIDATION FINDINGS WORKSHEET Internal Standards

Page:_	<u>/</u> of_/_
Reviewer:	\sim
2nd Reviewer:	R

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

YON/A

Were all internal standard area counts within -50 to +100 of the associated calibration standard?

IY N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

I I I	19//	vvere the retention times of	the internal standa	irds within +/- 30 seconds of the reter	TRION LIMES OF THE ASSOCIATED CAIR	ration standard:
#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications (*#)
		8 (dos No	10-VV	2708837(4818849-	8949-91)	Jolets/+*
	-	(xy, 22-dets)				
		20 (Lab dup	AD-111	5435767(1749170-324	*8458) 9	
		20 (100 aug		3435/01(1147110)-7	0730	
		2 (dos+ND)	d12-111	4666375 (1075347-430	(390)	-VWA X
		20 (Lab dup)	112-111 112-12L	5435767 (V	3886(44)	No Ceral
		· · · · · · · · · · · · · · · · · · ·	A12-666	3958406 (970036-	8080177)	
					<u></u>	
						* see and list
	-					
-						
			W.			
$\ -\ $						

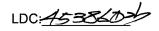
(DCB) = 1,4-Dichlorobenzene-d4 (NPT) = Naphthalene-d8

(ANT) = Acenaphthene-d10

(PHN) = Phenanthrene-d10

(CRY) = Chrysene-d12

(PRY) = Perylene-d12



VALIDATION FINDINGS WORKSHEET Initial Calibration Calculation Verification

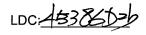
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Reviewwe: 9
nd Reviewer: _______

Method: GC/MS (EPA Method 625)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
8/6/2018	Fluoranthene	1	50	0.0179006000
		2	100	0.0401597000
		3	250	0.1200643000
		4	500	0.2636598000
		5	1000	0.5716119000

Linear through the origin

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	0.00055726	0.00055726
Correlation Coefficient	0.998615	0.99449
Coefficient of Determination (r^2)	0.997232	



VALIDATION FINDINGS WORKSHEET Initial Calibration Calculation Verification

Page: of 3
Reviewwe: 2nd Reviewer:

Method: GC/MS (EPA Method 625)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
8/6/2018	Benzo(a)pyrene	1	50	0.040952200
		2	100	0.074028400
		3	250	0.184882600
		4	500	0.369202200
	<u>'</u>	5	1000	0.652374000

Linear through the origin

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	0.00067370	0.000674
Correlation Coefficient	0.998449	0.99264
Coefficient of Determination (r^2)	0.996901	



VALIDATION FINDINGS WORKSHEET Initial Calibration Calculation Verification

Page: of Page: 2nd Reviewer:

Method: GC/MS (EPA Method 625)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
8/6/2018	Benzo(g,h,i)perylene	1	50	0.0316482
		2	100	0.0626504
	I F	3	250	0.1563291
		4	500	0.333455600
		5	1000	0.609684000

Linear through the origin

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	0.00062139	0.000621
Correlation Coefficient	0.999359	0.99711
Coefficient of Determination (r^2)	0.998718	

LDC #: 4538600

VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page:_	<u></u>
Reviewer:_	D
2nd Reviewer:	2

METHOD: GC/MS Semivolatiles (EPA Method 625.1)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF

 $RRF = (A_x)(C_{is})/(A_{is})(C_x)$

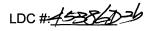
Where: ave. RRF = initial calibration average RRF

RRF = continuing calibration RRF

 $\begin{array}{ll} A_x = \text{Area of compound,} & A_{is} = \text{Area of associated internal standard} \\ C_x = \text{Concentration of compound,} & C_{is} = \text{Concentration of internal standard} \end{array}$

					Reported	Recalculated	Reported	Recalculated
#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	RRF (CC)	RRF (CC)	%D	%D
1	7×4 <cv< td=""><td>2/8/18</td><td>Phenol (1st internal standard)</td><td>500</td><td>612,5605</td><td>612,560</td><td>هِج</td><td>22.5</td></cv<>	2/8/18	Phenol (1st internal standard)	500	612,5605	612,560	هِج	22.5
			Naphthalene (2nd internal standard)		AT2.552T	472,339	5	5.5
			Rentachlorophenol (3rd internal standard)		493.1696	293.169T		1.4
			Pyrene (4th internal standard)				/	/
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Indeno(1,2,3-cd)pyrene (6th internal standard)					
2			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Pentachlorophenol (3rd internal standard)					
			Pyrene (4th internal standard)					
		-	Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Indeno(1,2,3-cd)pyrene (6th internal standard)					
3			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Pentachlorophenol (3rd internal standard)					
)			Pyrene (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Indeno(1,2,3-cd)pyrene (6th internal standard)					

Comments: _	Refer to	Continuing	Calibration fi	<u>indings work</u>	sheet for I	<u>ist of c</u>	qualifications and	associated	samples v	when reported	results do n	<u>ot agree withi</u>	n 10.0%	of the
recalculated	results.													



VALIDATION FINDINGS WORKSHEET Surrogate Results Verification

Reviewer: 2nd reviewer:_

METHOD: GC/MS Semivolatiles (EPA Method 625.1)

The percent recoveries	(%R) of	f surrogates were	recalculated for	the compounds	identified below	using the	following	calculation:
THE DELCENT LECOVELIES	1 /01 1 / 01	i Sullogates Wele	i i coaloulateu ioi	uic compounds	INCHILITIES DEIGN	using the	, IOHOVVIII	4 Calculation.

% Recovery: SF/SS * 100

Where: SF = Surrogate Found SS = Surrogate Spiked

Sample ID:___/___

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
d10-GG	10000	690.30 986.42 763.42 803.53 463.89	69	69	
d10-UU		986.42	99	99	
d12-DDD		763.42	76	76	
d12-ZZZ		803.53	80	80	
d8-S		463.89	46	46	

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					***
Phenol-d6					
2-Fluorophenol					
2,4,6-Tribromophenol					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl		_			
Terphenyl-d14					
Phenol-d6					
2-Fluorophenol					
2,4,6-Tribromophenol					

LDC #:4538/00%

VALIDATION FINDINGS WORKSHEET <u>Matrix Spike/Matrix Spike Duplicates Results Verification</u>

Page:_	
Reviewer:_	7
nd Reviewer:	2

METHOD: GC/MS Semivolatiles (EPA Method 625.1)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked sam SA = Spike added

Where: SSC = Spiked sample concentration

SC = Sample concentation

RPD = I MSC - MSC I * 2/(MSC + MSDC)

MSC = Matrix spike concentration

MSDC = Matrix spike duplicate concentration

MS/MSD samples:

Compound	Spike Added, (<i>M2</i> S/ C.)		Sample Spiked Sample Concentration		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD		
	MS	MSD		MS_	MSD	Reported	Recalc	Reported	Recalc ,	Reported	Recalculated
Acenaphthene	562	568	ND	464	419	83	83	74	74	1/	10
Pyrene	V	ν	2.5/	587	613	104	104	107	107	(N)	4
							. ,		' /		

Comments: Refer to Matrix Spike/Matrix Spike Duj	<u>olicates findings worksheet for list o</u>	f qualifications and associated sam	<u>oles when reported results do r</u>	<u>not agree within 10.0%</u>
of the recalculated results.				

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LDC #: 45360

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page:_	_/of/
Reviewer:_	9
2nd Reviewer:	2

METHOD: GC/MS Semivolatiles (EPA Method 625.1)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA)

Where:

SSC = Spike concentration

SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC)

LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 5659-BSI/-BS2

	Sı	oike	Sı	oike		LCS		LCSD		LCS/LCSD	
Compound	Ad (//	ded 5 /)	ed Concentration (NS/L)		Percent Recovery		Percent Recovery		RPD		
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated	
Acenaphthene	500	500	425	447	85	85	89	89	5	5	
Pyrene	V	V	449	418	90	90	84	84	7	フ	
	W 2						70.				
						*****		170.00	-	· · · · · · · · · · · · · · · · · · ·	
								-			

Comments: Refer to Laboratory Control Sample/Laboratory	Control Sample Duplicates f	findings worksheet for lis	t of qualifications and	associated samples when rep	orted
results do not agree within 10.0% of the recalculated results.					

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VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:_	
Reviewer:	9—
2nd reviewer:	
	-r

METHOD: GC/MS Semivolatiles (EPA Method 625.1)

IY	N	N/A
$(\mathbf{Y}$	N	N/A

Df

%S

2.0

=

Were all reported results recalculated and verified for all level IV samples? Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $(A_x)(I_x)(V_t)(DF)(2.0)$ Example: $(A_{is})(RRF)(V_o)(V_i)(\%S)$ Area of the characteristic ion (EICP) for the compound to be measured Area of the characteristic ion (EICP) for the specific internal standard Amount of internal standard added in nanograms (ng) Volume or weight of sample extract in milliliters (ml) or grams (g). Volume of extract injected in microliters (ul) V_{i} Volume of the concentrated extract in microliters (ul) V, =

Percent solids, applicable to soil and solid matrices

Factor of 2 to account for GPC cleanup

Dilution Factor.

only.

Conc. = 60 5) 0.	ST47)()()()
568217)(0,000 S)	5726))
= 4, 735n8	3/_			

#	Sample ID	Compound	Reported Concentration (N5/2)	Calculated Concentration ()	Qualification
	Q	~/~	4.74		
 			77.07		
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 16, 2019

Parameters: Metals

Validation Level: Level II & IV

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-007

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10022**	56561**	Water	07/18/18
B18-10076**	56562**	Water	07/18/18
B18-10077**	56563**	Water	07/18/18
B18-10112	56564	Water	07/18/18
B18-10113**	56565**	Water	07/18/18
B18-10024**	56566**	Water	07/19/18
B18-10029	56567	Water	07/19/18
B18-10114**	56568**	Water	07/19/18
B18-10115**	56569**	Water	07/19/18
B18-10116**	56570**	Water	07/19/18
B18-20116	56571	Water	07/19/18
B18-10031	56572	Water	07/20/19
B18-10032	56573	Water	07/20/19
B18-10119	56574	Water	07/20/19
B18-10121	56575	Water	07/20/19
B18-10123	56576	Water	07/20/19
B18-10178	56577	Water	07/20/19
B18-10022F**	56561F**	Water	07/18/18
B18-10076F**	56562F**	Water	07/18/18
B18-10077F**	56563F**	Water	07/18/18
B18-10112F	56564F	Water	07/18/18
B18-10113F**	56565F**	Water	07/18/18
B18-10024F**	56566F**	Water	07/19/18
B18-10029F	56567F	Water	07/19/18
B18-10114F**	56568F**	Water	07/19/18
B18-10115F**	56569F**	Water	07/19/18

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10116F**	56570F**	Water	07/19/18
B18-20116F	56571F	Water	07/19/18
B18-10031F	56572F	Water	07/20/19
B18-10032F	56573F	Water	07/20/19
B18-10119F	56574F	Water	07/20/19
B18-10121F	56575F	Water	07/20/19
B18-10123F	56576F	Water	07/20/19
B18-10178F	56577F	Water	07/20/19
B18-10076MS	56562MS	Water	07/18/18
B18-10076MSD	56562MSD	Water	07/18/18
B18-10076DUP	56562DUP	Water	07/18/18
B18-10116MS	56570MS	Water	07/19/18
B18-10116MSD	56570MSD	Water	07/19/18
B18-10116DUP	56570DUP	Water	07/19/18
B18-20116MS	56571MS	Water	07/19/18
B18-20116MSD	56571MSD	Water	07/19/18
B18-20116DUP	56571DUP	Water	07/19/18
B18-10178MS	56577MS	Water	07/20/19
B18-10178MSD	56577MSD	Water	07/20/19
B18-10178DUP	56577DUP	Water	07/20/19
B18-10076FDUP	56562FDUP	Water	07/18/18
B18-10116FDUP	56570FDUP	Water	07/19/18
B18-20116FMS	56571FMS	Water	07/19/18
B18-20116FMSD	56571FMSD	Water	07/19/18
B18-20116FDUP	56571FDUP	Water	07/19/18
B18-10178FDUP	56577FDUP	Water	07/20/19

Samples appended with "F" were analyzed for dissolved metals **Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Thallium, Tin, Titanium, Vanadium, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 1640 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10076F** B18-10077F** B18-10112F B18-10113F**	Mercury	45	28	UJ (all non-detects)	Р
B18-10024** B18-10029 B18-10114** B18-10115** B18-10116** B18-20116 B18-10024F** B18-10029F B18-10114F** B18-10116F** B18-20116F	Mercury	44	28	UJ (all non-detects)	P
B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178 B18-10031F B18-10032F B18-10119F B18-10121F B18-10121F B18-10123F B18-10178F	Mercury	43	28	UJ (all non-detects)	Р

II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Initial and continuing calibrations were performed as required by the methods with the following exceptions:

Sample	Analyte	Finding	Criteria
B18-10022** B18-10076** B18-10077** B18-10113** B18-10115** B18-10116** B18-10022F** B18-10076F** B18-10076F** B18-100113F** B18-100115F** B18-10114F** B18-10115F** B18-10116F**	All analytes except Mercury	More than ten samples were run between CCVs.	No more than ten samples to be run between CCVs.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
10/15/19	ICV (19:02)	Selenium	110.8 (90-110)	B18-10022** B18-10076** B18-10077** B18-10113** B18-10114** B18-10115** B18-10116** B18-10022F** B18-10076F** B18-10077F** B18-10113F** B18-10114F** B18-10114F** B18-10114F** B18-10115F** B18-10116F**	J (all detects)	P
10/15/19	CCV (23:43)	Selenium	118.2 (90-110)	B18-10022** B18-10076** B18-10077** B18-10113** B18-10115** B18-10116** B18-10022F** B18-10076F** B18-10077F** B18-10113F** B18-10114F** B18-10114F** B18-10115F** B18-10116F**	J (all detects)	Р

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
10/15/19	CCV (18:23)	Beryllium	85.9 (90-110)	B18-10022** B18-10076** B18-10077** B18-10113** B18-10114** B18-10115** B18-10116** B18-10022F** B18-10076F** B18-10077F** B18-10113F** B18-10114F** B18-10114F** B18-10114F** B18-10116F**	J (all detects) UJ (all non-detects)	Р

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods with the following exceptions:

Sample	Analyte	Finding	Criteria
B18-10022** B18-10076** B18-10077** B18-10113** B18-10114** B18-10115** B18-10116** B18-10022F** B18-10076F** B18-10076F** B18-100113F** B18-10114F** B18-10114F** B18-10115F** B18-10116F**	All analytes	No closing CCB associated with these samples.	Closing CCB required for all samples.

No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID		MS (%R)	MSD (%R)		
(Associated Samples)	Analyte	(Limits)	(Limits)	Flag	A or P
B18-10076MS/MSD (B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10024** B18-10029 B18-10114** B18-10115** B18-10116**)	Antimony	11 (75-125)	11 (75-125)	J (all detects)	A
B18-10076MS/MSD (B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10024** B18-10029 B18-10114** B18-10115** B18-10116**)	Iron	130 (75-125)	155 (75-125)	J (all detects)	А
B18-10076MS/MSD (B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10024** B18-10029 B18-10114** B18-10116**)	Titanium	44 (75-125)	44 (75-125)	J (all detects)	A
B18-20116FMS/MSD (B18-20116F B18-10031F B18-10032F B18-10119F B18-10121F B18-10123F B18-10178F)	Antimony	10 (75-125)	10 (75-125)	J (all detects)	A
B18-20116FMS/MSD (B18-10178F)	Iron	690 (75-125)	630 (75-125)	J (all detects)	А

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-20116FMS/MSD (B18-20116F B18-10031F B18-10032F B18-10119F B18-10121F B18-10123F)	Iron	690 (75-125)	630 (75-125)	NA	-
B18-20116MS/MSD (B18-20116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178)	Beryllium Silver	73 (75-125) 74 (75-125)	71 (75-125) -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
B18-20116MS/MSD (B18-20116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178)	Titanium	155 (75-125)	-	J (all detects)	A

For B18-10076MS/MSD and B18-10116MS/MSD, no data were qualified for aluminum percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

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

Spike ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-20116MS/MSD (B18-20116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178)	Aluminum Titanium	67 (≤25) 37 (≤25)	J (all detects) J (all detects)	A

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
B18-10076DUP (B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10024** B18-10029 B18-10114** B18-10115** B18-10116**)	Cadmium Selenium	67 (≤25) -	- 0.019 ug/L (≤0.015)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
B18-20116DUP (B18-20116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178)	Zinc	38 (≤25)	-	J (all detects)	A
B18-10076FDUP (B18-10022F** B18-10076F** B18-10077F** B18-10112F B18-10113F** B18-10024F** B18-10029F B18-10114F** B18-10116F**	Cadmium Lead	31 (≤25) 52 (≤25)	-	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	А
B18-20116FDUP (B18-20116F B18-10031F B18-10032F B18-10119F B18-10121F B18-10123F B18-10178F)	Titanium	44 (≤25)	-	J (all detects)	A

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Standard Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56560-LCS1/2 (B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10029 B18-10115** B18-10116** B18-10022F** B18-10076F** B18-10112F B18-10113F** B18-10115* B18-10115F** B18-10029F B18-10115F** B18-10115F** B18-10115F** B18-10115F** B18-10115F** B18-10115F** B18-10116F**)	Zine	121 (72-116)	-	J (all detects)	P
57249-LCS1/2 (B18-20116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178 B18-20116F B18-10031F B18-10032F B18-10119F B18-10121F B18-10123F B18-10178F)	Silver	-	56 (61-113)	UJ (all non-detects)	Р

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

LCS ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
56560-LCS1/2 (B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10029 B18-10115** B18-10116** B18-10022F** B18-10077F** B18-10113F** B18-10113F** B18-10113F** B18-10113F** B18-1012F B18-10113F** B18-10115F** B18-10115F** B18-10115F** B18-10115F** B18-10115F** B18-10116F**)	Zinc Titanium	33 (≤30) 35 (≤30)	J (all detects) J (all detects)	Р

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

XI. Field Replicates

Samples B18-10116** and B18-20116 and samples B18-10116F** and B18-20116F were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentra		
Analyte	B18-10116**	B18-20116	RPD
Aluminum	216	246	13
Antimony	0.115	0.102	12
Arsenic	1.27	1.51	17
Barium	8.1	7.71	5
Beryllium	0.005U	0.0154	Not calculable
Cadmium	0.0274	0.0521	62
Chromium	0.261	0.521	66
Cobalt	0.0971	0.115	17

	Concentr		
Analyte	B18-10116**	B18-20116	RPD
Copper	1.96	3.01	42
Iron	128	112	13
Lead	0.285	0.378	28
Manganese	8.27	8.4	2
Molybdenum	8.84	7.27	19
Nickel	0.432	0.473	9
Selenium	0.0201	0.012	50
Thallium	0.009	0.00847	6
Tin	0.00692	0.0102	38
Titanium	22	33.6	42
Vanadium	2.63	2.96	12
Zinc	6.22	5.71	9

	Concentra		
Analyte	B18-10116F**	B18-20116F	RPD
Antimony	0.14	0.169	19
Arsenic	1.33	1.5	12
Barium	9.14	8.82	4
Beryllium	0.00549	0.005U	Not calculable
Cadmium	0.0281	0.049	54
Chromium	0.0531	0.104	65
Cobalt	0.0451	0.052	14
Copper	1.56	2.42	43

	Concentra		
Analyte	B18-10116F**	B18-20116F	RPD
Lead	0.0025U	0.0388	Not calculable
Manganese	3.47	3.65	5
Molybdenum	9.6	8.58	11
Nickel	0.375	0.436	15
Selenium	0.0225	0.0188	Not calculable
Thallium	0.00736	0.00804	9
Tin	0.005U	0.00902	Not calculable
Titanium	22	18	20
Vanadium	2.3	2.54	10
Zinc	4.28	6.01	34

XII. Internal Standards (ICP-MS)

All internal standard percent recoveries (%R) were within QC limits for samples which underwent Level IV validation with the following exceptions:

Sample	Internal Standard	%R (Limits)	Affected Analyte	Flag	A or P
B18-10024**	Rhodium (Tune 1)	0.1 (60-125)	Selenium	J (all detects)	Р
B18-10024**	Rhodium (Tune 2)	59.3 (60-125)	Iron Nickel Copper Molybdenum Cadmium Tin Antimony	J (all detects)	Р

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All sample result verifications were acceptable for samples which underwent Level IV validation.

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-007	Analyte reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, ICV and CCV %R, MS/MSD %R and RPD, DUP RPD and difference, LCS/LCSD %R and RPD, internal standard %R, and results reported below the RL and above the MDL, data were qualified as estimated in thirty-four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-007

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10029 B18-10115** B18-10115** B18-10116** B18-20116 B18-10031 B18-10032 B18-10119 B18-10123 B18-10123 B18-10178 B18-10119F B18-10115F** B18-10115F** B18-10116F** B18-10116F** B18-10119F B18-10119F B18-10119F B18-10121F B18-10121F B18-10127F B18-10119F B18-10127F	Mercury	UJ (all non-detects)	P	Technical holding times (H)
B18-10022** B18-10076** B18-10077** B18-10113** B18-10024** B18-10115** B18-10116** B18-10076F** B18-10076F** B18-10113F** B18-10024F** B18-10114F** B18-10115F** B18-10115F** B18-10116F**	Selenium	J (all detects)	Р	Instrument calibration (ICV %R) (HV)

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10022** B18-10076** B18-10077** B18-10113** B18-10024** B18-10115** B18-10116** B18-10076** B18-10077F** B18-10074F** B18-10113F** B18-10114F** B18-10115F** B18-10115F** B18-10116F**	Selenium	J (all detects)	P	Instrument calibration (CCV %R) (CH)
B18-10022** B18-10076** B18-10076** B18-100113** B18-10024** B18-10115** B18-10116** B18-10022F** B18-10076F** B18-10013F** B18-10113F** B18-10115F** B18-10115F** B18-10115F** B18-10116F**	Beryllium	J (all detects) UJ (all non-detects)	Р	Instrument calibration (CCV %R) (LC)
B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10024** B18-10029 B18-10114** B18-10115** B18-10116**	Antimony Titanium	J (all detects) J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10024** B18-10029 B18-10115** B18-10115** B18-10116** B18-10178F	Iron	J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (HM)

	1			
Sample	Analyte	Flag	A or P	Reason (Code)
B18-20116F B18-10031F B18-10032F B18-10119F B18-10121F B18-10123F B18-10178F	Antimony	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-20116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178	Beryllium Silver	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-20116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178	Titanium	J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (HM)
B18-20116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178	Aluminum Titanium	J (all detects) J (all detects)	А	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10024** B18-10029 B18-10114** B18-10116**	Cadmium	J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10024** B18-10029 B18-10114** B18-10116**	Selenium	J (all detects) UJ (all non-detects)	А	Duplicate sample analysis (difference) (HD)
B18-20116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178	Zinc	J (all detects)	А	Duplicate sample analysis (RPD) (HD)

				·
Sample	Analyte	Flag	A or P	Reason (Code)
B18-10022F** B18-10076F** B18-10077F** B18-10112F B18-10113F** B18-10024F** B18-10029F B18-10114F** B18-10115F** B18-10116F**	Cadmium Lead	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	Α	Duplicate sample analysis (RPD) (HD)
B18-20116F B18-10031F B18-10032F B18-10119F B18-10121F B18-10123F B18-10178F	Titanium	J (all detects)	A	Duplicate sample analysis (RPD) (HD)
56560-LCS1/2 (B18-10022** B18-10076** B18-10112 B18-10112 B18-10113** B18-10029 B18-10115** B18-10116** B18-10116** B18-1007F** B18-10112F B18-10113F** B18-10113F** B18-10024F** B18-10115F** B18-10115F** B18-10115F** B18-10115F** B18-10115F** B18-10115F** B18-10116F**)	Zinc	J (all detects)	Р	Laboratory control samples (%R) (HP)
B18-20116 B18-10031 B18-10032 B18-10119 B18-10123 B18-10123 B18-20116F B18-20116F B18-10031F B18-10032F B18-10121F B18-10121F B18-10121F	Silver	UJ (all non-detects)	Р	Laboratory control samples (%R) (LP)

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10029 B18-10115** B18-10116** B18-10076F** B18-10077F** B18-10112F B18-10112F B18-10112F B18-10112F B18-10112F B18-10112F B18-10115F** B18-10029F B18-10114F** B18-100115F** B18-10115F** B18-10116F**	Zinc Titanium	J (all detects) J (all detects)	Р	Laboratory control samples (RPD) (HD)
B18-10024**	Selenium Iron Nickel Copper Molybdenum Cadmium Tin Antimony	J (all detects)	Р	Internal standards (%R) (*XII)
B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10029 B18-10114** B18-10115** B18-10116** B18-10116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10128 B18-10178 B18-10022F** B18-10077F** B18-10077F** B18-10113F** B18-10024F** B18-10115F** B18-10116F** B18-10116F** B18-10031F B18-10031F B18-10031F B18-10031F B18-10032F B18-10119F B18-10032F B18-10119F B18-10121F B18-10121F B18-10121F B18-10123F B18-10178F	Analyte reported below the RL and above the MDL	J (all detects)	A	Sample result verification (DL)

2018 Regional Harbor Monitoring Program Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-007

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-007

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-007

LDC #: 45386D4a

Level II/IV

Laboratory: Physis Environmental Laboratories, Inc.

Page:__ Reviewer:_ 2nd Reviewer:

METHOD: Metals (EPA Method 1640/200.8/245.7)

The samples listed below we're reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	ARW	
	ICP/MS Tune	A	Not reviewed for Level II validation
III.	Instrument Calibration	5W	Not reviewed for Level II validation
IV.	ICP Interference Check Sample (ICS) Analysis	N	Not reviewed for Level II validation
V.	Laboratory Blanks	Sul	
VI.	Field Blanks	N	
VII.	Matrix Spike/Matrix Spike Duplicates	Sw	
VIII.	Duplicate sample analysis	ŠW_	
IX.	Serial Dilution	N_{\perp}	
X.	Laboratory control samples	Alsw	LCIQ, SRMID
XI.	Field Duplicates	5w/	(10,11) (21,2R)
XII.	Internal Standard (ICP-MS)	SW_	Not reviewed for Level II validation
XIII.	Sample Result Verification	A	Not reviewed for Level II validation
XIV	Overall Assessment of Data	A-	

Note:

A = Acceptable

ND = No compounds detected

D = Duplicate TB = Trip blank SB=Source blank OTHER:

N = Not provided/applicable SW = See worksheet R = Rinsate FB = Field blank

EB = Equipment blank

**Indicates samples underwent Level IV review / Samples appended with "F" were analyzed as Dissolved

mak	Indicates samples underwent Level IV review / Samples appended with "F" were analyzed as Dissolved					
	Client ID	Lab ID	Matrix	Date		
1	B18-10022**	56561**	Water	07/18/18		
2	B18-10076**	56562**	Water	07/18/18		
3	B18-10077**	56563**	Water	07/18/18		
4	B18-10112	56564	Water	07/18/18		
5	B18-10113**	56565**	Water	07/18/18		
6	B18-10024**	56566**	Water	07/19/18		
6 7	B18-10029	56567	Water	07/19/18		
8	B18-10114**	56568**	Water	07/19/18		
9	B18-10115**	56569**	Water	07/19/18		
10_	B18-10116**	56570**	Water	07/19/18		
11	B18-20116	56571	Water	07/19/18		
12	B18-10031	56572	Water	07/20/19		
13	B18-10032	56573	Water	07/20/19		
14	B18-10119	56574	Water	07/20/19		
15	B18-10121	56575	Water	07/20/19		

VALIDATION COMPLETENESS WORKSHEET

LDC #: 45386D4a SDG #: 1807003-007

Level II/IV

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: Metals (EPA Method 1640/200.8/245.7)

Date: 7(S/9
Page: 2of 23
Reviewer: 2nd Reviewer:

16	B18-10123	56576	Water	07/20/19
17	B18-10178	56577	Water	07/20/19
18	B18-10022F**	56561F**	Water	07/18/18
19	B18-10076F**	56562F**	Water	07/18/18
20	B18-10077F**	56563F**	Water	07/18/18
21	B18-10112F	56564F	Water	07/18/18
22	B18-10113F**	56565F**	Water	07/18/18
23	B18-10024F**	56566F**	Water	07/19/18
24	B18-10029F	56567F	Water	07/19/18
25	B18-10114F**	56568F**	Water	07/19/18
26	B18-10115F**	56569F**	Water	07/19/18
27	B18-10116F**	56570F**	Water	07/19/18
28	B18-20116F	56571F	Water	07/19/18
29	B18-10031F	56572F	Water	07/20/19
30	B18-10032F	56573F	Water	07/20/19
31	B18-10119F	56574F	Water	07/20/19
32	B18-10121F	56575F	Water	07/20/19
33	B18-10123F	56576F	Water	07/20/19
34	B18-10178F	56577F	Water	07/20/19
35	B18-10076MS	56562MS	Water	07/18/18
36	B18-10076MSD	56562MSD	Water	07/18/18
37	B18-10076DUP	56562DUP	Water	07/18/18
38	B18-10116MS	56570MS	Water	07/19/18
39	B18-10116MSD	56570MSD	Water	07/19/18
40	B18-10116DUP	56570DUP	Water	07/19/18
41	B18-20116MS	56571MS	Water	07/19/18
42	B18-20116MSD	56571MSD	Water	07/19/18
43	B18-20116DUP	56571DUP	Water	07/19/18
44	B18-10178MS	56577MS	Water	07/20/19
45	B18-10178MSD	56577MSD	Water	07/20/19
46	B18-10178DUP	56577DUP	Water	07/20/19
47	B18-10076FDUP	56562FDUP	Water	07/18/18
48	B18-10116FDUP	56570FDUP	Water	07/19/18
11				07/19/18
49	B18-20116FDUP	56571FDUP	Water	107/19/18

LDC #: 45386D4a VALIDATION COMPLETENESS WORKS SDG #: 1807003-007 Level II/IV Laboratory: Physis Environmental Laboratories, Inc.	HEET Date: 7 (S) Page:sf Reviewer: 2nd Reviewer:
METHOD: Metals (EPA Method 1640/200.8/245.7)	
51 AARMS 52 AARMSD 53	
Notes:	

LDC#: 4536604a

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page:	1of	1_
Reviewer:	CR	
2nd reviewer		_

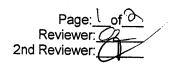
All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
134		Al, Sb, As, Ba, Be, Cd, Ca Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na (Tl, V, Zn, Mo) B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
Q:35-37	,47	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Nn, K, Se, Ag, Na, Ti, V, Zn, Mo)B, Sn, Ti)
3840	148 7	Al, Sb, As Ba, Be, Cd) Ca, Cr, Co, Cu, Fe, Pb, Mg, (Mn, Hg, Ni) K, Se, Ag, Na, Ti, V, Zn, Mg, B, Sn, Ti,
3840	48	Al, Sb, As Ba) Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
41-48	X	(Al)Sb, (As), Ba, (Be)Cd, Ca(Cr, Co) (Cu), Fe, Pb, Mg, (Mn) (Hg) Ni, K, Se (Ag, Na (Ti), Zn, Mo, B, Sn (Ti,)
51.5	λ	Al, Sb) As, Ba, Be, Cd) Ca, Cr, Co Cd) Fe, Pb, Mg, Mn, Hg, (Ni) K, Se) Ag, Na, Tl, V, Zn (Mo) B(Sn) Ti,
43,	49	(Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb) Mg, (Mn, Hg, Ni) K, (Se, Ag, Na, Tl, V, Zn, Mg, B(Sn, Ti,)
44-96	50	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	4	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA		Al, Sh, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Ph, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti

Comments: Mercury by CVAA if performed

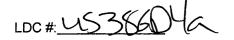
LDC#: 4536601a

VALIDATION FINDINGS CHECKLIST

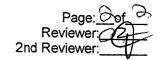


Method: Metals (EPA SW 846 Method 6010/6020/7000)

Validation Area	Yes	No	NA	Findings/Comments					
I. Technical holding times									
All technical holding times were met.	V								
Cooler temperature criteria was met.									
II. ICP/MS Tune									
Were all isotopes in the tuning solution mass resolution within 0.1 amu?	1								
Were %RSD of isotopes in the tuning solution ≤5%?	/								
III. Calibration									
Were all instruments calibrated daily, each set-up time?	V								
Were the proper number of standards used?	V								
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury) QC limits?		V		/					
Were the low standard checks within 70-130%		/	V						
Were all initial calibration correlation coefficients within limits as specified by the method?	/								
IV. Blanks	/								
Was a method blank associated with every sample in this SDG?	V								
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		V							
V. ICP Interference Check Sample			,						
Were ICP interference check samples performed daily?			V						
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?			V						
VI. Matrix spike/Matrix spike duplicates									
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.									
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.									
Were the MS/MSD or duplicate relative percent differences (RPD) \leq 20% for waters and \leq 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were \leq 5X the RL, including when only one of the duplicate sample values were \leq 5X the RL.		/							
VII. Laboratory control samples									
Was an LCS anaylzed for this SDG?	/								
Was an LCS analyzed per extraction batch?	/								
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?		/							



VALIDATION FINDINGS CHECKLIST



Validation Area	Yes	No	NA	Findings/Comments
VIII. Internal Standards (EPA SW 846 Method 6020/EPA 200.8)				
Were all the percent recoveries (%R) within the 30-120% (6020)/60-125% (200.8) of the intensity of the internal standard in the associated initial calibration?		V		
If the %Rs were outside the criteria, was a reanalysis performed?		V		
IX. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the MDL (ICP)/>100X the MDL(ICP/MS)?				
Were all percent differences (%Ds) < 10%?				
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.				
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?				
XI. Overall assessment of data				•
Overall assessment of data was found to be acceptable.				
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.				
Target analytes were detected in the field duplicates.				
XIII. Field blanks				
Field blanks were identified in this SDG.				
Farget analytes were detected in the field blanks.			,	

LDC #: 45386D4a

VALIDATION FINDINGS WORKSHEET Technical Holding Times

2nd reviewer:

Were samples preserved? Y N N/A All circled dates have exceeded the technical holding time.

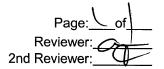
METHOD:		Mercury Holding time = 28 days				
Sample ID:	Sampling Date	Analysis Date	Total Time until Analysis (days)	Code: H	Det/ND	
1-5, 18-22	7/18/18	9/1/18	45	J/UJ/P	ND	
6-11, 23-28	7/19/18	9/1/18	44	J/UJ/P	ND	
12-17, 29-34	7/20/18	9/1/18	43	J/UJ/P	ND	
1,00						

Technical Holding Time Criteria

Mercury: 28 days All other metals: 180 days - 1 year if frozen

LDC #: 45356D

VALIDATION FINDINGS WORKSHEET Calibration



METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all instruments calibrated daily, each set-up time, and were the proper number of standards used?

YNN/A Were all initial and continuing calibration verification percent recoveries (%R) within the control limits of 90-110% for all analytes except mercury (80-120%)?

LEVEL IV ONLY:

Y N N/A Was a midrange cyanide standard distilled?

Y N N/A Are all correlation coefficients >0.995?

Y N N/A Were recalculated results acceptable? See Level IV Initial and Continuing Calibration Recalculation Worksheet for recalculations.

#	Date	Calibration ID	Analyte	%R	Associated Samples	Qualification of Data
-		CCV	All except	7 10 Samptes between	1-3,5,6,8-10, 18-20,	Text
			3	·		
	1					
	101519	ICA (10,05)	Se.	110.8 (90-110)	1-3,5,6,8-0, 18-20,22,	23,25-27 Jdet (Det)
	idislig i	CV (2343)	Se.	118.311		
	10/15/19	CU (18:23)	Be.	85.9		JIJTP (Det(no)
		7				

Comments:	

LDC #:_		
SDG#:	seem	MR

VALIDATION FINDINGS WORKSHEET Blanks

Page:
Reviewer: 😽
2nd Reviewer:

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

					T	
#	Date	Blank ID	Apalyte	no closing cob	1-3,5,6,8-10, 18-20,22,23,25-27	Qualifications
			Analyte H	no closing COB	1-3,5,6,8-10,	Text
					18-20, 22, 23, 25-27	
Ш						
Щ						
\sqcup			Allexapt	no closing arm		Text
\sqcup			BAO 1/2			
$\vdash \vdash$						
$\vdash \vdash$						
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\sqcap						
\Box						

Comments:		

LDC #: 45386D4a

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page: __of Reviewer: _____ 2nd Reviewer: _____

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qualifications be	low for all questions answered	"N". Not applicable question	ns are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

YNN/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor

of 4 or more, no action was taken.

Y N N/A Were all duplicate sample relative percent differences (RP $\not\!\!D$) $\leq 25\%$ for samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

<u>#</u>	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications	
	35/36		Sb	11	11		1-10	J/R/A (Det)	LM
Г			Fe	130	155			Jdet/A (Det)	HM
			Ti	44	44			J/UJ/A (Det)	LM
	51/52		Sb	10	10		28-34	J/R/A (Det)	LM
L			Fe	690	630			Jdet/A (34=Det)	1+m
	41/42		Be	73	71		11-17	J/UJ/A (Det/ND)	LM
			Ag	74				J/UJ/A (ND)	Lm .
			Ti	155				Jdet/A (Det)	HM
			Al			67		J/UJ/A (Det)	40
			Tí			37		J/UJ/A (Det)	لل
<u> </u>									
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Comments:	35/36, 38/39: Al>4x		

LDC #: 453865

VALIDATION FINDINGS WORKSHEET Duplicate Analysis

	\ (
Page:_	of
Reviewer:	0
2nd Reviewer:	9

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a duplicate sample analyzed for each matrix in this SDG? 25 Y N N/A

Were all duplicate sample relative percent differences (RPD) < 20% samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L. for soil) was Y N N/A used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used

for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N N/A		Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.						1100
#	Date	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	,Qualifications
		37		Cd	67	_	1-10	JUJA (Del)
				Se		0.019 (50.015)		1 Det(10)
				-7			.1	
1		ч3		Zn	38		11-17	JUJA (Det)
$\parallel \perp \parallel$,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Ш		47		65 85	31		18-27	JUSTA (BELIND)
\mathbb{H}				15	52			
		49		Ti	44		28-34	JUJIA(Act)
			1					
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Comments:			

LDC#: 4536604a

VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page:	of
Reviewer:	
2nd Reviewer:	

METHOD: Inorganics, Method See Carel

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

Y N N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

LEVEL IV ONLY:

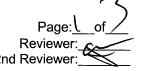
Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

		 		T				
#	1 00/1 000 10		A b . 4 -	LCS	LCSD %R (limits)	RPD (limits)	Annadated Commiss	1 HL
┝╇	LCS/LCSDJD	Matrix	Analyte	%R (limits)	%R (limits)	l (limirs)	Associated Samples	Qualifications 7
	56560-LCS.	<i>H</i> 2	20	121 (72-116)			1-10,18-27	Jolet (PCDel) #
		' - '	Zn			33(430)	1	JOSEPP (Del) HO
			Ti			35 (430)		
			<u> </u>)	V	
<u> </u>								
					_			12
	57249-LCSI	1/2	Aa	56(61-113)	56(61-113)		11-17, 28-34	7/5/P(M) LP
	210000	10	115	(Colon 11.)	Je (er 13)		11 11 018 31	J105/1 (1.07 4
			 					
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			2 - 3000					
			<u> </u>			<u> </u>		
	-			<u> </u>				

Comments:			

LDC#: 45386D4a

VALIDATION FINDINGS WORKSHEET Field Duplicates



METHOD: Metals (EPA Method 6010B/7000)

	Concentra		
Analyte	10	11	RPD
Aluminum	216	246	13
Antimony	0.115	0.102	12
Arsenic	1.27	1.51	17
Barium	8.1	7.71	5
Beryllium	0.005U	0.0154	NC
Cadmium	0.0274	0.0521	62
Chromium	0.261	0.521	66
Cobalt	0.0971	0.115	17
Copper	1.96	3.01	42
Iron	128	112	13
Lead	0.285	0.378	28
Manganese	8.27	8.4	2
Molybdenum	8.84	7.27	19
Nickel	0.432	0.473	9
Selenium	0.0201	0.012	50
Thallium	0.009	0.00847	6
Tin	0.00692	0.0102	38
Titanium	22	33.6	42
Vanadium	2.63	2.96	12

LDC#: 45386D4a

VALIDATION FINDINGS WORKSHEET Field Duplicates



METHOD: Metals (EPA Method 6010B/7000)

	Concentra	222	
Analyte	10	11	RPD
Zinc	6.22	5.71	9

	Concentra		
Analyte	27	28	RPD
Antimony	0.14	0.169	19
Arsenic	1.33	1.5	12
Barium	9.14	8.82	4
Beryllium	0.00549	0.005U	NC
Cadmium	0.0281	0.049	54
Chromium	0.0531	0.104	- 65
Cobalt	0.0451	0.052	14
Copper	1.56	2.42	43
Lead	0.0025U	0.0388	NC
Manganese	3.47	3.65	5
Molybdenum	9.6	8.58	11
Nickel	0.375	0.436	15
Selenium	0.0225	0.0188	x6 14
Thallium	0.00736	0.00804	9
Tin	0.005U	0.00902	NC
Titanium	22	18	20

LDC#: 45386D4a

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Reviewer:__ ___Reviewer:__ __ad Reviewer:

METHOD: Metals (EPA Method 6010B/7000)

	Concentra	BDD	
Analyte	27	28	RPD
Vanadium	2.3	2.54	10
Zinc	4.28	6.01	34

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2019\45386D4a.wpd

LDC#: 4526016

VALIDATION FINDINGS WORKSHEET Internal Standards (ICP-MS)

Page: of Reviewer: 2nd Reviewer:

METHOD: Metals (EPA Method 200.8)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were all internal standard percent recoveries within 60-125% of the intensity of the internal standard in the initial calibration standard?

Y IN IN/A

If the response to the above question is no, were the samples reanalyzed as required?

Y TY IN/A		If the response to the above question is no, were the samples reanalyzed as required?						
#	Date	Internal Standard	Associated Metals	%R (Limits)	Associated Samples	Qualifications		
		Rh (Ture 1)	Se	0.\	6	J/RIP(Bet)		
	!	Rh (Tune a)	Tribic m Cl	50.0		J/15/P (Bet)		
		microne a)	Feilingunosa,	593	6	JUJ/P (Det)		
			الرود ا					
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VALIDATION FINDINGS WORKSHEET Initial and Continuing Calibration Calculation Verification

Page: _of	_
Reviewer:	_
2nd Reviewer:	_

METHOD: Trace metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100True

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution

True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
	ICP (Initial calibration)						
ICV	ICP/MS (Initial calibration)	Cd	107.172	CO	107		4
IPR	CVAA (Initial calibration)	the	1020	1000	102	107	4
	ICP (Continuing calibration)	7					
CCU	ICP/MS (Continuing calibration)	Ba	100	98.56	99		4
ORK	CVAA (Continuing calibration)	HS	986	1000	99		9

Comments:		

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

Page: of 1
Reviewer: 2
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample an	nd a matrix spike sample were recalculated using the following formula
--	--

 $%R = Found \times 100$ True

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).

True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

 $RPD = |S-D| \times 100$

Where S = Original sample concentration

(S+D)/2

D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

 $%D = II-SDR \times 100$

Where, I = Initial Sample Result (mg/L)

SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
N	ICP interference check						
LCS	Laboratory control sample	Ha	0.901	1.0	90	90	Y
35	Matrix spike	Be	(SSR-SR)	30	86	86	
35/36	Duplicate	Sb	3.35	2,29		0	
	ICP serial dilution						

Comments:	

LDC#: 45360)

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Rease see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Page: of Page: Of Pag

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

equati	N/A N/A red analy on: tration =	Are results w Are all detec	vithin the calibra tion limits below	Al	ents and within the lin	ulated and verified	
Dil	=	Dilution factor	ii) or weight (e)				
#	S	ample ID		Analyte	Reported Concentration	Calculated Concentration	Acceptable (Y/N)
		l		Al	158	156	
		2		Ba	8.16	6.16	
		3		175	1.33	1,326	
		5_		Cd	6.0975	0.0975	
		6		T1	0.0071	0.0011	
		- 8		14.0	\$80	8.82	
		9		Sn	0.0188	00188	
		10		Ph	0.285	0.285	
		18		<u>Co</u>	10,0304	0.0509	
		19		15%	7 30	200	
		20		W	2,50	3.35	
		22		<u> </u>	a, a	0.51	
		75		<u> </u>	0.00	0361	
		76			10.361	0.0185	
		27	·- · · · · · · · · · · · · · · · · · ·	<u> </u>	1.32	100	
					 " 	\	
				·			

Note:

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 16, 2019

Parameters: Wet Chemistry

Validation Level: Level II & IV

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-007

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10022**	56561**	Water	07/18/18
B18-10076**	56562**	Water	07/18/18
B18-10077**	56563**	Water	07/18/18
B18-10112	56564	Water	07/18/18
B18-10113**	56565**	Water	07/18/18
B18-10024**	56566**	Water	07/19/18
B18-10029	56567	Water	07/19/18
B18-10114**	56568**	Water	07/19/18
B18-10115**	56569**	Water	07/19/18
B18-10116**	56570**	Water	07/19/18
B18-20116	56571	Water	07/19/18
B18-10031	56572	Water	07/20/19
B18-10032	56573	Water	07/20/19
B18-10119	56574	Water	07/20/19
B18-10121	56575	Water	07/20/19
B18-10123	56576	Water	07/20/19
B18-10178	56577	Water	07/20/19
B18-10076MS	56562MS	Water	07/18/18
B18-10076MSD	56562MSD	Water	07/18/18
B18-10076DUP	56562DUP	Water	07/18/18
B18-10077MS	56563MS	Water	07/18/18
B18-10077MSD	56563MSD	Water	07/18/18
B18-10077DUP	56563DUP	Water	07/18/18

^{**}Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Ammonia as Nitrogen by Standard Method 4500-NH3-D
Dissolved Organic Carbon by Standard Method 5310B
Methylene Blue Active Substances by Standard Method 5540C
Nitrate as Nitrogen by Standard Method 4500-NO3-E
Oil and Grease by Environmental Protection Agency (EPA) Method 1664B
Total Orthophosphate as Phosphorus by Standard Method 4500-P-E
Total Organic Carbon by Standard Method 5310B
Total Suspended Solids by Standard Method 2540D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
B18-10112 B18-10113**	Nitrate as N	55 days	2 days	J (all detects)	Р
B18-10022** B18-10076** B18-10077**	Nitrate as N	55 days	2 days	R (all non-detects)	Р
B18-10022** B18-10076** B18-10077** B18-10112 B18-10113**		37 days	2 days	J (all detects)	Р
B18-10024** B18-10029 B18-10114** B18-10115**	Nitrate as N	54 days	2 days	J (all detects)	Р
B18-10116** B18-20116	Nitrate as N	54 days	2 days	R (all non-detects)	Р
B18-10024** B18-10029 B18-10114** B18-10115** B18-10116** B18-20116	Total orthophosphate as P	36 days	2 days	J (all detects)	Р
B18-10031 B18-10119 B18-10121 B18-10123 B18-10178	Nitrate as N	53 days	2 days	J (all detects)	Р
B18-10032	Nitrate as N	53 days	2 days	R (all non-detects)	Р
B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178	Total orthophosphate as P	35 days	2 days	J (all detects)	Р

II. Initial Calibration

All criteria for the initial calibration of each method were met.

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

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

Spike ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10076MS/MSD (All samples in SDG 1807003-007)	Methylene blue active substances	26 (≤25)	J (all detects) UJ (all non-detects)	А

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10076DUP (All samples in SDG 1807003-007)	Total suspended solids	29 (≤25)	J (all detects)	А

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Replicates

Samples B18-10116** and B18-20116 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentra		
Analyte	B18-10116**	B18-20116	RPD
Ammonia as N	0.0246	0.0423	53
Dissolved organic carbon	1.65	2.02	20
Methylene blue active substances	0.0155	0.0223	36
Total organic carbon	1.62	2.27	33
Total orthophosphate as P	0.0378	0.0386	2
Total suspended solids	5.45	6.2	13

X. Sample Result Verification

All sample result verifications were acceptable for samples which underwent Level IV validation.

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-007	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods.

Due to technical holding time, data were rejected in six samples.

Due to technical holding time, MS/MSD RPD, DUP RPD, and results reported below the RL and above the MDL, data were qualified as estimated in seventeen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-007

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10112 B18-10113** B18-10024** B18-10029 B18-10114** B18-10115** B18-10119 B18-10121 B18-10123 B18-10178	Nitrate as N	J (all detects)	Р	Technical holding times (H)
B18-10022** B18-10076** B18-10077** B18-10116** B18-20116 B18-10032	Nitrate as N	R (all non-detects)	Р	Technical holding times (H)
B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10029 B18-10115** B18-10116** B18-20116 B18-10031 B18-10032 B18-10119 B18-10123 B18-10123 B18-10178	Total orthophosphate as P	J (all detects)	Р	Technical holding times (H)
B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10024** B18-10029 B18-10114** B18-10116** B18-10116** B18-20116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178	Methylene blue active substances	J (all detects) UJ (all non-detects)	А	Matrix spike/Matrix spike duplicate (RPD) (HD)

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10029 B18-10115** B18-10116** B18-20116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178	Total suspended solids	J (all detects)	A	Duplicate sample analysis (RPD) (HD)
B18-10022** B18-10076** B18-10077** B18-10112 B18-10113** B18-10029 B18-10115** B18-10116** B18-20116 B18-10031 B18-10032 B18-10119 B18-10123 B18-10123 B18-10178	Analyte reported below the RL and above the MDL	J (all detects)	Α	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-007

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-007

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-007

Level II/IV

Laboratory: Physis Environmental Laboratories, Inc.

LDC #: 45386D6

Reviewer: 2nd Reviewer:

METHOD: (Analyte) Ammonia as N (SM4500-NH3 D), DOC SM 5310 B), MBAS (SM 5540 C), Nitrate as N (SM 4500-NO3 E), Oil & Grease (EPA Method 1664B), Total Orthophosphate as P (SM 4500-P E), TOC (SM 5310 B), TSS (SM 2540 D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l	Sample receipt/Technical holding times	A SW	
II	Initial calibration	A.	Not reviewed for Level II validation
III.	Calibration verification	A	Not reviewed for Level II validation
IV	Laboratory Blanks	A	
V	Field blanks	~	
VI.	Matrix Spike/Matrix Spike Duplicates	SW_	
VII.	Duplicate sample analysis	SW	
VIII.	Laboratory control samples	A/	LESLU
IX.	Field duplicates	SW	((O,11)
X.	Sample result verification	1	Not reviewed for Level II validation
	Overall assessment of data	M	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

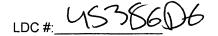
TB = Trip blank EB = Equipment blank SB=Source blank

OTHER:

**Indicates samples underwent Level IV review

	cates samples underwent Level IV review			
	Client ID	Lab ID	Matrix	Date
1	B18-10022**	56561**	Water	07/18/18
2	B18-10076**	56562**	Water	07/18/18
3	B18-10077**	56563**	Water	07/18/18
4	B18-10112	56564	Water	07/18/18
5	B18-10113**	56565**	Water	07/18/18
6	B18-10024**	56566**	Water	07/19/18
7	B18-10029	56567	Water	07/19/18
8	B18-10114**	56568**	Water	07/19/18
9	B18-10115**	56569**	Water	07/19/18
10	B18-10116**	56570**	Water	07/19/18
11	B18-20116	56571	Water	07/19/18
12	B18-10031	56572	Water	07/20/19
13	B18-10032	56573	Water	07/20/19
14	B18-10119	56574	Water	07/20/19
15	B18-10121	56575	Water	07/20/19
16	B18-10123	56576	Water	07/20/19
17	B18-10178	56577	Water	07/20/19

SDG	#:45386D6 VALIDATION (6 #:1807003-007 pratory: Physis Environmental Laboratories, In-		Date: 7(S/F) Page: 2 of 2 Reviewer: Reviewer:	
MET E), C	THOD: (Analyte) <u>Ammonia as N (SM4500-NH</u> Dil & Grease (EPA Method 1664B), Total Ortho	3 D), DOC SM 5310 B), MBAS (SM 554 ophosphate as P (SM 4500-P E), TOC	10 C), Nitrate as (SM 5310 B), T	SN (SM 4500-NO3 SS (SM 2540 D)
18	B18-10076MS	56562MS	Water	07/18/18
19	B18-10076MSD	56562MSD	Water	07/18/18
20	B18-10076DUP	56562DUP	Water	07/18/18
21	B18-10077MS	56563MS	Water	07/18/18
22	B18-10077MSD	56563MSD	Water	07/18/18
23	B18-10077DUP	56563DUP	Water	07/18/18
24				
25				
26				
Note	S:			

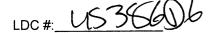


VALIDATION FINDINGS CHECKLIST

Page: of 3 Reviewer: 2nd Reviewer:

Method: Inorganics (EPA Method See avel)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times			,	
All technical holding times were met.				
II. Calibration				
Were all instruments calibrated daily, each set-up time?	V			
Were the proper number of standards used?	V			
Were all initial calibration correlation coefficients ≥ 0.995?	V			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	/			
Were titrant checks performed as required? (Level IV only)			1	
Were balance checks performed as required? (Level IV only)	V			
III. Blanks				
Was a method blank associated with every sample in this SDG?	/			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.				
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	/			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.				
Were the MS/MSD or duplicate relative percent differences (RPD) \leq 20% for waters and \leq 35% for soil samples? A control limit of \leq CRDL(\leq 2X CRDL for soil) was used for samples that were \leq 5X the CRDL, including when only one of the duplicate sample values were \leq 5X the CRDL.		/		
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	/			
Was an LCS analyzed per extraction batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?				
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		/		
Were the performance evaluation (PE) samples within the acceptance limits?			/	



VALIDATION FINDINGS CHECKLIST



Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?				
Were detection limits < RL?				
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.				
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.				
Target analytes were detected in the field duplicates.				
X. Field blanks				
Field blanks were identified in this SDG.				
Target analytes were detected in the field blanks.				

LDC #: 4536606

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: 2nd reviewer:

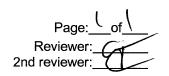
All circled methods are applicable to each sample.

Sample ID	Parameter
1-17	pH TDS CI F (NO3) NO2 SO4 (O-PO) AIK CN (TH) TKN (TOC) Cr6+ CIO4 (DOC) (MB/B) (TSS) (CH-6)
	PH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
Q(:18-20	PH TDS CI F (NO3) NO2 SO4 (O-PO) AIK CN(NH3) TKN(TOC) Cr6+ CIO4 (NO2) (M3) AS)
	pH TDS CI F(NO3) NO2 SO4(O-PO4) AIK CN NH3 TKN TOC Cr6+ CIO4
	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF $\mathrm{NO_3}$ $\mathrm{NO_2}$ $\mathrm{SO_4}$ O-PO $_4$ Alk CN $\mathrm{NH_3}$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH_TDS_CLE_NO ₂ _NO ₂ _SO ₄ _O-PO ₄ _Alk_CN_NH ₂ _TKN_TOC_Cr6+_ClO ₄

Comments:			

LDC #: 45386D6

VALIDATION FINDINGS WORKSHEET <u>Technical Holding Times</u>



Code: H

All circled dates have exceeded the technical holding time.

Y N N/A Were all cooler temperatures within validation criteria?

Y N N/A Were all samples preserved as applicable to each method?

Method: SM4500 NO3-E SM4500 P-E Parameters: Nitrate as N Total orthophosphate as P Technical holding time: 2 days 2 days Sampling **Analysis** Total **Analysis Total** Sample ID date date Time (days) Qualifier date Time (days) Qualifier

1-5	7/18/18	9/11/18	55	J/R/P (ND = 1-3)	8/24/18	37	J/R/P (Det)
6-11	7/19/18	9/11/18	54	J/R/P (ND = 10, 11)	8/24/18	36	J/R/P (Det)
12-17	7/20/18	9/11/18	53	J/R/P (ND = 13)	8/24/18	35	J/R/P (Det)
					:		

LDC #: US 38606

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

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Reviewer:	
2nd Reviewer:	
V	

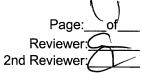
METHOD: Inorg	ganics, EPA Method	V
Please see qua	lifications below for all questions answered "N". Not applicable questions are identified as "N/A".	
<u>Y) N N/A</u>	Was a matrix spike analyzed for each matrix in this SDG?	
Y) N N/A Y) N N/A	Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a	factor
	of 4 or more, no action was taken.	
YN N/A LEVEL IV ONL	Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤35% for soil samples?	
LEVEL IV ONL	Y:	
Y N N/A	Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.	

_	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
	18/19		MBAS			26(530	All	JOJIA (Del/M)
<u> </u>						25)		* -)
Н								
H								
H			<u> </u>		<u> </u>			
Н								
H					<u></u>			· · · · · · · · · · · · · · · · · · ·
\Vdash								
H								
Ш								

Comments:				
			:	

LDC #: <u>US360</u>6

VALIDATION FINDINGS WORKSHEET Duplicate Analysis



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					<u>Duplicate A</u>	<u>Analysis</u>		Reviewer:⊆ 2nd Reviewer:∠	
Pleas Y) N N	se see qualific N/A W N/A W be we EL IV ONLY:	ations below for all que as a duplicate sample a ere all duplicate sample elow. A control limit of ± ere ≤5X the CRDL. If fie ere recalculated results	analyzed for e e relative perc CRDL (±2X C eld blanks wer	ach matrix in t ent difference RDL for soil) v e used for lab	this SDG? s (RPD) ≤ 20% for v vas used for sample oratory duplicates,	water and <u><</u> 35% fo es that were ≤5X th see overall assessr	r soil samples (≤ 10% for M e CRDL, including when on nent.	lethod 300.0)? If no, see qual lly one of the duplicate sample	ificatior
#	Date	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications	1
		3 0		T35	39 (525)		All	JIJIA(Del)	
					7				
				<u> </u>					
———			1	<u> </u>	† · · · · · · · · · · · · · · · · · · ·	i		 	1

Comments:

LDC#: 45386D6

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page: of Reviewer: 2nd Reviewer:

Inorganics, Method See Cover

	Concentration		
Analyte	10	11	RPD
Ammonia as N	0.0246	0.0423	53
DOC	1.65	2.02	20
MBAS	0.0155	0.0223	36
тос	1.62	2.27	33
Total orthophosphate as	0.0378	0.0386	2
TSS	5.45	6.2	13

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2019\45386D6.wpd

LDC #: 4538696

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

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Page:	_ of <u>\</u>
Reviewer:	
nd Review	/er:

Method : Inorganics, Method _	See Cover	,
The correlation coefficient (r) for the	e calibration of was recalculated.Calibration date:_	10/10/16

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = <u>Found X 100</u>

Where,

Found = concentration of each analyte <u>measured</u> in the analysis of the ICV or CCV solution

True

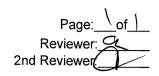
True = concentration of each analyte in the ICV or CCV source

					Recalculated	Reported	Acceptable
Type of analysis	Analyte	Standard	Conc. (mg/L)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration		s1	0.0	0			
		s2	0.05	0.0065	0.9983	0.9984	()
	moss	s3	0.1	0.0163			T
		s4	0.5	0.0937			
		s5	0.75	0.1584			1
		s6	11	0.2156			
Calibration verification	NH3	ICV	G.0707	7001)	94 -		
Calibration verification	CCUE	FOC	10	9,8688	99		
Calibration verification							

Comments: Refer to Calibration V	erification findings worksheet for lis	st of qualifications and associated	samples when reported results	do not agree within
10.0% of the recalculated results.				

LDC #: 5360/

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet



METUOD.	Inorganias	Mothod	Seconer	
VIE I HOD:	morganics,	wemou		

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

 $%R = \frac{Found}{True} \times 100$

Where,

Found =

concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation,

Found = SSR (spiked sample result) - SR (sample result).

True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

 $RPD = |S-D| \times 100$

Where,

S =

Original sample concentration

(S+D)/2

D =

Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	TOC	851	10	85	85	Y
21	Matrix spike sample	N03N	(SSR-SR)	0.5	111	((\	
90	Duplicate sample	TSS	3,9	5,2	29	29	

Comments:			

LDC #: <u>US360</u>6

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page:	of	1
Reviewer:	OL	
2nd reviewer:	0	

				2nd review	wer:
METH	IOD: Inorganics, Metho	d see all			
Y N Y N Y N Comp	N/A Have results work Are all detection ound (analyte) results f	ow for all questions answered "N". Not apply been reported and calculated correctly? within the calibrated range of the instrument tion limits below the CRQL? Tor	s?	e identified as "N/.	
Concen	tration = 5-0,6153x -0,0	Recalculation: OZO 78 OZO 11	+0.007078 -6153	:0,02126	
#	Sample ID	Analyte	Reported Concentration (MGL)	Calculated Concentration (W	Acceptable (Y/N)
	}	NH3-N	OOTE	0.0779	Y

#	Sample ID	Analyte	Reported Concentration (MS/L-)	Calculated Concentration (W	Acceptable (Y/N)
	1	NH3-N	0,077	0.0779	4
	2	DOC	1.66	1,66)
	3	MBAS	0.0191	0,0201	
	5	NO3N	0.0242	0.0242	
	6	TOC	1,61	1.61	4
	8	0804	0021	0.02810	D.OZI 7
	9	TSS'	3.35	335	Y
	10	J	5.45	5.45	4
				<u></u>	
<u> </u>					
					

Note:	
	···

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 16, 2019

Parameters: Polynuclear Aromatic Hydrocarbons

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-009

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10124	56669	Water	07/26/18
B18-10126	56670	Water	07/26/18
B18-10127	56671	Water	07/26/18
B18-10132	56672	Water	07/26/18
B18-10133	56673	Water	07/26/18
B18-20133	56674	Water	07/26/18
B18-10136	56675	Water	07/27/18
B18-10137	56676	Water	07/27/18
B18-10139	56677	Water	07/27/18
B18-10140	56678	Water	07/27/18
B18-10141	56679	Water	07/27/18
B18-10142	56680	Water	07/27/18
B18-10133MS	56673MS	Water	07/26/18
B18-10133MSD	56673MSD	Water	07/26/18
B18-10133DUP	56673DUP	Water	07/26/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) Method 625

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10133MS/MSD (B18-10133)	1-Methylnaphthalene 2-Methylnaphthalene Naphthalene	43 (50-150) 46 (50-150) 37 (50-150)	-	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Α

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10133MS/MSD (B18-10133)	1-Methylnaphthalene 2-Methylnaphthalene Naphthalene	45 (≤25) 44 (≤25) 60 (≤25)	NA	-

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10133DUP (B18-10133)	Acenaphthene Fluorene	31 (≤25) 41 (≤25)	NA	-

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56667-BS1/BS2 (All samples in SDG 1807003-009)	1-Methylnaphthalene 2-Methylnaphthalene Naphthalene	49 (70-130) 52 (70-130) 41 (70-130)	67 (70-130) - 69 (70-130)	J (all detects) UJ (all non-detects)	Α

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

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
56667-BS1/BS2 1-Methylnaphthalene Naphthalene Naphthalene		31 (≤30) 51 (≤30)	NA	-
56667-BS1/BS2 (B18-10124 B18-10126 B18-10137 B18-10139 B18-10141)	2-Methylnaphthalene	31 (≤30)	J (all detects)	Р
56667-BS1/BS2 (B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10140 B18-10142)	2-Methylnaphthalene	31 (≤30)	NA	-

X. Field Replicates

Samples B18-10133 and B18-20133 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentra		
Compound	B18-10133	B18-20133	RPD
Acenaphthene	2.89	2.44	17
Fluoranthene	3.01	2.60	15
Phenanthrene	2.51	1.94	26
Pyrene	1.71	2.06	19
Fluorene	5U	1.58	Not calculable

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-009	Compound reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R, LCS/LCSD %R and RPD, and results reported below the RL and above the MDL, data were qualified as estimated in twelve samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-009

Sample	Compound	Flag	A or P	Reason (Code)
B18-10133	1-Methylnaphthalene 2-Methylnaphthalene Naphthalene	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10139 B18-10140 B18-10141	1-Methylnaphthalene 2-Methylnaphthalene Naphthalene	J (all detects) UJ (all non-detects)	Α	Laboratory control samples (%R) (LL)
B18-10124 B18-10126 B18-10137 B18-10139 B18-10141	2-Methylnaphthalene	J (all detects)	Р	Laboratory control samples (RPD) (HD)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10140 B18-10141 B18-10141	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-009

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 1807003-009

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45386E2b SDG #: 1807003-009

Laboratory: Physis Environmental Laboratories, Inc.

Level II

Reviewer: 2nd Reviewer:

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA Method 625)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	Terp @11.4°C-Not enough time
II	GC/MS Instrument performance check	N	, , , , , , , , , , , , , , , , , , ,
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	\sim	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	$\mathcal{M}/$,
IX.	Laboratory control samples	W	Les 6
X.	Field duplicates	W	D=5+6
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

A = Acceptable Note:

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10124	56669	Water	07/26/19
2	B18-10126	56670	Water	07/26/19
3	B18-10127	56671	Water	07/26/19
4	B18-10132	56672	Water	07/26/19
5 [B18-10133	56673	Water	07/26/19
6	B18-20133	56674	Water	07/26/19
7	B18-10136	56675	Water	07/27/19
8	B18-10137	56676	Water	07/27/19
9	B18-10139	56677	Water	07/27/19
10	B18-10140	56678	Water	07/27/19
11	B18-10141	56679	Water	07/27/19
12	B18-10142	56680	Water	07/27/19
13	B18-10133MS	56673MS	Water	07/26/19

LDC #: 45386E2b VALIDATION COMPLETENESS WORKSHEET SDG #: 1807003-009 Level II Laboratory: Physis Environmental Laboratories, Inc. METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA Method 625)					2nd	Date: 7/9// Page: of 2 Reviewer: Q Reviewer:
14	B18-10133MSD			56673MSD	Water	07/26/19
15	B18-10133DUP			56673DUP	Water	07/26/19
16				****		
17						
18_						
Note	s:					

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

WETTIOD: COMO GVOA				
A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	/_of
Reviewer:	
2nd Reviewer:	

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

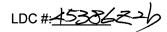
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	13/4	777	43 (50-150)	()	()	5(NO)	NWA(ZM)
		W/		()	()		777
		Ś	46 ()) 37 (V)	()	()		V
		777	()	()	45 (5X5)		Whote A (HO)
		\mathcal{W}	()	()	45 (575)		Y,
		5	()	()	60 ()		
			()	()	()		
			()	(()		
			()	()	()		
	15	34	()	()	31 (575)	5 (Sots)	Idet (HO)
	•	N/N	()	()	41 (V)		V
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	of
Reviewer: _	9
2nd Reviewer: _	

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Y(N N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		56667-BSV	777		6T (TO-13C)		All (Rots+ND)	VIHA (ZN)
		-B52		52 (1)	()	()	_	
			W	41 (1)	69 (1)	()	-	
		-	777	(,)	()	≥ (≤30)	(ND)	State (HD)
			W	()	()	31 ()	(dot=1-2.8-911)	1/0
			5	()	()	5 ()	(ND) Uns=1-2,8-9,11) (ND)	V
				()	()	()		
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LDC#:45386236

VALIDATION FINDINGS WORKSHEET <u>Field Duplicates</u>

Page:	/6f /
Reviewer:	'9-
2nd Reviewer:_	

METHOD: GCMS PAH 8270D

	Concentration (ng/L)		200
Compound	5	6	RPD
GG	2.89	2.44	17
YY	3.01	2.60	, 15
UU	2.51	1.94	26
ZZ	1.71	2.06	19
NN	5U	1.58	NC

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2019\45386E2b_RHMP.wpd

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 16, 2019

Parameters: Metals

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-009

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10124	56669	Water	07/26/18
B18-10126	56670	Water	07/26/18
B18-10127	56671	Water	07/26/18
B18-10132	56672	Water	07/26/18
B18-10133	56673	Water	07/26/18
B18-20133	56674	Water	07/26/18
B18-10136	56675	Water	07/27/18
B18-10137	56676	Water	07/27/18
B18-10139	56677	Water	07/27/18
B18-10140	56678	Water	07/27/18
B18-10141	56679	Water	07/27/18
B18-10142	56680	Water	07/27/18
B18-10124F	56669F	Water	07/26/18
B18-10126F	56670F	Water	07/26/18
B18-10127F	56671F	Water	07/26/18
B18-10132F	56672F	Water	07/26/18
B18-10133F	56673F	Water	07/26/18
B18-20133F	56674F	Water	07/26/18
B18-10136F	56675F	Water	07/27/18
B18-10137F	56676F	Water	07/27/18
B18-10139F	56677F	Water	07/27/18
B18-10140F	56678F	Water	07/27/18
B18-10141F	56679F	Water	07/27/18
B18-10142F	56680F	Water	07/27/18
B18-10133MS	56673MS	Water	07/26/18
B18-10133MSD	56673MSD	Water	07/26/18

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10133DUP	56673DUP	Water	07/26/18
B18-10133FDUP	56673FDUP	Water	07/26/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Thallium, Tin, Titanium, Vanadium, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 1640 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-20133 B18-10124F B18-10126F B18-10132F B18-10133F B18-20133F	Mercury	39	28	UJ (all non-detects)	Р
B18-10136 B18-10137 B18-10139 B18-10140 B18-10141 B18-10142 B18-10136F B18-10137F B18-10139F B18-10140F B18-10140F B18-10141F	Mercury	38	28	UJ (all non-detects)	Р

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10133MS/MSD (B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-20133 B18-10136 B18-10137 B18-10140)	Aluminum Beryllium Iron	70 (75-125) 72 (75-125) -	60 (75-125) 71 (75-125) 65 (75-125)	J (all detects) UJ (all non-detects)	А
B18-10133MS/MSD (B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-20133 B18-10136 B18-10137 B18-10139 B18-10140)	Antimony	10 (75-125)	9 (75-125)	J (all detects)	Α

Relative percent differences (RPD) were within QC limits.

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10133FDUP (B18-10124F B18-10126F B18-10127F B18-10132F B18-10133F B18-20133F B18-10136F B18-10137F B18-10139F B18-10140F)	Cadmium Iron Lead	29 (≤25) 26 (≤25) 65 (≤25)	J (all detects) UJ (all non-detects)	А

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10133DUP (B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-20133 B18-10136 B18-10139 B18-10140)	Cadmium Lead Zinc	79 (≤25) 71 (≤25) 28 (≤25)	J (all detects) J (all detects) J (all detects)	A

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Standard Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

XI. Field Replicates

Samples B18-10133 and B18-20133 and samples B18-10133F and B18-20133F were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentra		
Analyte	B18-10133	B18-20133	RPD
Aluminum	115	220	63
Antimony	0.142	0.102	33
Arsenic	1.46	1.51	3
Barium	8.44	7.9	7
Cadmium	0.116	0.0561	70
Chromium	0.297	0.454	42
Cobalt	0.0285	0.0572	67

	Concentr		
Analyte	B18-10133	B18-20133	RPD
Copper	3.81	3.91	3
Iron	77.4	134	54
Lead	0.38	0.355	7
Manganese	10.4	11.6	11
Molybdenum	9.25	8.28	11
Nickel	0.624	0.557	11
Selenium	0.0198	0.0241	20
Silver	0.0162	0.017	5
Tin	0.0269	0.0128	71
Titanium	23.3	26.4	12
Vanadium	2.49	2.68	7
Zinc	7.32	5.56	27

	Concentra		
Analyte	B18-10133F	B18-20133F	RPD
Antimony	0.149	0.12	22
Arsenic	1.36	1.49	9
Barium	8.21	9.76	17
Cadmium	0.0645	0.0616	5
Chromium	0.115	0.12	4
Copper	3.4	3.02	12
Iron	1.09	0.5U	Not calculable
Lead	0.0729	0.0433	51

	Concentr		
Analyte	B18-10133F	B18-20133F	RPD
Manganese	8.19	8.47	3
Molybdenum	9.42	9.33	1
Nickel	0.597	0.571	4
Selenium	0.0161	0.0325	67
Silver	0.0154	0.0132	15
Titanium	17.5	19.8	12
Vanadium	2.4	2.47	3
Zinc	4.95	4.61	7

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-009	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, MS/MSD %R, DUP RPD, and results reported below the RL and above the MDL, data were qualified as estimated in twenty-four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-009

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-20133 B18-10136 B18-10139 B18-10140 B18-10141 B18-10142 B18-10124F B18-10126F B18-10127F B18-10133F B18-20133F B18-10136F B18-10139F B18-10139F B18-10139F B18-10140F B18-10140F B18-10141F B18-10141F	Mercury	UJ (all non-detects)	P	Technical holding times (H)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10139 B18-10140	Aluminum Beryllium Iron	J (all detects) UJ (all non-detects)	Α	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10140	Antimony	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10124F B18-10126F B18-10127F B18-10132F B18-10133F B18-20133F B18-10136F B18-10137F B18-10139F B18-10140F	Cadmium Iron Lead	J (all detects) UJ (all non-detects)	А	Duplicate sample analysis (RPD) (HD)

LDC #: 45386E4a VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-009

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Page: __of Reviewer: _____ 2nd Reviewer: _____

METHOD: Metals (EPA Method 1640/200.8/245.7)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	ASW	
II.	ICP/MS Tune	N	
111	Instrument Calibration	N	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Laboratory Blanks	A	
VI.	Field Blanks	\mathcal{N}	
VII.	Matrix Spike/Matrix Spike Duplicates	SW	
VIII.	Duplicate sample analysis		
IX.	Serial Dilution	\mathcal{N}	
X.	Laboratory control samples	A	LCS(D, Sam/D
XI.	Field Duplicates	5W	(56) (17,18)
XII.	Internal Standard (ICP-MS)	N	
XIII.	Sample Result Verification	N	
XIV	Overall Assessment of Data	A	

Note:

A = Acceptable

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

SW = See worksheet FB = Samples appended with "F" were analyzed as Dissolved

N = Not provided/applicable

Samp	oles appended with "F" were analyzed as Dissolved		····	
	Client ID	Lab ID	Matrix	Date
1	B18-10124	56669	Water	07/26/19
2	B18-10126	56670	Water	07/26/19
3	B18-10127	56671	Water	07/26/19
4	B18-10132	56672	Water	07/26/19
5	B18-10133	56673	Water	07/26/19
6	B18-20133	56674	Water	07/26/19
7	B18-10136	56675	Water	07/27/19
8	B18-10137	56676	Water	07/27/19
9	B18-10139	56677	Water	07/27/19
10	B18-10140	56678	Water	07/27/19
11	B18-10141	56679	Water	07/27/19
12	B18-10142	56680	Water	07/27/19
13	B18-10124F	56669F	Water	07/26/19
14	B18-10126F	56670F	Water	07/26/19
15	B18-10127F	56671F	Water	07/26/19

LDC #: 45386E4a VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-009

Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: Metals (EPA Method 1640/200.8/245.7)

Date: 756
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16_	B18-10132F	56672F	Water	07/26/19
7_	B18-10133F	56673F	Water	07/26/19
8_	B18-20133F	56674F	Water	07/26/19
9	B18-10136F	56675F	Water	07/27/19
20_	B18-10137F	56676F	Water	07/27/19
21	B18-10139F	56677F	Water	07/27/19
22	B18-10140F	56678F	Water	07/27/19
23	B18-10141F	56679F	Water	07/27/19
24	B18-10142F	56680F	Water	07/27/19
25	B18-10133MS	56673MS	Water	07/26/19
26	B18-10133MSD	56673MSD	Water	07/26/19
27	B18-10133DUP	56673DUP	Water	07/26/19
28	B18-10133FDUP	56673FDUP	Water	07/26/19
29				
30				
31				

LDC#: 4538664A

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: <u>1</u>	_of	1
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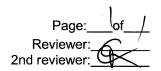
All circled elements are applicable to each sample.

Sample ID Matri	x Target Analyte List (TAL)
1-24	(Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb) Mg, (Mn, Hg, Ni) K, (Se, Ag) Na, (Tl, V, Zn, Mo) B, (Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
QC:25-25	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, (Mn, Hg, Ni) K, Se, Ag, Na (Tl, V, Zn, Mo) B (Sn, Ti,)
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Analysis Method
ICP	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA	Al Sh. As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Ph, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,

Comments:	Mercury by CVAA if performed		

LDC #: 45386E4a

VALIDATION FINDINGS WORKSHEET Technical Holding Times



Were samples preserved? $\underline{Y} \underline{N} \underline{N/A}$ All circled dates have exceeded the technical holding time.

METHOD:		Mercury Holding time = 28 days				
Sample ID:	Sampling Date	Analysis Date	Total Time until Analysis (days)	Qualifier Code: #	Det/ND	
1-6, <u>13-18</u>	7/26/18	9/3/18	39	J/UJ/P	ND	
7-12, 19-24	7/27/18	9/3/18	38	J/UJ/P	ND	
		en material and the second				

Technical Holding Time Criteria

Mercury:

28 days

All other metals: 180 days - 1 year if frozen

LDC #: 45386E4a

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	L of
Reviewer:	C-
2nd Reviewer:	_0/

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see	qualifications below for all questions answered "N". Not applicable question	ons ar e id entified as "N/A".
<u>Y N N/A</u>	Was a matrix spike analyzed for each matrix in this SDG?	

YNN/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor

of 4 or more, no action was taken.

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 25% for samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
	25/26		AI		60		1-10	Jdet/A (Det) とか
			Sb	10	9			J/R/A (Det)
			Be		71			J/UJ/A (Det/ND)
			Fe		65			J/UJ/A (Det)
								1
		_						
				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
L								
					<u> </u>			
						:		

Comments:			

LDC#: 45386E4

VALIDATION FINDINGS WORKSHEET Duplicate Analysis

Page: _of\	
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METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a duplicate sample analyzed for each matrix in this SDG? 25 N/A IN (Y

Were all duplicate sample relative percent differences (RPD) \leq 20% samples? If no, see qualifications below. A control limit of \pm R.L. (\pm 2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used

for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

N/A

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

		T			VOIRSHEET TO TECATORIE		
# Date	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications
	38		Q	29		Associated Samples 13-22	JUJA (Bel)
			fe'	26			
			Pb	65			
		 					
	27		Q	79		1-10	JUJ/A(Bot)
 	-	ļ	8p'	71			
			20	28			1
			<u> </u>				
		 					
			-				
				 		<u> </u>	
		 					
							
		 					
			<u> </u>				

Comments:		 		
		-		

LDC#: 45386E4a

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page:___of__ Reviewer:____ 2nd Reviewer:____

METHOD: Metals (EPA Method 6010B/7000)

	Concentra		
Analyte	5	6	RPD
Aluminum	115	220	63
Antimony	0.142	0.102	33
Arsenic	1.46	1.51	3
Barium	8.44	7.9	7
Cadmium	0.116	0.0561	70
Chromium	0.297	0.454	42
Cobalt	0.0285	0.0572	67
Соррег	3.81	3.91	3
Iron	77.4	134	54
Lead	0.38	0.355	7
Manganese	10.4	11.6	11
Molybdenum	9.25	8.28	11
Nickel	0.624	0.557	11
Selenium	0.0198	0.0241	20
Silver	0.0162	0.017	5
Tin	0.0269	0.0128	71
Titanium	23.3	26.4	12
Vanadium	2.49	2.68	7
Zinc	7.32	5.56	27

LDC#: 45386E4a

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page: 2of Reviewer: 2nd Reviewer:

METHOD: Metals (EPA Method 6010B/7000)

	Concentra		
Analyte	17	18	RPD
Antimony	0.149	0.12	22
Arsenic	1.36	1.49	9
Barium	8.21	9.76	17
Cadmium	0.0645	0.0616	5
Chromium	0.115	0.12	4
Copper	3.4	3.02	12
Iron	1.09	0.5U	NC
Lead	0.0729	0.0433	51
Manganese	8.19	8.47	3
Molybdenum	9.42	9.33	1
Nickel	0.597	0.571	4
Selenium	0.0161	0.0325	67
Silver	0.0154	0.0132	15
Titanium	17.5	19.8	12
Vanadium	2.4	2.47	3
Zinc	4.95	4.61	7

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 16, 2019

Parameters: Wet Chemistry

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-009

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10124	56669	Water	07/26/18
B18-10126	56670	Water	07/26/18
B18-10127	56671	Water	07/26/18
B18-10132	56672	Water	07/26/18
B18-10133	56673	Water	07/26/18
B18-20133	56674	Water	07/26/18
B18-10136	56675	Water	07/27/18
B18-10137	56676	Water	07/27/18
B18-10139	56677	Water	07/27/18
B18-10140	56678	Water	07/27/18
B18-10141	56679	Water	07/27/18
B18-10142	56680	Water	07/27/18
B18-10133MS	56673MS	Water	07/26/18
B18-10133MSD	56673MSD	Water	07/26/18
B18-10133DUP	56673DUP	Water	07/26/18
B18-20133MS	56674MS	Water	07/26/18
B18-20133MSD	56674MSD	Water	07/26/18
B18-20133DUP	56674DUP	Water	07/26/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Ammonia as Nitrogen by Standard Method 4500-NH3-D
Dissolved Organic Carbon by Standard Method 5310B
Methylene Blue Active Substances by Standard Method 5540C
Nitrate as Nitrogen by Standard Method 4500-NO3-E
Oil and Grease by Environmental Protection Agency (EPA) Method 1664B
Total Orthophosphate as Phosphorus by Standard Method 4500-P-E
Total Organic Carbon by Standard Method 5310B
Total Suspended Solids by Standard Method 2540D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133	Nitrate as N	47 days	2 days	R (all non-detects)	Р
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133	Total orthophosphate as P	5 days	2 days	J (all detects)	Р
B18-10136 B18-10137 B18-10139 B18-10140 B18-10141 B18-10142	Nitrate as N	46 days	2 days	R (all non-detects)	Р
B18-10136 B18-10137 B18-10139 B18-10140 B18-10141 B18-10142	Total orthophosphate as P	4 days	2 days	J (all detects)	Р

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10133DUP (All samples in SDG 1807003-009)	Total suspended solids	44 (≤25)	J (all detects)	А

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Replicates

Samples B18-10133 and B18-20133 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentra		
Analyte	B18-10133	B18-20133	RPD
Ammonia as N	0.0175	0.0498	96
Dissolved organic carbon	1.73	1.52	13
Methylene blue active substances	0.0109	0.0169	43
Total organic carbon	1.75	1.83	4
Total orthophosphate as P	0.0383	0.0462	19
Total suspended solids	2.89	3.6	22

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-009	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods.

Due to technical holding time, data were rejected in twelve samples.

Due to technical holding time, DUP RPD, and results reported below the RL and above the MDL, data were qualified as estimated in twelve samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-009

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10139 B18-10140 B18-10141	Nitrate as N	R (all non-detects)	Р	Technical holding times (H)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10140 B18-10140 B18-10141	Total orthophosphate as P	J (all detects)	Р	Technical holding times (H)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10140 B18-10140 B18-10141	Total suspended solids	J (all detects)	Α	Duplicate sample analysis (RPD) (HD)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10140 B18-10140 B18-10141 B18-10142	Analyte reported below the RL and above the MDL	J (all detects)	А	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-009

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-009

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET

LDC #: 45386E6 SDG #: 1807003-009

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: (Analyte) Ammonia as N (SM4500-NH3 D), DOC SM 5310 B), MBAS (SM 5540 C), Nitrate as N (SM 4500-NO3 E), Oil & Grease (EPA Method 1664B), Total Orthophosphate as P (SM 4500-P E), TOC (SM 5310 B), TSS (SM 2540 D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	ASW	
II	Initial calibration	N_	
III.	Calibration verification	N	
IV	Laboratory Blanks	A	
V	Field blanks	Λ	
VI.	Matrix Spike/Matrix Spike Duplicates	À,	
VII.	Duplicate sample analysis	Sw	
VIII.	Laboratory control samples	A	LCS12
IX.	Field duplicates	54/	(5.6)
X.	Sample result verification	N _	
ΧI	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected ·

FB = Field blank

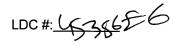
R = Rinsate

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10124	56669	Water	07/26/19
2	B18-10126	56670	Water	07/26/19
3	B18-10127	56671	Water	07/26/19
4	B18-10132	56672	Water	07/26/19
5	B18-10133	56673	Water	07/26/19
6	B18-20133	56674	Water	07/26/19
7	B18-10136	56675	Water	07/27/19
8	B18-10137	56676	Water	07/27/19
9	B18-10139	56677	Water	07/27/19
10	B18-10140	56678	Water	07/27/19
11	B18-10141	56679	Water	07/27/19
12	B18-10142	56680	Water	07/27/19
13	B18-10133MS	56673MS	Water	07/26/19
14	B18-10133MSD	56673MSD	Water	07/26/19
15	B18-10133DUP	56673DUP	Water	07/26/19
16	B18-20133MS	56674MS	Water	07/26/19
17	B18-20133MSD	56674MSD	Water	07/26/19

LDC #: 45386E6 VALIDATION COMPLETENESS WORKSHEET SDG #: 1807003-009 Level II Laboratory: Physis Environmental Laboratories, Inc.				Date: 7(SF Page: 2 of Ziewer: G
	HOD: (Analyte) <u>Ammonia as N (SM4500-NH3 D), DOC SM 5310</u> il & Grease (EPA Method 1664B), Total Orthophosphate as P (SN			
18	B18-20133DUP	56674DUP	Water	07/26/19
19				
20_				
21				
Notes	S:			



VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: CR
2nd reviewer: CR

All circled methods are applicable to each sample.

Sample ID	Parameter
1-12	pH TDS CI F(NO) NO2 SO4(0-PO4) AIK CN(NH3)TKN TOC Cr6+ CIO4 (DOC) (MBAS (TSS) (Od G)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
Q:13-15	PH TDS CI F (NO3) NO2 SO4(O-PO4) AIK CN(NH3) TKN(TOC) Cr6+ CIO(DOC) (MS/S) () & G
1	pH TDS CI F (NO ₃) NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
., [pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄ (755)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
***************************************	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
·	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH_TDS_CL_F_NO ₂ _NO ₂ _SO ₄ _O-PO ₄ _Alk_CN_NH ₂ _TKN_TOC_Cr6+_ClO ₄

Comments:_					_	

LDC #: 45386E6

VALIDATION FINDINGS WORKSHEET Technical Holding Times

2nd reviewer:

All circled dates have exceeded the technical holding time.

Y N N/A

Were all samples preserved as applicable to each method?

Y N N/A

Were all cooler temperatures within validation criteria?

Method:			SM4500 NO3-	E	SM4500 P-E		
Parameters	:		Nitrate as N		Total	orthophospha	te as P
Technical h	olding time:		2 days		2 days		
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier
1-6	7/26/18	9/11/18	47	J/R/P (ND)	7/31/18	5	J/R/P (Det)
7-12	7/27/18	9/11/18	46	J/R/P (ND)	7/31/18	4	J/UJ/P (Det)

LDC#: US356E6

VALIDATION FINDINGS WORKSHEET <u>Duplicate Analysis</u>

Page:of_	_
Reviewer:	
2nd Reviewer:	

METHOD: Inorganics, Method Security

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a duplicate sample analyzed for each matrix in this SDG?

 $\underline{\underline{Y} \ N \ N/A}$ Were all duplicate sample relative percent differences (RPD) \leq 20% for water and \leq 35% for soil samples (\leq 10% for Method 300.0)? If no, see qualification

below. A control limit of ±CRDL (±2X CRDL for soil) was used for samples that were ≤5X the CRDL, including when only one of the duplicate sample values

were ≤5X the CRDL. If field blanks were used for laboratory duplicates, see overall assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

	IN/A VV		i deceptable:		I TOGGIOGIATION TVO	KSneet for recalcula	I	
#	_Date	Duplicate ID	Matrix	Analyte	RPD (Limits)_	Difference (Limits)	Associated Samples	Qualifications
		15		T5S	44 (525)		All	TUTA (Del
					/			-
								
		· · · · · · · · · · · · · · · · · · ·						

Comments:		 			
	-				
		 	,		

LDC#: 45386E6

VALIDATION FINDINGS WORKSHEET Field Duplicates



Inorganics, Method See Cover

	Concentration		
Analyte	5	6	RPD
Ammonia as N	0.0175	0.0498	96
DOC	1.73	1.52	13
MBAS	0.0109	0.0169	43
тос	1.75	1.83	4
Total orthophosphate as	0.0383	0.0462	19
TSS	2.89	3.6	22

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2019\45386E6.wpd

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

July 10, 2019

Parameters:

Polynuclear Aromatic Hydrocarbons

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-011

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10034	56736	Water	07/30/18
B18-10035	56737	Water	07/30/18
B18-10036	56738	Water	07/30/18
B18-10143	56739	Water	07/30/18
B18-10144	56740	Water	07/30/18
B18-10039	56741	Water	07/30/18
B18-10144MS	56740MS	Water	07/30/18
B18-10144MSD	56740MSD	Water	07/30/18
B18-10144DUP	56740DUP	Water	07/30/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) Method 625

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56734-BS1/BS2 (All samples in SDG 1807003-011)	Naphthalene 1-Methylnaphthalene 2,6-Dimethylnaphthalene 2-Methylnaphthalene Acenaphthylene Biphenyl	67 (70-130) - - - - - -	31 (70-130) 43 (70-130) 69 (70-130) 45 (70-130) 69 (70-130) 68 (70-130)	J (all detects) UJ (all non-detects)	Р

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

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
56734-BS1/BS2 (All samples in SDG 1807003-011)	1-Methylnaphthalene	53 (≤30)	NA	-
56734-BS1/BS2 (B18-10144 B18-10039)	2-Methylnaphthalene	54 (≤30)	J (all detects)	Р
56734-BS1/BS2 (B18-10034 B18-10035 B18-10036 B18-10143)	2-Methylnaphthalene	54 (≤30)	NA	-
56734-BS1/BS2 (B18-10039)	Biphenyl	32 (≤30)	J (all detects)	Р
56734-BS1/BS2 (B18-10034 B18-10035 B18-10036 B18-10143 B18-10144)	Biphenyl	32 (≤30)	NA	-
56734-BS1/BS2 (B18-10144)	Naphthalene	73 (≤30)	J (all detects)	Р
56734-BS1/BS2 (B18-10034 B18-10035 B18-10036 B18-10143 B18-10039)	Naphthalene	73 (≤30)	NA	-

X. Field Replicates

No field replicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-011	Compound reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD %R and RPD and results reported below the RL and above the MDL, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-011

			20.00.	
Sample	Compound	Flag	A or P	Reason (Code)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Naphthalene 1-Methylnaphthalene 2,6-Dimethylnaphthalene 2-Methylnaphthalene Acenaphthylene Biphenyl	J (all detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10144 B18-10039	2-Methylnaphthalene	J (all detects)	Р	Laboratory control samples (RPD) (HD)
B18-10039	Biphenyl	J (all detects)	Р	Laboratory control samples (RPD) (HD)
B18-10144	Naphthalene	J (all detects)	Р	Laboratory control samples (RPD) (HD)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-011

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary SDG 1807003-011

No Sample Data Qualified in this SDG

/ETH	OD: GC/MS Polynuclear Aromatic Hydro	ocarbons (l	EPA Metho	od 625)	2nd F	Reviewer:
	amples listed below were reviewed for ea ion findings worksheets.	ch of the fo	ollowing va	alidation areas. Valida	ation findings are	noted in attache
	Validation Area			Com	nments	
l.	Sample receipt/Technical holding times	A				
II.	GC/MS Instrument performance check	N			,	
III.	Initial calibration/ICV	N/N				
IV.	Continuing calibration	N				
V.	Laboratory Blanks	A				
٠VI.	Field blanks					
VII.	Surrogate spikes	#				
VIII.	Matrix spike/Matrix spike duplicates	A/A				
IX.	Laboratory control samples	Kurl	100	8		
X.	Field duplicates	N	(
XI.	Internal standards					
XII.	Compound quantitation RL/LOQ/LODs	N		OPWARE.		
XIII.	Target compound identification	N				
XIV.	System performance	N				
XV.	Overall assessment of data	A				
lote:	N = Not provided/applicable R = Rin	o compounds sate eld blank	s detected	D = Duplicate TB = Trip blank EB = Equipment b	OTHER:	rce blank
- (Client ID			Lab ID	Matrix	Date
1	B18-10034			56736	Water	07/30/18
2 I	B18-10035			56737	Water	07/30/18
	B18-10036			56738	Water	07/30/18
	B18-10143			56739	Water	07/30/18
	B18-10144			56740	Water	07/30/18
	318-10039	# 1 m		56741	Water	07/30/18
	B18-10144MS	56740MS	Water	07/30/18		
3 [B18-10144MSD	56740MSD	Water	07/30/18		
	B18-10144DUP	56740DUP	Water	07/30/18		
10						
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VALIDATION COMPLETENESS WORKSHEET

Level II

Reviewer:

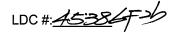
LDC #: 45386F2b SDG #: 1807003-011

Laboratory: Physis Environmental Laboratories, Inc.

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

METHOD: COMO CVO/T	· · · · · · · · · · · · · · · · · · ·			
A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o"-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachiorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenoi	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	<u>_</u> 6f
Reviewer:	9
2nd Reviewer:	

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Y N N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

5673A-B51/		LCS %R (Limits)	%R (Limits)	RPD (Limits)	Associated Samples	Qualifications
00/2/1009	3	67 40-1701	31 (70-130)	()	All (AdS+ND)	JMA (22)
-BS2	777	()	43 (1)	()		7,71
	XXX	()	43 () 59 () 45 ()	()		
	W	()	45-()	()		
	DD	()	69 ()	()		
	EEEE	()	28 (V)	()		V
	777	()	()	53 (<30)		Jdets & (HD)
	W	()	()	54 ()) 32 ()	(dots=5-6) (dets=6) (dots=5)	1
	EEEE	()	()		(dets=6)	
	5	()	()	Z3 (√)	(dets=5)	V
		()	()	()		
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		()	()	()		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 16, 2019

Parameters: Metals

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-011

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10034	56736	Water	07/30/18
B18-10035	56737	Water	07/30/18
B18-10036	56738	Water	07/30/18
B18-10143	56739	Water	07/30/18
B18-10144	56740	Water	07/30/18
B18-10039	56741	Water	07/30/18
B18-10034F	56736F	Water	07/30/18
B18-10035F	56737F	Water	07/30/18
B18-10036F	56738F	Water	07/30/18
B18-10143F	56739F	Water	07/30/18
B18-10144F	56740F	Water	07/30/18
B18-10039F	56741F	Water	07/30/18
B18-10144MS	56740MS	Water	07/30/18
B18-10144MSD	56740MSD	Water	07/30/18
B18-10144DUP	56740DUP	Water	07/30/18
B18-10144FDUP	56740FDUP	Water	07/30/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Thallium, Tin, Titanium, Vanadium, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 1640 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039 B18-10035F B18-10036F B18-10143F B18-10144F B18-10039F	Mercury	35	28	UJ (all non-detects)	Р

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10144MS/MSD (B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039)	Antimony	12 (75-125)	11 (75-125)	J (all detects)	A
B18-10144MS/MSD (B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039)	Manganese Silver	55 (75-125) -	42 (75-125) 57 (75-125)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	А

For B18-10144MS/MSD, no data were qualified for aluminum and iron percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

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

Spike ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10144MS/MSD (B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039)	Aluminum Iron Manganese Silver	39 (≤25) 360 (≤25) 27 (≤25) 31 (≤25)	J (all detects) UJ (all non-detects)	А

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	Difference (Limits)	Flag	A or P
B18-10144FDUP (B18-10034F B18-10035F B18-10036F B18-10143F B18-10144F B18-10039F)	Selenium	0.0259 ug/L (≤0.015) 0.0662 ug/L (≤0.01)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Standard Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

XI. Field Replicates

No field replicates were identified in this SDG.

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-011	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, MS/MSD %R and RPD, DUP difference, and results reported below the RL and above the MDL, data were qualified as estimated in twelve samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-011

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039 B18-10035F B18-10036F B18-10143F B18-10144F B18-10144F	Mercury	UJ (all non-detects)	Р	Technical holding times (H)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Antimony	J (all detects)	. A	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Manganese Silver	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Aluminum Iron Manganese Silver	J (all detects) UJ (all non-detects)	А	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10034F B18-10035F B18-10036F B18-10143F B18-10144F B18-10039F	Selenium Tin	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	А	Duplicate sample analysis (difference) (HD)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039 B18-10035F B18-10036F B18-10143F B18-10144F B18-10039F	Analyte reported below the RL and above the MDL	J (all detects)	A	Sample result verification (DL)

2018 Regional Harbor Monitoring Program Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-011

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-011

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45386F4a SDG #: 1807003-011 Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: Metals (EPA Method 1640/200.8/245.7)

Reviewer: 2nd Reviewer

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	ASh	/
II.	ICP/MS Tune	, N	
III.	Instrument Calibration	N	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Laboratory Blanks	A	
VI.	Field Blanks	N	
VII.	Matrix Spike/Matrix Spike Duplicates	SW	•
VIII.	Duplicate sample analysis	5	
IX.	Serial Dilution	V	10
X.	Laboratory control samples	H	LOSID SRMID
XI.	Field Duplicates	N	,
XII.	Internal Standard (ICP-MS)	N	
XIII.	Sample Result Verification	aN .	
XIV	Overall Assessment of Data	LP	

Note: A = Acceptable

N = Not provided/applicable

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

SW = See worksheet Samples appended with "F" were analyzed as Dissolved

	Client ID	Lab ID	Matrix	Date
1	B18-10034	56736	Water	07/30/18
2	B18-10035	56737	Water	07/30/18
3	B18-10036	56738	Water	07/30/18
4	B18-10143	56739	Water	07/30/18
5	B18-10144	56740	Water	07/30/18
6	B18-10039	56741	Water	07/30/18
7	B18-10034F	56736F	Water	07/30/18
8	B18-10035F	56737F	Water	07/30/18
9	B18-10036F	56738F	Water	07/30/18
10	B18-10143F	56739F	Water	07/30/18
11	B18-10144F	56740F	Water	07/30/18
12_	B18-10039F	56741F	Water	07/30/18
13	B18-10144MS	56740MS	Water	07/30/18
14	B18-10144MSD	56740MSD	Water	07/30/18
15	B18-10144DUP	56740DUP	Water	07/30/18

DC #: 45386F4a VALIDATION COMPLETENESS WORKSHEET DG #: 1807003-011 Level II aboratory: Physis Environmental Laboratories, Inc.				Date:7/\S Page: \(\tag{-}\)ef Reviewer: \(\) 2nd Reviewer: \(\)	
/IETHOD: Metals (EPA M	lethod 1640/200.8/245.7)				
		56740FDUP	Water	07/30/18	
6 B18-10144FDUP		30740FDOF	vvalei	07/30/10	
		307401001	vvatei	07730710	
16 B18-10144FDUP 17		307401001	Water	07750710	

LDC#: 4536F

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: 1 of 1
Reviewer: CR
2nd reviewer: CR

All circled elements are applicable to each sample.

Sample ID Matrix	Target Analyte List (TAL)
1-12	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb) Mg, Mn, Hg, Ni) K, Se, Ag) Na (Tl, V, Zn, Mo) B, (n, Ti,
QC:13-16	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
90 10 15	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mg, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Ti, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Analysis Method
ICP	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti

Comments: Mercury by CVAA if performed

LDC #: 45386F4a

VALIDATION FINDINGS WORKSHEET Technical Holding Times

Were samples preserved? Y N N/A All circled dates have exceeded the technical holding time.

METHOD:		Mercury Holding time = 28 days				
Sample ID:	Sampling Date	Analysis Date	Total Time until Analysis (days)	Qualifier Code:	Det/ND	
All	7/30/18	9/3/18	35	J/UJ/P	ND	

Technical Holding Time Criteria

Mercury: 28 days All other metals: 180 days - 1 year if frozen

LDC #: 45386F4a

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page: <u>of</u> ∫	_
Reviewer:	
2nd Reviewer:	

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Diagna and avalifications halov	u for all according a anaccor	al IIAII. Alataanilaahla au	continue and identified on UNI/AU
Please see qualifications below	vior all questions answere	ed in . Not applicable qu	uestions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

YNN/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor

of 4 or more, no action was taken.

Y N N/A Were all duplicate sample relative percent differences (RP \cancel{p}) \leq 25% for samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications	
	13/14		Sb	12	11		1-6	J/R/A (Det)	LM
			Mn	55	42				-m
			Ag		57			J/UJ/A (Det/ND) L	-m
Ш			Al			39			10
Ш			Fe			360		J/UJ/A (Det)	
Ш			Mn			27		J/UJ/A (Det)	
			Ag			31		J/UJ/A (Det/ND)	
									İ
Ш									

Comments:_	13/14: Al, Fe >4x		 	

LDC#: 45386FP

VALIDATION FINDINGS WORKSHEET Duplicate Analysis

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Page:_	of/
Reviewer:	
2nd Reviewer:	

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used

for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

\Box	14// \		T	T	I	T I		T
#	Date	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications
		16		se		Difference (Limits)	7-12	Qualifications JUJA (DEC)
H	_					(60.015) 0.062 21L (60.01)		
H				Sn		0.0667 8011	7-12	JUJIA (AC+(M)
H			-	<u> </u>		(400)	1 (JOS (FICHER /NU)
\vdash						(30,0,1)		
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Comments:					
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 16, 2019

Parameters: Wet Chemistry

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-011

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10034	56736	Water	07/30/18
B18-10035	56737	Water	07/30/18
B18-10036	56738	Water	07/30/18
B18-10143	56739	Water	07/30/18
B18-10144	56740	Water	07/30/18
B18-10039	56741	Water	07/30/18
B18-10144MS	56740MS	Water	07/30/18
B18-10144MSD	56740MSD	Water	07/30/18
B18-10144DUP	56740DUP	Water	07/30/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Ammonia as Nitrogen by Standard Method 4500-NH3-D
Dissolved Organic Carbon by Standard Method 5310B
Methylene Blue Active Substances by Standard Method 5540C
Nitrate as Nitrogen by Standard Method 4500-NO3-E
Oil and Grease by Environmental Protection Agency (EPA) Method 1664B
Total Orthophosphate as Phosphorus by Standard Method 4500-P-E
Total Organic Carbon by Standard Method 5310B
Total Suspended Solids by Standard Method 2540D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Nitrate as N	42 days	2 days	R (all non-detects)	Р
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Total orthophosphate as P	24 days	2 days	J (all detects)	Р

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Replicates

No field replicates were identified in this SDG.

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-011	Analyte reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods.

Due to technical holding time, data were rejected in six samples.

Due to technical holding time and results reported below the RL and above the MDL, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-011

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Nitrate as N	R (all non-detects)	Р	Technical holding times (H)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Total orthophosphate as P	J (all detects)	Р	Technical holding times (H)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Analyte reported below the RL and above the MDL	J (all detects)	А	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-011

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-011

No Sample Data Qualified in this SDG

SDG : Labor METH E), Oi	#:45386F6	es, Inc. 0-NH3 D), D0 Orthophospl	Level II OC SM 5310 E hate as P (SM	4500-P E), TOC (S	2nd I C), Nitrate as M 5310 B), TS	SS (SM 2540 D)
	Validation Area			Comm	ente	
1.	Sample receipt/Technical holding times	ASW		- John J		
	Initial calibration	N				
III.	Calibration verification	N				
IV	Laboratory Blanks	A				
V	Field blanks	N				
VI.	Matrix Spike/Matrix Spike Duplicates	A				
VII.	Duplicate sample analysis	A	. , ,	`		
VIII.	Laboratory control samples	A	LCSI)		
IX.	Field duplicates	N				
X.	Sample result verification	N				
xı	Overall assessment of data	1 8				
Note:	N = Not provided/applicable R = F	No compounds Rinsate Field blank	s detected	D = Duplicate TB = Trip blank EB = Equipment blan	OTHER:	rce blank
:	Client ID			Lab ID	Matrix	Date
1	B18-10034			56736	Water	07/30/18
	B18-10035			56737	Water	07/30/18
	B18-10036			56738	Water	07/30/18
4	B18-10143			56739	Water	07/30/18
5				56740	Water	07/30/18
6	B18-10039			56741	Water	07/30/18
7	B18-10144MS			56740MS	Water	07/30/18
8	B18-10144MSD		56740MSD	Water	07/30/18	

LDC #: 4538676

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: 1 of 1

Reviewer: CR
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	
1-6	PH TDS CI F (NO3)NO2 SO4(0-PO4)AIK CN(NH3)TKN(TOC)Cr6+ CIO4 (DOC)MRAD)(155) (OFG)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
(x:79	PH TDS CI F (NO) NO2 SQ O-PO) AIK CN NH3 TKN TOO Cr6+ CIQ DOOLOGO
9	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄ TS
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO, NO, SO, O-PO, Alk CN NH, TKN TOC Cr6+ ClO,

Comments:				

LDC #: 45386F6

VALIDATION FINDINGS WORKSHEET Technical Holding Times

2nd reviewer:

All circled dates have exceeded the technical holding time.

Y N N/A Were all samples preserved as applicable to each method?

Y N N/A Were all cooler temperatures within validation criteria?

Method: Parameters:		SM4500 NO3-E			SM4500 P-E		
			Nitrate as N	te as N Total orthophospha		orthophosphat	ıte as P
Technical h	olding time:	2 days				2 days	
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier
1-6	7/30/18	9/10/18	42	J/R/P (ND)	8/23/18	24	J/R/P (Det)

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 10, 2019

Parameters: Polynuclear Aromatic Hydrocarbons

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-013

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10037	56794	Water	07/31/18
B18-10038	56795	Water	07/31/18
B18-10041	56796	Water	07/31/18
B18-10179	56797	Water	07/31/18
B18-10180	56798	Water	07/31/18
B18-10181	56799	Water	07/31/18
B18-10042	56800	Water	08/01/18
B18-10085	56801	Water	08/01/18
B18-10086	56802	Water	08/01/18
B18-10087	56803	Water	08/01/18
B18-10088	56804	Water	08/01/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) Method 625

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56792-BS1/BS2 (All samples in SDG 1807003-013)	Naphthalene 1-Methylnaphthalene 2,6-Dimethylnaphthalene 2-Methylnaphthalene Acenaphthylene Biphenyl	67 (70-130) - - - - -	31 (70-130) 43 (70-130) 69 (70-130) 45 (70-130) 69 (70-130) 68 (70-130)	J (all detects) UJ (all non-detects)	Р

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

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
56792-BS1/BS2 (All samples in SDG 1807003-013)	1-Methylnaphthalene Biphenyl	53 (≤30) 32 (≤30)	, NA	-
56792-BS1/BS2 (B18-10041 B18-10042 B18-10085 B18-10087)	2-Methylnaphthalene	54 (≤30)	J (all detects)	Р
56792-BS1/BS2 (B18-10037 B18-10038 B18-10179 B18-10180 B18-10181 B18-10086 B18-10088)	2-Methylnaphthalene	54 (≤30)	NA	-
56792-BS1/BS2 (B18-10085 B18-10086 B18-10087)	Naphthalene	73 (≤30)	J (all detects)	Р
56792-BS1/BS2 (B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10088)	Naphthalene	73 (≤30)	NA	-

X. Field Replicates

No field replicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-013	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD %R and RPD and results reported below the RL and above the MDL, data were qualified as estimated in ten samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-013

Sample	Compound	Flag	A or P	Reason (Code)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Naphthalene 1-Methylnaphthalene 2,6-Dimethylnaphthalene 2-Methylnaphthalene Acenaphthylene Biphenyl	J (all detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10041 B18-10042 B18-10085 B18-10087	2-Methylnaphthalene	J (all detects)	Р	Laboratory control samples (RPD) (HD)
B18-10085 B18-10086 B18-10087	Naphthalene	J (all detects)	Р	Laboratory control samples (RPD) (HD)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-013

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 1807003-013

No Sample Data Qualified in this SDG

LDC #: 45386G2b VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-013

Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA Method 625)

Date: 7/9/19
Page: __/d0
Reviewer: ____/
2nd Reviewer: ____/

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V	Laboratory Blanks	A	
VI.	Field blanks	\sim	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	Ň	25
IX.	Laboratory control samples	W/	205/0
X.	Field duplicates	N	/
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N _.	
XV.	Overall assessment of data	1	

Note: A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

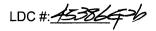
TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10037	56794	Water	07/31/18
2	B18-10038	56795	Water	07/31/18
3	B18-10041	56796	Water	07/31/18
4	B18-10179	56797	Water	07/31/18
5	B18-10180	56798	Water	07/31/18
6	B18-10181	56799	Water	07/31/18
7	B18-10042	56800	Water	08/01/18
8	B18-10085	56801	Water	08/01/18
9	B18-10086	56802	Water	08/01/18
10	B18-10087	56803	Water	08/01/18
11	B18-10088	56804	Water	08/01/18
12				
13				

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o"-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	4 <u>0</u> f_
Reviewer: _	7
2nd Reviewer:	e

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Y N N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		5492-BSI/	5	67 (70-130)	31 70-1701	()	All (dots+ND)	VM F (12)
		_B92	TTT	()	43 (70-130)	()		75.71
			XXX	()	69 (1)	()		
			W	()	45-()	()		
			DD	()	109 ()	()		,
			ZZZZ	()	68 (V)	()		V
		<u> </u>	777	()	()	53 (30)	(ND)	State (HD)
			W	()	()	54 () 32 (/)	(Ad5=3,7-8,10)	1 '
			ZZZZ		()	32 (//)	(NO)	/
			5	()	()	73 (/)	(dots= \$-10)	V
				()	()	()		
				()	()	()		
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				()	()	()		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 16, 2019

Parameters: Metals

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-013

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10037	56794	Water	07/31/18
B18-10038	56795	Water	07/31/18
B18-10041	56796	Water	07/31/18
B18-10179	56797	Water	07/31/18
B18-10180	56798	Water	07/31/18
B18-10181	56799	Water	07/31/18
B18-10042	56800	Water	08/01/18
B18-10085	56801	Water	08/01/18
B18-10086	56802	Water	08/01/18
B18-10087	56803	Water	08/01/18
B18-10088	56804	Water	08/01/18
B18-10037F	56794F	Water	07/31/18
B18-10038F	56795F	Water	07/31/18
B18-10041F	56796F	Water	07/31/18
B18-10179F	56797F	Water	07/31/18
B18-10180F	56798F	Water	07/31/18
B18-10181F	56799F	Water	07/31/18
B18-10042F	56800F	Water	08/01/18
B18-10085F	56801F	Water	08/01/18
B18-10086F	56802F	Water	08/01/18
B18-10087F	56803F	Water	08/01/18
B18-10088F	56804F	Water	08/01/18
B18-10037MS	56794MS	Water	07/31/18
B18-10037MSD	56794MSD	Water	07/31/18
B18-10037DUP	56794DUP	Water	07/31/18
B18-10038MS	56795MS	Water	07/31/18

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10038MSD	56795MSD	Water	07/31/18
B18-10038DUP	56795DUP	Water	07/31/18
B18-10037FDUP	56794FDUP	Water	07/31/18
B18-10038FDUP	56795FDUP	Water	07/31/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Thallium, Tin, Titanium, Vanadium, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 1640 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10037F B18-10038F B18-10041F B18-10179F B18-10180F B18-10181F	Mercury	34	28	UJ (all non-detects)	Р
B18-10042 B18-10085 B18-10086 B18-10087 B18-10088 B18-10042F B18-10085F B18-10086F B18-10087F B18-10088F	Mercury	33	28	UJ (all non-detects)	Р

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10038MS/MSD (B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088)	Antimony	7 (75-125)	7 (75-125)	J (all detects)	A

For B18-10038MS/MSD, no data were qualified for aluminum and iron percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

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

Spike ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10038MS/MSD (B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088)	Aluminum	33 (≤25)	J (all detects)	А

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
B18-10038FDUP (B18-10038F B18-10041F B18-10179F B18-10180F B18-10181F B18-10042F B18-10085F B18-10086F B18-10087F B18-10088F)	Beryllium Cobalt Tin	- 37 (≤25) -	0.051 ug/L (≤0.01) - 0.01325 ug/L (≤0.01)	J (all detects) UJ (all non-detects)	А
B18-10038FDUP (B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088)	Tin	-	0.0169 ug/L (≤0.01)	J (all detects) UJ (all non-detects)	A

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Standard Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

XI. Field Replicates

No field replicates were identified in this SDG.

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-013	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, MS/MSD %R and RPD, DUP RPD and difference, and results reported below the RL and above the MDL, data were qualified as estimated in twenty-two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-013

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10085 B18-10086 B18-10087 B18-10037F B18-10038F B18-10038F B18-10179F B18-10179F B18-10180F B18-10181F B18-10042F B18-10085F B18-10085F B18-10085F B18-10086F B18-10087F B18-10088F	Mercury	UJ (all non-detects)	Р	Technical holding times (H)
B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Antimony	J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Aluminum	J (all detects)	А	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10038F B18-10041F B18-10179F B18-10180F B18-10181F B18-10042F B18-10085F B18-10086F B18-10087F B18-10088F	Beryllium Tin	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	Α	Duplicate sample analysis (difference) (HD)

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10038F B18-10041F B18-10179F B18-10180F B18-10181F B18-10042F B18-10085F B18-10086F B18-10087F B18-10088F	Cobalt	J (all detects)	Α	Duplicate sample analysis (RPD) (HD)
B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Tin	J (all detects) UJ (all non-detects)	А	Duplicate sample analysis (difference) (HD)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10087 B18-10037F B18-10038F B18-10139F B18-10141F B18-10179F B18-10180F B18-10180F B18-10180F B18-10042F B18-10085F B18-10085F B18-10085F B18-10086F B18-10087F B18-10088F	Analyte reported below the RL and above the MDL	J (all detects)	A	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-013

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-013

No Sample Data Qualified in this SDG

LDC #: 45386G4a VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-013

Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: Metals (EPA Method 1640/200.8/245.7)

Date: 7(LS/19)
Page: _____ of ____
Reviewer: ______
2nd Reviewer: ______

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	ASW	
11.	ICP/MS Tune	N	
111.	Instrument Calibration	N	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Laboratory Blanks	A	
VI.	Field Blanks	N	
VII.	Matrix Spike/Matrix Spike Duplicates	Sw	
VIII.	Duplicate sample analysis	SW	
IX.	Serial Dilution	\mathcal{N}	•
X.	Laboratory control samples	A	LCS/D, SRM//)
XI.	Field Duplicates	· N	3 12
XII.	Internal Standard (ICP-MS)	N	
XIII.	Sample Result Verification	N	
LXIV	Overall Assessment of Data	1	

Note: A = A

A = Acceptable N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

Samples appended with "F" were analyzed as Dissolved

20111	pies appended with P were analyzed as Dissolved					
	Client ID	Lab ID	Matrix	Date		
1	B18-10037	56794	Water	07/31/18		
2	B18-10038	56795	Water	07/31/18		
3	B18-10041	56796	Water	07/31/18		
4	B18-10179	56797	Water	07/31/18		
5	B18-10180	56798	Water	07/31/18		
6	B18-10181	56799	Water	07/31/18		
7	B18-10042	56800	Water	08/01/18		
8	B18-10085	56801	Water	08/01/18		
9	B18-10086	56802	Water	08/01/18		
10	B18-10087	56803	Water	08/01/18		
11	B18-10088	56804	Water	08/01/18		
12	B18-10037F	56794F	Water	07/31/18		
13	B18-10038F	56795F	Water	07/31/18		
14	B18-10041F	56796F	Water	07/31/18		
15	B18-10179F	56797F	Water	07/31/18		

LDC #: 45386G4a VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-013

Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: Metals (EPA Method 1640/200.8/245.7)

Date: 7(IS/G)
Page: 2_of 2
Reviewer: 2nd Reviewer: 2

	T							
16	B18-10180F	56798F	Water	07/31/18				
17	B18-10181F	56799F	Water	07/31/18				
18	B18-10042F	56800F	Water	08/01/18				
19	B18-10085F	56801F	Water	08/01/18				
20	B18-10086F	56802F	Water	08/01/18				
21	B18-10087F	56803F	Water	08/01/18				
22	B18-10088F	56804F	Water	08/01/18				
23	B18-10037MS	56794MS	Water	07/31/18				
24	B18-10037MSD	56794MSD	Water	07/31/18				
25_	B18-10037DUP	56794DUP	Water	07/31/18				
26	B18-10038MS	56795MS	Water	07/31/18				
27	B18-10038MSD	56795MSD	Water	07/31/18				
28	B18-10038DUP	56795DUP	Water	07/31/18				
29	B18-10037FDUP	56794FDUP	Water	07/31/18				
30	B18-10038FDUP	56795FDUP	Water	07/31/18				
31								
32								
33								
loto	lotes:							

Notes:

LDC#: 4536664a

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: 1 of 1

Reviewer: CR
2nd reviewer:

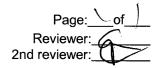
All circled elements are applicable to each sample.

Sample ID Matrix	Target Analyte List (TAL)
1-22	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Ph, Mg, Mn, Hg, Ni) K, Ee, Ag) Na, Tl, V, Zn, Mo, B, En, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
0:23-25.29	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn(Hg), Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
26-28/30	(Al, Sb, As, Ba, Be, Cd) Ca (Cr, Co, Cu, Fe, Pb,)Mg,(Mn) Hg, (Vi) K, (Se, Ag) Na (Tl, V, Zn, Mg, B, Sn, Ti,)
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Analysis Method
ICP	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA	Al Sh As Ba Be Cd Ca Cr Co Cu Fe Ph Mg Mn Hg Ni K Se Ag Na Tl V Zn Mo B Sn Ti

Comments: Mercury by CVAA if performed

LDC #: 45386G4a

VALIDATION FINDINGS WORKSHEET Technical Holding Times



Were samples preserved? Y N N/A

All circled dates have exceeded the technical holding time.

METHOD:		Mercury Holding time = 28 days					
Sample ID:	Sampling Date	Analysis Date	Total Time until Analysis (days)	Code: H	Det/ND		
1-6, 12-17	7/31/18	9/3/18	34	J/UJ/P	ND		
7-11, 18-22	8/1/18	9/3/18	33	J/UJ/P	ND		
					_		
						_	

Technical Holding Time Criteria

Mercury: 28 days All other metals: 180 days - 1 year if frozen

LDC #: 45386G4a

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

	Page:	of_
	Reviewer:	
2nd	Reviewer: <a> 	

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qua	lifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Y N N/A	Was a matrix spike analyzed for each matrix in this SDG?
Y N N/A	Were matrix spike percent recoveries (%R) within the control limits of 75-1252 If the sample concentration exceeded the spike concentration by a facto
	of 4 or more, no action was taken.
<u>Y N N/A</u>	Were all duplicate sample relative percent differences (RPD() ≤ 25%) for samples?
LEVEL IV ONL	
Y N N/A	Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
	26/27		Sb	7	7			J/R/A (Det)
			Al			33		J/UJ/A (Det)
L								
L								
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Comments:	26/27: Al, Fe >4x			

LDC#: 4538664a

VALIDATION FINDINGS WORKSHEET <u>Duplicate Analysis</u>

		1	- 1
	Page:_	of	<u> </u>
	Reviewer:	\bigcirc	
2nd	Reviewer:	4	

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a dup

Was a duplicate sample analyzed for each matrix in this SDG?

Y N N/A

Were all duplicate sample relative percent differences (RPD) \leq 20% samples? If no, see qualifications below. A control limit of \pm R.L. (\pm 2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

						- Contract for resource		
#	Date	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications
		30	l Maint	Be	KPD (LIMINS)	0.051(50.01)	13-22	JUJ (AC Della)
\parallel		30			27(425)	0.05(1-0.01)	1,22	
				Co	37(525)	4		Deb
\square				Sn		(20.01325 (50.01)		V Det(M)
Ш								
П								
П		28		Sn		0.0169 (50.01)	2-11	JUJIA (BEKIM)
$\ \cdot \ $								
H								
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П		***************************************						
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Comments:		 		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

July 16, 2019

Parameters:

Wet Chemistry

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-013

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10037	56794	Water	07/31/18
B18-10038	56795	Water	07/31/18
B18-10041	56796	Water	07/31/18
B18-10179	56797	Water	07/31/18
B18-10180	56798	Water	07/31/18
B18-10181	56799	Water	07/31/18
B18-10042	56800	Water	08/01/18
B18-10085	56801	Water	08/01/18
B18-10086	56802	Water	08/01/18
B18-10087	56803	Water	08/01/18
B18-10088	56804	Water	08/01/18
B18-10037MS	56794MS	Water	07/31/18
B18-10037MSD	56794MSD	Water	07/31/18
B18-10037DUP	56794DUP	Water	07/31/18
B18-10181MS	56799MS	Water	07/31/18
B18-10181MSD	56799MSD	Water	07/31/18
B18-10181DUP	56799DUP	Water	07/31/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Ammonia as Nitrogen by Standard Method 4500-NH3-D
Dissolved Organic Carbon by Standard Method 5310B
Methylene Blue Active Substances by Standard Method 5540C
Nitrate as Nitrogen by Standard Method 4500-NO3-E
Oil and Grease by Environmental Protection Agency (EPA) Method 1664B
Total Orthophosphate as Phosphorus by Standard Method 4500-P-E
Total Organic Carbon by Standard Method 5310B
Total Suspended Solids by Standard Method 2540D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181	Nitrate as N	41 days	2 days	R (all non-detects)	Р
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181	Total orthophosphate as P	23 days	2 days	J (all detects)	Р
B18-10085 B18-10086	Nitrate as N	40 days	2 days	J (all detects)	Р
B18-10042 B18-10087 B18-10088	Nitrate as N	40 days	2 days	R (all non-detects)	Р
B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Total orthophosphate as P	22 days	2 days	J (all detects)	Р

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Replicates

No field replicates were identified in this SDG.

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-013	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods.

Due to technical holding time, data were rejected in nine samples.

Due to technical holding time and results reported below the RL and above the MDL, data were qualified as estimated in eleven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-013

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10087 B18-10088	Nitrate as N	R (all non-detects)	Р	Technical holding times (H)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Total orthophosphate as P	J (all detects)	Р	Technical holding times (H)
B18-10085 B18-10086	Nitrate as N	J (all detects)	Р	Technical holding times (H)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Analyte reported below the RL and above the MDL	J (all detects)	А	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-013

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-013

No Sample Data Qualified in this SDG

LDC #: 45386G6 VALIDATION COMPLETENESS WORKSHEET SDG #: 1807003-013 Level II

Laboratory: Physis Environmental Laboratories, Inc.

Date: 7/15/19
Page: of 1
Reviewer: 2nd Reviewer:

METHOD: (Analyte) Ammonia as N (SM4500-NH3 D), DOC SM 5310 B), MBAS (SM 5540 C), Nitrate as N (SM 4500-NO3 E), Oil & Grease (EPA Method 1664B), Total Orthophosphate as P (SM 4500-P E), TOC (SM 5310 B), TSS (SM 2540 D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A SW	
ll l	Initial calibration	N	
111.	Calibration verification	N	
IV	Laboratory Blanks	A	
V	Field blanks	\mathcal{N}	
VI.	Matrix Spike/Matrix Spike Duplicates	A	
VII.	Duplicate sample analysis	A	
VIII.	Laboratory control samples	A	LCSID
IX.	Field duplicates	\ ^	
X.	Sample result verification	Ņ	
XI	Overall assessment of data	1	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank

OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10037	56794	Water	07/31/18
2	B18-10038	56795	Water	07/31/18
3	B18-10041	56796	Water	07/31/18
4	B18-10179	56797	Water	07/31/18
5	B18-10180	56798	Water	07/31/18
6	B18-10181	56799	Water	07/31/18
7	B18-10042	56800	Water	08/01/18
8	B18-10085	56801	Water	08/01/18
9	B18-10086	56802	Water	08/01/18
10	B18-10087	56803	Water	08/01/18
11	B18-10088	56804	Water	08/01/18
12	B18-10037MS	56794MS	Water	07/31/18
13	B18-10037MSD	56794MSD	Water	07/31/18
14	B18-10037DUP	56794DUP	Water	07/31/18
15	B18-10181MS	56799MS	Water	07/31/18
16	B18-10181MSD	56799MSD	Water	07/31/18
17	B18-10181DUP	56799DUP	Water	07/31/18

LDC #:<u>U63666</u>6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: CR
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter (2 C) (2 C)
1-11	PH TDS CI F(NO) NO, SO4(0-PO) AIK CN(NH) TKN(TOC) Cr6+ CIO4 (DOC) (MR) AS(TSS) (O+G)
QC:12-14	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
_ \	PH TDS CI F (NO) NO2 SO (O-PO4) AIK CN NH3 TKM TOC Cr6+ CIO4 (DOC) MMY
15-17	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN(NH ₃)TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄

Comments:					

LDC #: 45386G6

VALIDATION FINDINGS WORKSHEET Technical Holding Times

Reviewer: 2nd reviewer:

All circled dates have exceeded the technical holding time.

Y N N/A Were all samples preserved as applicable to each method?

Y N N/A Were all cooler temperatures within validation criteria?

Method:		SM4500 NO3-E			SM4500 P-E			
Parameters:								
		Nitrate as N			Total orthophosphate as P			
Technical holding time: Sampling Sample ID date		2 days Analysis Total date Time (days) Qualifier		Qualifier	2 days Analysis Total date Time (days) Qualifier			
1-6	7/31/18	9/10/18	41	J/R/P (ND)	8/23/18	23	J/R/P (Det)	
7-11	8/1/18	9/10/18	40	J/R/P (Det=89)	8/23/18	22	J/R/P (Det)	
					····			
					,			

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

July 11, 2019

Parameters:

Polynuclear Aromatic Hydrocarbons

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-015

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10040	57529	Water	08/14/18
B18-10043	57530	Water	08/14/18
B18-10044	57531	Water	08/14/18
B18-20043	57532	Water	08/14/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) Method 625

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
57527-BS1/BS2 (All samples in SDG 1807003-015)	Naphthalene	-	67 (70-130)	J (all detects) UJ (all non-detects)	А

Relative percent differences (RPD) were within QC limits.

X. Field Replicates

Samples B18-10043 and B18-20043 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentra		
Compound	B18-10043	B18-20043	RPD
2-Methylnaphthalene	1.41	5U	Not calculable
Naphthalene	2.32	5U	Not calculable

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-015	Compound reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD %R and results reported below the RL and above the MDL, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-015

Sample	Compound	Flag	A or P	Reason (Code)
B18-10040 B18-10043 B18-10044 B18-20043	Naphthalene	J (all detects) UJ (all non-detects)	А	Laboratory control samples (%R) (LL)
B18-10040 B18-10043 B18-10044 B18-20043	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-015

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 1807003-015

No Sample Data Qualified in this SDG

, 1,	Validation Area			Co	mments	
. 5	Sample receipt/Technical holding times	A				•
I. C	GC/MS Instrument performance check	N				
I. II	nitial calibration/ICV	N/N				
<u>/. c</u>	Continuing calibration	N				
<u>/. L</u>	_aboratory Blanks	X				
1. F	Field blanks	\/				
II. S	Surrogate spikes	A				
II. N	Matrix spike/Matrix spike duplicates	N	e9			
κ. L	Laboratory control samples	Ŵ	1000			
(. F	Field duplicates	W	D=2+	4		
ı. h	Internal standards	N				
ı. (Compound quantitation RL/LOQ/LODs	N				
И. Т	Target compound identification	N				
v. s	System performance	N				
v. c	Overall assessment of data	1				
1	N = Not provided/applicable $R = R$	No compound insate Field blank	s detected	D = Duplicate TB = Trip blank EB = Equipment	OTHER:	rce blank
Cli	ient ID			Lab ID	Matrix	Date
B18	8-10040			57529	Water	08/14/18
B18	8-10043			57530	Water	08/14/18
	8-10044			57531	Water	08/14/18
B18	8-20043			57532	Water	08/14/18
	0 200 10					

Level II

Reviewer: 2nd Reviewer:

LDC #: 45386H2b VALIDATION COMPLETENESS WORKSHEET

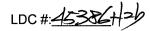
SDG #: 1807003-015

Laboratory: Physis Environmental Laboratories, Inc.

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenoi	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o"-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachiorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	lof/
Reviewer:	
2nd Reviewer:	

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Y N N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		57527-BSI	S	()	67 (70+30)	()	All (Lats+ND)	VUN/P(42)
		/-B52		()	/ ()	()		7 7 7
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LDC#:45384-b

VALIDATION FINDINGS WORKSHEET _Field Duplicates

Page: <u>/</u> of	
Reviewer: C	<u></u>
2nd Reviewer:	

METHOD: GCMS PAH 8270D

	Concentration (ng/L)		
Compound	2	4	RPD
w	1.41	5U	NC
s	2.32	5U	NC

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2019\45386H2b_RHMP.wpd

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 16, 2019

Parameters: Metals

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-015

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10040	57529	Water	08/14/18
B18-10043	57530	Water	08/14/18
B18-10044	57531	Water	08/14/18
B18-20043	57532	Water	08/14/18
B18-10040F	57529F	Water	08/14/18
B18-10043F	57530F	Water	08/14/18
B18-10044F	57531F	Water	08/14/18
B18-20043F	57532F	Water	08/14/18
B18-10040MS	57529MS	Water	08/14/18
B18-10040MSD	57529MSD	Water	08/14/18
B18-10040DUP	57529DUP	Water	08/14/18
B18-10040FDUP	57529FDUP	Water	08/14/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Thallium, Tin, Titanium, Vanadium, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 1640 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10040MS/MSD (B18-10040 B18-10043 B18-10044 B18-20043)	Antimony Iron Tin	38 (75-125) 74 (75-125) 70 (75-125)	38 (75-125) 53 (75-125) -	J (all detects) J (all detects) J (all detects)	А
B18-10040MS/MSD (B18-10040 B18-10043 B18-10044 B18-20043)	Titanium	154 (75-125)	-	J (all detects)	А

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

Spike ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10040MS/MSD (B18-10040 B18-10043 B18-10044 B18-20043)	Aluminum Iron Titanium	29 (≤25) 33 (≤25) 36 (≤25)	J (all detects) J (all detects) J (all detects)	А

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
B18-10040FDUP (B18-10040F B18-10043F B18-10044F)	Beryllium Cadmium Chromium Lead Titanium	- 37 (≤25) 92 (≤25) 62 (≤25) 100 (≤25)	0.031 ug/L (≤0.01) - - - - -	J (all detects) UJ (all non-detects)	А
B18-10040DUP (B18-10040 B18-10043 B18-10044 B18-20043)	Cadmium Cobalt	35 (≤25) -	- 0.0553 ug/L (≤0.01)	J (all detects) J (all detects)	А

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Standard Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

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

LCS ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
57528-LCS1/2 (All samples in SDG 1807003-015)	Manganese	53 (≤30)	J (all detects)	Р

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

XI. Field Replicates

Samples B18-10043 and B18-20043 and samples B18-10043F and B18-20043F were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentr	ation (ug/L)	
Analyte	B18-10043	B18-20043	RPD
Aluminum	90.9	48	62
Antimony	0.128	0.116	10
Arsenic	1.61	1.83	13
Barium	15	13.9	8
Beryllium	0.005U	0.0124	Not calculable
Cadmium	0.0668	0.0445	40
Chromium	0.152	0.101	40
Cobalt	0.0733	0.0466	45
Copper	2.81	3.58	24
Iron	59.9	36.5	49
Lead	0.115	0.0582	66
Manganese	21.4	19.6	9
Molybdenum	8.43	8.74	4
Nickel	0.519	0.459	12
Selenium	0.0147	0.005U	Not calculable
Silver	0.0182	0.0131	33
Titanium	18.7	17.1	9
Vanadium	3.77	3.23	15
Zinc	2.92	3.22	10

	Concentra	ation (ug/L)	
Analyte	B18-10043F	B18-20043F	RPD
Antimony	0.158	0.148	7
Arsenic	1.86	2.04	9
Barium	15.2	14.9	2
Beryllium	0.005U	0.0362	Not calculable
Cadmium	0.0681	0.0548	22
Chromium	0.0366	0.0214	52
Cobalt	0.0885	0.0261	109
Copper	2.59	5.43	71
Iron	0.978	1.58	Not calculable
Lead	0.0188	0.00407	129
Manganese	19.4	18.3	6
Molybdenum	8.98	9.09	1
Nickel	0.49	0.454	8
Selenium	0.005U	0.00932	Not calculable
Silver	0.031	0.024	25
Titanium	10.3	9.63	7
Vanadium	3.46	3.09	11
Zinc	2.3	3.29	35

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-015	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to MS/MSD %R and RPD, DUP RPD and difference, LCS/LCSD RPD, and results reported below the RL and above the MDL, data were qualified as estimated in eight samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-015

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10040 B18-10043 B18-10044 B18-20043	Antimony Iron Tin	J (all detects) J (all detects) J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10040 B18-10043 B18-10044 B18-20043	Titanium	J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (HM)
B18-10040 B18-10043 B18-10044 B18-20043	Aluminum Iron Titanium	J (all detects) J (all detects) J (all detects)	А	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10040F B18-10043F B18-10044F	Beryllium	J (all detects) UJ (all non-detects)	Α	Duplicate sample analysis (difference) (HD)
B18-10040F B18-10043F B18-10044F	Cadmium Chromium Lead Titanium	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)		Duplicate sample analysis (RPD) (HD)
B18-10040 B18-10043 B18-10044 B18-20043	Cadmium	J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10040 B18-10043 B18-10044 B18-20043	Cobalt	J (all detects)	А	Duplicate sample analysis (difference) (HD)
B18-10040 B18-10043 B18-10044 B18-20043 B18-10040F B18-10043F B18-10044F B18-20043F	Manganese	J (all detects)	Р	Laboratory control samples (RPD) (HD)
B18-10040 B18-10043 B18-10044 B18-20043 B18-10040F B18-10043F B18-10044F B18-20043F	Analyte reported below the RL and above the MDL	J (all detects)	A	Sample result verification (DL)

2018 Regional Harbor Monitoring Program Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-015

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-015

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45386H4a Level II SDG #: 1807003-015

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: Metals (EPA Method 1640/200.8/245.7)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	AA	
II.	ICP/MS Tune	N	
III.	Instrument Calibration	N	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Laboratory Blanks	A	
VI.	Field Blanks	N	
VII.	Matrix Spike/Matrix Spike Duplicates	SW	
VIII.	Duplicate sample analysis	SW_{-}	
IX.	Serial Dilution	<i>N</i> ,	
X.	Laboratory control samples	A SW	LCS(D,SRM/1)
XI.	Field Duplicates	SW	(2,41(68)
XII.	Internal Standard (ICP-MS)	N	
XIII.	Sample Result Verification	N_	
XIV	Overall Assessment of Data	X	

Note: A = Acceptable

N = Not provided/applicable

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank

OTHER:

SW = See worksheet Samples appended with "F" were analyzed as Dissolved

Jamp	es appended with "F" were analyzed as Dissolved			
	Client ID	Lab ID	Matrix	Date
1	B18-10040	57529	Water	08/14/18
2	B18-10043	57530	Water	08/14/18
3	B18-10044	57531	Water	08/14/18
4	B18-20043	57532	Water	08/14/18
5	B18-10040F	57529F	Water	08/14/18
6	B18-10043F	57530F	Water	08/14/18
7	B18-10044F	57531F	Water	08/14/18
8	B18-20043F	57532F	Water	08/14/18
9	B18-10040MS	57529MS	Water	08/14/18
10	B18-10040MSD	57529MSD	Water	08/14/18
11	B18-10040DUP	57529DUP	Water	08/14/18
12	B18-10040FDUP	57529FDUP	Water	08/14/18
13				

Notes:			

LDC#145256HYC

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: <u>1</u>	_of1_	
Reviewer:	CR	
2nd reviewer:		

All circled elements are applicable to each sample.

Г		
Sample ID	Matrix	Torget Analysis List (TAL)
Sample ID	IVIALITIX	Target Analyte List (TAL)
' B		Al, Sb, As, Ba, Be, Cd) Ca(Cr, Co, Cu, Fe, Pb) Mg,(Mn, Hg, Ni),K,(Se, Ad) Na,(Tl, V, Zn, Mo), B,(Sn, Ti,
009-11	,	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
acrei		Al, Sb, As, Ba, Be, Cd, Ca (Cr, Co, Cu, Fe, Pb, Mg, (Mn, Hg, Ni,)K, (Se, Ag) Na (TI, V, Zn, Mo, B(Sn, Ti,)
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GEAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,

Comments: Mercury by CVAA if performed

LDC #: 45386H4a

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

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2nd	Reviewer:		
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METHOD: Trace metals (EPA SW 846 Method 6010/7000)

	Trace metar	S (EPA SVV o	46 Method 6010	17000)						
	ase see qualification	ns below for a	II questions ansv	wered "N". Not ap	oplicable question	ons are id entified	as "N/A".			
Y	<u>N N/A</u> Was a	matrix spike	analyzed for eac	ch matrix in this S	DG?	/				
XI	<u>∕n N/A</u> Were r	Were matrix spike percent recoveries (%R) within the control limits of 75-1252 If the sample concentration exceeded the spike concentration by a factor								
7	7	of 4 or more, no action was taken.								
Y)1	N N/A Were a	Were all duplicate sample relative percent differences (RPD) ≤ 25% for samples?								
	EL IV ONLY:	•	•		` (•				
Y	Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.									
			•							
П				MS	MSD					
#	MS/MSD ID	Matrix	Analyte	%Recovery	%Recovery	RPD (Limits)	Associated Samples	Qualifications		

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
\blacksquare	9/10				38		1-4	J/UJ/A (Det)
			Fe		53			J/UJ/A
П				70				J/UJ/A
			Ti	157				JDet/A HM
			Al			29		J/UJ/A HO'
			Fe			33		J/UJ/A
			Ti			36		J/UJ/A
						1		
Ц								

Comments:			

LDC #: 45386146

VALIDATION FINDINGS WORKSHEET Duplicate Analysis

Page:	of
Reviewer:	5
2nd Reviewer:	O

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a duplicate sample analyzed for each matrix in this SDG? 25 Y N N/A

Were all duplicate sample relative percent differences (RPD) \leq 20% samples? If no, see qualifications below. A control limit of \pm R.L. (\pm 2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used Y N N/A

for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

Ė	<u> </u>	110.01000000000000000000000000000000000	ante diocopian			Volksheet for recalcula		
					,,	USILMOTE		
#	<u> Date</u>	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications
		12		Be		Difference (Limits)	5-7	Qualifications JOJA (De+/W)
				Cd	37			1 (pet)
				GC .	92			
				62	62			
				Ti	100			
Ш								
Щ					<u> </u>			
Ш		11		Cd	35		1-4	JUJIA (Dex)
Ш				Co		0,0553(40.01)		
Ш						-		
Ш								
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Comments:			

LDC #: 45366 Ha

VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _of _
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2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010B/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/.	Please see qualifications below	v for all questions answere	d "N". Not applicable que	estions are identified as "N/A
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Y N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

Y N N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

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#	LCS/LCSD ID	Matrix	Analyte	LCS %R (limits)	LCSD %R (limits)	RPD (limits)	Associated Samples	Qualifications
	57528-10	54/2	MN			53(430)	AII	7/05/1
								Jdet /P (Ded)
	<u> </u>)
<u> </u>						<u> </u>		
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Comments:				
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LDC#: 45386H4a

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page: of Reviewer: 2nd Reviewer:

METHOD: Metals (EPA Method 6010B/7000)

	Concentra	200	
Analyte	2	4	RPD
Aluminum	90.9	48	62
Antimony	0.128	0.116	10
Arsenic	1.61	1.83	13
Barium	15	13.9	8
Beryllium	0.005U	0.0124	NC
Cadmium	0.0668	0.0445	40
Chromium	0.152	0.101	40
Cobalt	0.0733	0.0466	45
Copper	2.81	3.58	24
Iron	59.9	36.5	49
Lead	0.115	0.0582	66
Manganese	21.4	19.6	9
Molybdenum	8.43	8.74	4
Nickel	0.519	0.459	12
Selenium	0.0147	0.005U	NC
Silver	0.0182	0.0131	33
Titanium	18.7	17.1	9
Vanadium	3.77	3.23	15
Zinc	2.92	3.22	10

LDC#: 45386H4a

VALIDATION FINDINGS WORKSHEET <u>Field Duplicates</u>

Page: of Reviewer: 2nd Reviewer:

METHOD: Metals (EPA Method 6010B/7000)

Concentration (ug/L)		ition (ug/L)	222
Analyte	6	8	RPD
Antimony	0.158	0.148	7
Arsenic	1.86	2.04	9
Barium	15.2	14.9	2
Beryllium	0.005U	0.0362	NC
Cadmium	0.0681	0.0548	22
Chromium	0.0366	0.0214	52
Cobalt	0.0885	0.0261	109
Copper	2.59	5.43	71
Iron	0.978	1.58	NC
Lead	0.0188	0.00407	129
Manganese	19.4	18.3	6
Molybdenum	8.98	9.09	1
Nickel	0.49	0.454	8
Selenium	0.005U	0.00932	NC
Silver	0.031	0.024	25
Titanium	10.3	9.63	7
Vanadium	3.46	3.09	11
Zinc	2.3	3.29	35

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

July 16, 2019

Parameters:

Wet Chemistry

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-015

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10040	57529	Water	08/14/18
B18-10043	57530	Water	08/14/18
B18-10044	57531	Water	08/14/18
B18-20043	57532	Water	08/14/18
B18-10040MS	57529MS	Water	08/14/18
B18-10040MSD	57529MSD	Water	08/14/18
B18-10040DUP	57529DUP	Water	08/14/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Ammonia as Nitrogen by Standard Method 4500-NH3-D
Dissolved Organic Carbon by Standard Method 5310B
Methylene Blue Active Substances by Standard Method 5540C
Nitrate as Nitrogen by Standard Method 4500-NO3-E
Oil and Grease by Environmental Protection Agency (EPA) Method 1664B
Total Orthophosphate as Phosphorus by Standard Method 4500-P-E
Total Organic Carbon by Standard Method 5310B
Total Suspended Solids by Standard Method 2540D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
B18-10040 B18-10043 B18-10044 B18-20043	Nitrate as N	27 days	2 days	R (all non-detects)	Р
B18-10040 B18-10043 B18-10044 B18-20043	Total orthophosphate as P	9 days	2 days	J (all detects)	Р

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Replicates

Samples B18-10043 and B18-20043 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentra		
Analyte	B18-10043	B18-20043	RPD
Ammonia as N	0.0165	0.021	24
Dissolved organic carbon	2.26	2.25	0
Methylene blue active substances	0.0287	0.0201	35
Total organic carbon	2.78	2.53	9
Total orthophosphate as P	0.0518	0.0485	7
Total suspended solids	3.04	3.46	13

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-015	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods.

Due to technical holding time, data were rejected in four samples.

Due to technical holding time and results reported below the RL and above the MDL, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-015

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10040 B18-10043 B18-10044 B18-20043	Nitrate as N	R (all non-detects)	Р	Technical holding times (H)
B18-10040 B18-10043 B18-10044 B18-20043	Total orthophosphate as P	J (all detects)	Р	Technical holding times (H)
B18-10040 B18-10043 B18-10044 B18-20043	Analyte reported below the RL and above the MDL	J (all detects)	А	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-015

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-015

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45386H6 Level II SDG #: 1807003-015

Laboratory: Physis Environmental Laboratories, Inc.



METHOD: (Analyte) Ammonia as N (SM4500-NH3 D), DOC SM 5310 B), MBAS (SM 5540 C), Nitrate as N (SM 4500-NO3 E), Oil & Grease (EPA Method 1664B), Total Orthophosphate as P (SM 4500-P E), TOC (SM 5310 B), TSS (SM 2540 D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	ASW	
- 11	Initial calibration	N	
111.	Calibration verification	N	
IV	Laboratory Blanks	A.	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	A	
VII.	Duplicate sample analysis	A	
VIII.	Laboratory control samples	A	LS/D
IX.	Field duplicates	5w/	(2,4)
X.	Sample result verification	N	- /
xı	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank

OTHER:

Client ID	Lab ID	Matrix	Date
B18-10040	57529	Water	08/14/18
B18-10043	57530	Water	08/14/18
B18-10044	57531	Water	08/14/18
B18-20043	57532	Water	08/14/18
B18-10040MS	57529MS	Water	08/14/18
B18-10040MSD	57529MSD	Water	08/14/18
B18-10040DUP	57529DUP	Water	08/14/18
	B18-10040 B18-10043 B18-10044 B18-20043 B18-10040MS B18-10040MSD	B18-10040 57529 B18-10043 57530 B18-10044 57531 B18-20043 57532 B18-10040MS 57529MS B18-10040MSD 57529MSD B18-10040DUP 57529DUP	B18-10040 57529 Water B18-10043 57530 Water B18-10044 57531 Water B18-20043 57532 Water B18-10040MS 57529MS Water B18-10040MSD 57529MSD Water B18-10040DUP 57529DUP Water

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Notes:				

LDC#: 45386HG

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

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All circled methods are applicable to each sample.

Sample ID	Parameter
1-9	PH TDS CI F(NO) NO, SO, O-PO, AIK CN(NH) TKN(TOC) Cr6+ CIO, QOC) (MS/S)(TSS) (O+G)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
Q151	PH TDS CI F(NO) NO, SO(O-PO) AIK CN NH, TKN TOO Cr6+ CIO O COMBAS
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH_TDS_CL_F_NO ₉ _NO ₉ _SO ₄ _O-PO ₄ _Alk_CN_NH ₉ _TKN_TOC_Cr6+ ClO ₄

Comments:		

LDC #: 45386H6

VALIDATION FINDINGS WORKSHEET <u>Technical Holding Times</u>

Page: __of__ Reviewer: ____ 2nd reviewer: ____

Code: H

All circled dates have exceeded the technical holding time.

Y N N/A Were all samples preserved as applicable to each method?
Y N N/A Were all cooler temperatures within validation criteria?

Method: SM4500 NO3-E SM4500 P-E Parameters: Total orthophosphate as P Nitrate as N Technical holding time: 2 days 2 days Sampling Total **Analysis** Total **Analysis** Sample ID date date Time (days) Qualifier date Time (days) Qualifier Αll 8/14/18 9/10/18 27 J/R/P (ND) 8/23/18 9 J/R/P (Det) LDC#: 45386H6

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page: of Reviewer: 2nd Reviewer:

Inorganics, Method See Cover

-	Concentration		
Analyte	2	4	RPD
Ammonia as N	0.0165	0.021	24
DOC	2.26	2.25	0
MBAS	0.0287	0.0201	35
тос	2.78	2.53	9
Total orthophosphate as	0.0518	0.0485	7
TSS	3.04	3.46	13

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2019\45386H6.wpd

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

July 10, 2019

Parameters:

Polynuclear Aromatic Hydrocarbons

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-017

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10200	58089	Water	09/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) Method 625

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
58087-BS1 (All samples in SDG 1807003-017)	Benzo(b)fluoranthene	136 (70-130)	139 (70-130)	NA	-
58087-BS1 (All samples in SDG 1807003-017)	Naphthalene	-	131 (70-130)	J (all detects)	Р

Relative percent differences (RPD) were within QC limits.

X. Field Replicates

No field replicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-017	Compound reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD %R and results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-017

Sample Compound		Flag	A or P	Reason (Code)
B18-10200	Naphthalene	J (all detects)	Р	Laboratory control samples (%R) (HL)
B18-10200 Compound reported below RL and above the MDL		J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-017

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 1807003-017

No Sample Data Qualified in this SDG

SDG a	#:1807003-017 ratory:_Physis_Environmental_Laboratorie	es, Inc.	Level II	205		Page: _/of _/ Reviewer:
The s	HOD: GC/MS Polynuclear Aromatic Hyd amples listed below were reviewed for etion findings worksheets.			·	ation findings are	noted in attached
	Validation Area			Com	nments	
l.	Sample receipt/Technical holding times	A				
11.	GC/MS Instrument performance check	N				
III.	Initial calibration/ICV	N/N				
IV.	Continuing calibration	N				
V.	Laboratory Blanks	A				
VI.	Field blanks	M				
VII.	Surrogate spikes	A				
VIII.	Matrix spike/Matrix spike duplicates	N	09			
IX.	Laboratory control samples	W.	100/	D		
X.	Field duplicates	\mathcal{N}	/			
XI.	Internal standards	\mathcal{N}				
XII.	Compound quantitation RL/LOQ/LODs	N				
XIII.	Target compound identification	N				
XIV.	System performance	N				
XV.	Overall assessment of data	1				
Note:	N = Not provided/applicable $R = F$	No compound Rinsate Field blank	s detected	D = Duplicate TB = Trip blank EB = Equipment b	SB=Sour OTHER: llank	
	Client ID			Lab ID	Matrix	Date
1	B18-10200			58089	Water	09/12/18
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LDC #: 4538612b VALIDATION COMPLETENESS WORKSHEET

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

METHOD: GONG GVOA				
A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o"-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	of
Reviewer:	7
2nd Reviewer:	

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Y/N N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications (HZ)
		68087-BSI	444	136 70-130	139 (70-130	()	\$11 (ND) (dets)	Vdets A
			5	()	13/ (/)	()	(dets)	
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				()	()	()		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 16, 2019

Parameters: Metals

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-017

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10200	58089	Water	09/12/18
B18-10200F	58089F	Water	09/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Thallium, Tin, Titanium, Vanadium, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 1640 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to nonconformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10040MS/MSD (B18-10200)	Antimony Iron Tin	38 (75-125) 74 (75-125) 70 (75-125)	38 (75-125) 53 (75-125) -	J (all detects) J (all detects) J (all detects)	A
B18-10040MS/MSD (B18-10200)	Titanium	154 (75-125)	-	J (all detects)	A

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

Spike ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10040MS/MSD (B18-10200)	Aluminum Iron Titanium	29 (≤25) 33 (≤25) 36 (≤25)	J (all detects) J (all detects) J (all detects)	Α

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
B18-10040FDUP (B18-10200F)	Beryllium Cobalt Tin	- 37 (≤25) -	0.051 ug/L (≤0.01) - 0.01325 ug/L (≤0.01)	J (all detects) UJ (all non-detects)	А
B18-10040DUP (B18-10200F)	Tin	-	0.0169 ug/L (≤0.01)	J (all detects)	А

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Standard Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

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

LCS ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
57528-LCS1/2 (All samples in SDG 1807003-017)	Manganese	53 (≤30)	J (all detects)	Р

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

XI. Field Replicates

No field replicates were identified in this SDG.

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-017	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to MS/MSD %R and RPD, DUP RPD and difference, LCS/LCSD RPD, and results reported below the RL and above the MDL, data were qualified as estimated in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-017

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10200	Antimony Iron Tin	J (all detects) J (all detects) J (all detects)	Α	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10200	Titanium	J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (HM)
B18-10200	Aluminum Iron Titanium	J (all detects) J (all detects) J (all detects)	А	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10200F	Beryllium Tin	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Duplicate sample analysis (difference) (HD)
B18-10200F	Cobalt	J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10200F	Tin	J (all detects)	А	Duplicate sample analysis (difference) (HD)
B18-10200 B18-10200F	Manganese	J (all detects)	Р	Laboratory control samples (RPD) (HD)
B18-10200 B18-10200F	Analyte reported below the RL and above the MDL	J (all detects)	Α	Sample result verification (DL)

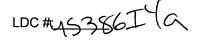
2018 Regional Harbor Monitoring Program
Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-017

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-017

No Sample Data Qualified in this SDG

OG #:	: 45386l4a VALIDATIO	l	LETENESS Level II	WORKSHEE	E T	Date: 715 Page: of 1 Reviewer: Reviewer:
ETHO	DD: Metals (EPA Method 1640/200.8/24	5.7)			2110 1	Neviewei
	mples listed below were reviewed for eac on findings worksheets.	ch of the fo	llowing valida	tion areas. Valida	ation findings are	noted in attached
	Validation Area			Con	nments	
I.	Sample receipt/Technical holding times	ASW	<u>A</u>			
II.	ICP/MS Tune	N				
III.	Instrument Calibration	N				
IV.	ICP Interference Check Sample (ICS) Analysis	N	,			
V.	Laboratory Blanks	IA				
VI.	Field Blanks	N				
χII.	Matrix Spike/Matrix Spike Duplicates	SW				
VIII.	Duplicate sample analysis	SW				
IX.	Serial Dilution	N_1	10			
X.	Laboratory control samples	AGW	LCS/) <u>SRM</u> [[
XI.	Field Duplicates	N N				
XII.	Internal Standard (ICP-MS)	N				
XIII.	Sample Result Verification	N				
XIV_	Overall Assessment of Data	1				
te: mples	N = Not provided/applicable R = Rin	o compounds sate eld blank	detected	D = Duplicate TB = Trip blank EB = Equipment b	OTHER	rce blank :
С	lient ID			Lab ID	Matrix	Date
В	18-10200			58089	Water	09/12/18
В	18-10200F			58089F	Water	09/12/18
0						
1						
2						



VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: <u>1</u>	_of <u> 1</u> _
Reviewer:	Ø₹\
2nd reviewer:	CI

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1,2		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni) K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
****		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Ph, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,

Comments:	Mercury by CVAA if performed		

LDC #: <u>45386/44a</u>

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

4		1
Page:_	of]
Reviewer:_	6	
2nd Reviewer:_	4	
_		

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qualifications	below for all questions	answered "N". No	ot applicable qu	estions are identifie	:d as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

YN N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125?) If the sample concentration exceeded the spike concentration by a factor

of 4 or more, no action was taken.

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 25% for samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

ted Samples Qualifications
J/UJ/A (Det)
J/UJ/A
J/UJ/A
JDet/A HM
J/UJ/A +
J/UJ/A \
J/UJ/A V
- · · · · · · · · · · · · · · · · · · ·

Comments:			
_			

VALIDATION FINDINGS WORKSHEET Duplicate Analysis

Page: <u> </u> of <u> </u>	
Reviewer:	_
2nd Reviewer:	

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a duplicate sample analyzed for each matrix in this SDØ? 15 Y N N/A

Were all duplicate sample relative percent differences (RPD) \leq 20% samples? If no, see qualifications below. A control limit of \pm R.L. (\pm 2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used Y N N/A

for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations. Y N N/A

#	Date	Duplicate ID	Matrix_	Analyte	RPD (Limits)	Difference (Limits) 0.051 (£0.01)	Associated Samples	Qualifications 2
		B18-10038FD4		Be		0.051 (60.01)	7_	JUJ/A(M)
		40		ςο 5n	37			Pet
Ш				Sn		0.01325 (50.01)		+ Det
lacksquare								
-								
╟┼								
$\parallel + \parallel$								
H		B18-1025804P		50		0.0169 (5001)	\ 2	JUJ A(Det)
Ш		40						
Ш								
\Vdash								
\mathbb{H}								
\vdash								
П								
$\parallel \downarrow$								
$\parallel \downarrow$								
$\ \cdot\ $								
Ш		<u> </u>						

Comments:	Stum	R07003-0	15					
					-			

LDC#: 45366 IK

VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page:of	_
Reviewer:	<u>-</u>
2nd Reviewer: (1)	_

	METH	HOD: Inorganics,	Method	***************************************					
	<u>Y N</u>	<u>N/A</u> Was a	a laboratory	control sample	nswered "N". Not ap (LCS) analyzed for e	ach matrix in this SI	DG?		
ļ	Y N LEVE Y N	L IV ONLY:	•		s (%R) and relative possible? See Level IV F	`	,		#
	#	LCS/LCSD ID	Matrix	Analyte	LCS %R (limits)	LCSD %R (limits)	RPD (limits)	Associated Samples	Qua
		58058-LCS2/	a	Mu			53	AIL	Jolet

#	LCS/I CSD ID	Matrix	Analyte	%R (limits)	%R (limits)	(limits)	Associated Samples	Qualifications
	58088-LCS21	(a	Mn			53	All	Jodet (P (Det)
	3-1		1911)
						_		
			·					
 							<u> </u>	
<u> </u>								
<u> </u>								
<u></u>								
-	· · · · · · · · · · · · · · · · · · ·	•						
-								

Comments:		 _		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: July 16, 2019

Parameters: Wet Chemistry

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-017

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10200	58089	Water	09/12/18
B18-10200MS	58089MS	Water	09/12/18
B18-10200MSD	58089MSD	Water	09/12/18
B18-10200DUP	58089DUP	Water	09/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Ammonia as Nitrogen by Standard Method 4500-NH3-D
Dissolved Organic Carbon by Standard Method 5310B
Methylene Blue Active Substances by Standard Method 5540C
Nitrate as Nitrogen by Standard Method 4500-NO3-E
Oil and Grease by Environmental Protection Agency (EPA) Method 1664B
Total Orthophosphate as Phosphorus by Standard Method 4500-P-E
Total Organic Carbon by Standard Method 5310B
Total Suspended Solids by Standard Method 2540D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample Analyte		Total Time From Required Holding Time Sample Collection From Sample Collectio Until Analysis Until Analysis		Flag	A or P	
B18-10200	Nitrate as N	21 days	2 days	J (all detects)	Р	

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Replicates

No field replicates were identified in this SDG.

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-017	Analyte reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time and results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-017

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10200	Nitrate as N	J (all detects)	Р	Technical holding times (H)
B18-10200	Analyte reported below the RL and above the MDL	J (all detects)	А	Sample result verification (DL)

2018 Regional Harbor Monitoring Program Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-017

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-017

No Sample Data Qualified in this SDG

SDG _abor METI <u>E), O</u>	#:45386I6VALIDATIO #:1807003-017 ratory: Physis Environmental Laboratories HOD: (Analyte) Ammonia as N (SM4500- il & Grease (EPA Method 1664B), Total O amples listed below were reviewed for ea	, <u>Inc.</u> <u>NH3 D), Derthophosp</u>	Level II OC SM 5310 B hate as P (SM	4500-P E), TOC (SM	2nd l 2), Nitrate as 1 5310 B), TS	SS (SM 2540 D)
	Validation Area			Comme	nts	
I.	Sample receipt/Technical holding times	A SW				
11	Initial calibration	N N				
111.	Calibration verification	N				
IV	Laboratory Blanks	A				
٧	Field blanks	N				
VI.	Matrix Spike/Matrix Spike Duplicates	A				
VII.	Duplicate sample analysis	A	1			
VIII.	Laboratory control samples	H	LCSID			
IX.	Field duplicates	\mathcal{N}				
Χ.	Sample result verification	N				
ΧI	Overall assessment of data	B				
Note:	N = Not provided/applicable R = Rin	o compounds sate eld blank	s detected	D = Duplicate TB = Trip blank EB = Equipment blank	SB=Sou OTHER:	rce blank
	Client ID			Lab ID	Matrix	Date
1	B18-10200			58089	Water	09/12/18
2	B18-10200MS			58089MS	Water	09/12/18
3	B18-10200MSD			58089MSD	Water	09/12/18
4	B18-10200DUP			58089DUP	Water	09/12/18
5						
6						
7						
8						
9						
10						
11						

LDC #: 45386.TG

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: CR
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter
Sample ID	pH TDS CI F(NO) NO, SO, O-PO, AIK CN(NH) TKN TOC Cr6+ CIO, TOC MP/15/155) (O-6)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
QC:2-4	PH TDS CI F(NO) NO, SO(O-PO) AIK CN NH, TKN(TOC)Cr6+ CIQ (NO) MBAS
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
<u> </u>	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH_TDS_CL_F_NO ₂ _NO ₂ _SO ₄ _O-PO ₄ _Alk_CN_NH ₂ _TKN_TOC_Cr6+ ClO ₄

Comments:				

LDC #: 4538616

VALIDATION FINDINGS WORKSHEET Technical Holding Times

Page:__of___ Reviewer:______ 2nd reviewer:______

All circled dates have exceeded the technical holding time.

Y N N/A Were all samples preserved as applicable to each method?
Y N N/A Were all cooler temperatures within validation criteria?

Method:			SM4500 NO3-	E	SM4500 P-E			
Parameters	:	Nitrate as N			Total orthophosphate as P			
Technical h	olding time:		2 days			2 days		
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier	
All	9/12/18	10/3/18	21	J/R/P (Det)				
		ALLEY MINE						

LDC#: 4538%

EDD POPULATION COMPLETENESS WORKSHEET

Date: 7/2 Page: 1 of 1 2nd Reviewer:

The LDC job number listed above was entered by ______.
Entered from Body or Summary

	EDD Process	<u> </u>	Comments/Action
I.	EDD Completeness	-	
Ia.	- All methods present?	4	
Ib.	- All samples present/match report?	4	
Ic.	- All reported analytes present?	Ч	
Id.	(10% or 100% verification of EDD?	4	
A. A. A. A. A. A. A. A. A. A. A. A. A. A			
II.	EDD Preparation/Entry		
IIa.	- Carryover U/J?	J	0L
IIb.	- Reason Codes used? If so, note which codes.	4	
IIc.	- Additional Information (QC Level, Validator, Validated Y/N, etc.)		
III.	Reasonableness Checks	-	
IIIa.	- Do all qualified ND results have ND qualifier (e.g. UJ)?	4	
IIIb.	- Do all qualified detect results have detect qualifier (e.g. J)?	4	
IIIc.	- If reason codes are used, do all qualified results have reason code field populated, and vice versa?	4	
IIId.	-Does the detect flag require changing for blank qualifier? If so, are all U results marked ND?	+	
IIIe.	- Do blank concentrations in report match EDD where data was qualified due to blank contamination?	4	
IIIf.	- Were multiple results reported due to dilutions/reanalysis? If so, were results qualified appropriately?	+	
IIIg.	-Are there any discrepancies between the data packet and the EDD?	7	

Notes:	*see discrepancy sheet	

Sediment



LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Wood Environment & Infrastructure 9210 Sky Park Ct San Diego, CA 92123 Attn: Ms. Corey Sheredy corey.sheredy@woodplc.com

June 6, 2019

SUBJECT: 2018 Regional Harbor Monitoring Program, Data Validation

Dear Ms. Sheredy

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on May 22, 2019. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #45128

The data validation was performed under Level II guidelines. The analyses were validated using the following documents, as applicable to each method:

- Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California; June 2018
- USEPA National Functional Guidelines for Organic Superfund Methods Data Review;
 January 2017
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review;
 January 2017
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng

pgeng@lab-data.com

Project Manager/Senior Chemist

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F	1807003-012	05/22/19	06/13/19	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6		<u> </u>			
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Н	1807003-016	05/22/19	06/13/19	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4		<u> </u>			
ı	1807003-018	05/22/19	06/13/19	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1		<u> </u>	_		
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J	1807003-019	05/22/19	06/13/19	1	0	1	0	1	0	1	0	1	0		0		0					0	1	0	1	0	1	0										
Total	J/PG			1	0	1	0	1	0	1	0	1	0	1	0	1	0) 1		0	1	0	1	0	1	0	1	0	0	0	0	C	0	0	0	0	0	12

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polynuclear Aromatic Hydrocarbons

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-002

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10065	56380	Sediment	07/10/18
B18-10066	56381	Sediment	07/10/18
B18-10067	56382	Sediment	07/10/18
B18-10068	56383	Sediment	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to nonconformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56375-BS1/BS2 (All samples in SDG 1807003-002)	1-Methylnaphthalene 2,6-Dimethylnaphthalene 2-Methylnaphthalene Acenaphthene Acenaphthylene Biphenyl Naphthalene	49 (70-130) 59 (70-130) 50 (70-130) 60 (70-130) 59 (70-130) 55 (70-130) 41 (70-130)	53 (70-130) 60 (70-130) 53 (70-130) 61 (70-130) 61 (70-130) 57 (70-130) 46 (70-130)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р
56375-BS1/BS2 (All samples in SDG 1807003-002)	Benzo(a)anthracene Indeno(1,2,3-cd)pyrene	149 (70-130) 131 (70-130)	146 (70-130) -	J (all detects) J (all detects)	Р

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
SRM 1944	2-Methylnaphthalene	56 (60-140)	All samples in SDG 1807003-002	J (all detects)	А

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-002	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD %R, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-002

Sample	Compound	Flag	A or P	Reason (Code)
B18-10065 B18-10066 B18-10067 B18-10068	1-Methylnaphthalene 2,6-Dimethylnaphthalene 2-Methylnaphthalene Acenaphthene Acenaphthylene Biphenyl Naphthalene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р	Laboratory control samples (%R) (LL)
B18-10065 B18-10066 B18-10067 B18-10068	Benzo(a)anthracene Indeno(1,2,3-cd)pyrene	J (all detects) J (all detects)	Р	Laboratory control samples (%R) (HL)
B18-10065 B18-10066 B18-10067 B18-10068	2-Methylnaphthalene	J (all detects)	А	Certified reference material (%R) (LP)
B18-10065 B18-10066 B18-10067 B18-10068	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-002

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 1807003-002

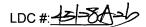
No Sample Data Qualified in this SDG

SDG	#:45128A2b VALIDATION #:1807003-002 pratory:_Physis Environmental Laboratorie		PLETENES Level II	S WORKSHEET	R	Date: 5/1// Page: /of / Reviewer: /
The	FHOD: GC/MS Polynuclear Aromatic Hydrosamples listed below were reviewed for extraction findings worksheets.	·		·		noted in attached
	Validation Area			Comr	nents	
l.	Sample receipt/Technical holding times	A				****
- 11.	GC/MS Instrument performance check	N				
111	. Initial calibration/ICV	N/N		We will be a second of the sec	A STATE OF THE STA	
IV	Continuing calibration	N				
<u>v</u>	. Laboratory Blanks					
VI	. Field blanks	N				
VII	I. Surrogate spikes	A				
VII	Matrix spike/Matrix spike duplicates	N	e5			
ΙX	. Laboratory control samples	w Ku	105	D. OFW	-	
X.	Field duplicates	()	(
ΧI	. Internal standards	l N				
XII	. Compound quantitation RL/LOQ/LODs	N				
XII	I. Target compound identification	N				
ΧIV	/. System performance	N				
ΧV	/. Overall assessment of data	A				
Note:	N = Not provided/applicable R = Ri	No compounds nsate Field blank	s detected	D = Duplicate TB = Trip blank EB = Equipment bla	SB=Sourc OTHER: nk	ce blank
	Client ID			Lab ID	Matrix	Date
1	B18-10065			56380	Sediment	07/10/18
2	B18-10066			56381	Sediment	07/10/18
3	B18-10067			56382	Sediment	07/10/18
4	B18-10068			56383	Sediment	07/10/18
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VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

YN N/A Was a LCS required?

YNN/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		563[5-BS/	TTT	49 (70-130)	53 (70-131)	()	All (dots)	JMA (4)
		-357	XxX	59(,)		()		Y
			W/	50 ()	53 ()	()		
			44	60 ()	61()	()		
			カカ	59 ()	61 ()	()		
		· · · · · · · · · · · · · · · · · · ·			57 ()	()		
				41 ()	46 ()	()		V
				49 ()	146 ()	()		1dots F (HZ)
			M	<i>13</i> ¹ (₹)	()	()		L V
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		5kU 1944	W	56 (60-140)	()	()	All clots/	My (20)
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polybrominated Diphenyl Ethers

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-002

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10065	56380	Sediment	07/10/18
B18-10066	56381	Sediment	07/10/18
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The analyses were performed by the following method:

Polybrominated Diphenyl Ethers (PBDE) by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

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- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
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- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
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- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

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II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56375-BS1/BS2 (All samples in SDG	PBDE 190	59 (70-130)	66 (70-130)	J (all detects) UJ (all non-detects)	Р
1807003-002)	PBDE 209	23 (70-130)	25 (70-130)	J (all detects) UJ (all non-detects)	

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-002	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD %R and results reported below the RL and above the MDL, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polybrominated Diphenyl Ethers - Data Qualification Summary - SDG 1807003-002

Sample	Compound	Flag	A or P	Reason (Code)
B18-10065 B18-10066 B18-10067 B18-10068	PBDE 190 PBDE 209	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10065 B18-10066 B18-10067 B18-10068	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Laboratory Blank Data Qualification Summary SDG 1807003-002

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Field Blank Data Qualification Summary - SDG
1807003-002

No Sample Data Qualified in this SDG

SDG Labo MET The s	DC #: 45128A2c VALIDATION COMPLETENESS WORKSHEET DG #: 1807003-002 Level II aboratory: Physis Environmental Laboratories, Inc. Reviewer: 2nd Reviewer: 2nd Reviewer: 1/2 Aletthod: GC/MS Polybrominated Diphenyl Ethers (EPA SW 846 Method 8270D-NCI) the samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached alidation findings worksheets.								
	Validation Ar	ea				Com	ment	s	
1.	Sample receipt/Technical holdir	ng times	A						
Η.	GC/MS Instrument performance	e check	Z						
111.	Initial calibration/ICV		N/N						
IV.	Continuing calibration		N						
V.	Laboratory Blanks		A /						
VI.	Field blanks		N						
VII.	Surrogate spikes		A						
VIII.	Matrix spike/Matrix spike duplica	ates	N	45					
IX.	Laboratory control samples	+M	W/A	100	3/2	o. Al			
Χ.	Field duplicates				<u> </u>				
XI.	Internal standards		N						
XII.	Compound quantitation RL/LOC	Q/LODs	N						
XIII.	Target compound identification		N						
XIV.	System performance		N				-		
XV.	Overall assessment of data		A						
lote:	A = Acceptable N = Not provided/applicable SW = See worksheet	R = Rin	lo compounds nsate ield blank	detected		D = Duplicate TB = Trip blank EB = Equipment bla	ank	SB=Source b	lank
	Client ID				,	Lab ID		Matrix	Date
1	B18-10065				,	56380		Sediment	07/10/18
2	B18-10066					56381		Sediment	07/10/18
3	B18-10067					56382		Sediment	07/10/18
4	B18-10068					56383	8	Sediment	07/10/18
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	<u>/</u> of
Reviewer:	9-
2nd Reviewer:	NE

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A". Was a LCS required?

Y (N) N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		563TS-PSV	78DZ190	59 (70-130)	66 10-130	()	A11 (Sub+NO)	-Vav \$ (4)
		-B52		33 ()	25 (//)	()		77
			(()	()	()		
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Laboratory Data Consultants, Inc. **Data Validation Report**

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Fipronil & Degradates

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-002

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10065	56380	Sediment	07/10/18
B18-10066	56381	Sediment	07/10/18
B18-10067	56382	Sediment	07/10/18
B18-10068	56383	Sediment	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Fipronil and Degradates by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-002	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Fipronil & Degradates - Data Qualification Summary - SDG 1807003-002

Sample	Compound	Flag	A or P	Reason (Code)
B18-10065 B18-10066 B18-10067 B18-10068	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Fipronil & Degradates - Laboratory Blank Data Qualification Summary - SDG 1807003-002

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Fipronil & Degradates - Field Blank Data Qualification Summary - SDG 1807003002

No Sample Data Qualified in this SDG

	G #:1807003-002 oratory: <u>Physis Environmental Laboratorie</u>		Level II			Page: /of / Reviewer:
The	FHOD: GC/MS Fipronil & Degradates(EPA samples listed below were reviewed for e dation findings worksheets.			·		
	Validation Area			Со	mments	5
<u> </u>	Sample receipt/Technical holding times	A		·		
11.	. GC/MS Instrument performance check	N				
111.	. Initial calibration/ICV	N/N				
IV	Continuing calibration	N				
<u>v.</u>	. Laboratory Blanks	A				
VI.	. Field blanks	N				
VII	I. Surrogate spikes	()				
VIII	I. Matrix spike/Matrix spike duplicates	Ň/	09			
IX.	. Laboratory control samples	A	100	10		
X.	Field duplicates	N,	/			
XI.	. Internal standards					
XII	. Compound quantitation RL/LOQ/LODs	N				
XIII	I. Target compound identification	N				
XI∨	/. System performance	N				
χV	Overall assessment of data	1				
Note:	N = Not provided/applicable R = R	No compounds Rinsate Field blank	s detected	D = Duplicate TB = Trip blank EB = Equipment	SB=Sourc OTHER: blank	e blank
	Client ID			Lab ID	Matrix	Date
1	B18-10065			56380	Sediment	07/10/18
2	B18-10066			56381	Sediment	07/10/18
3	B18-10067			56382	Sediment	07/10/18
4	B18-10068			56383	Sediment	07/10/18
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6						
7						
8						
Note	S:		1 1			
_						A.V. 20. A.V. 20. A.V. 20. A.V. 20. A.V. 20. A.V. 20. A.V. 20. A.V. 20. A.V. 20. A.V. 20. A.V. 20. A.V. 20. A.
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VALIDATION COMPLETENESS WORKSHEET

LDC #: 45128A2d

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Synthetic Pyrethroid Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-002

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10065	56380	Sediment	07/10/18
B18-10066	56381	Sediment	07/10/18
B18-10067	56382	Sediment	07/10/18
B18-10068	56383	Sediment	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Synthetic Pyrethroid Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D-MRM

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-002	Compound reported below the RL and above the MDL	J (all detects)	A

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Synthetic Pyrethroid Pesticides - Data Qualification Summary - SDG 1807003-002

Sample	Compound	Flag	A or P	Reason (Code)
B18-10065 B18-10066 B18-10067 B18-10068	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Laboratory Blank Data Qualification Summary - SDG 1807003-002

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Field Blank Data Qualification Summary - SDG
1807003-002

No Sample Data Qualified in this SDG

SDG Labo MET The s	#:45128A2eVALIDATIO #:1807003-002 ratory:_Physis Environmental Laboratories HOD: GC/MS Synthetic Pyrethroid Pestici samples listed below were reviewed for ea	s, Inc. ides (EPA	Level II SW 846 Metho	•	Rev 2nd Rev	-5, 4
	Validation Area			Comme	ents	
1.	Sample receipt/Technical holding times	A				
11.	GC/MS Instrument performance check	N				
	Initial calibration/ICV	N/N				
IV.	Continuing calibration	N				
V.	Laboratory Blanks	A /				
VI.	Field blanks	1/				
VII.	Surrogate spikes	Ň				
VIII.	Matrix spike/Matrix spike duplicates	N	05			
IX.	Laboratory control samples	A.	100/	つ		
X.	Field duplicates	λ/				
XI.	Internal standards	N				
XII.	Compound quantitation RL/LOQ/LODs	N				
XIII.	Target compound identification	N				
XIV.		N .				
XV.	Overall assessment of data	1				
Note:	N = Not provided/applicable R = Rin	o compounds sate eld blank	s detected	D = Duplicate TB = Trip blank EB = Equipment blank	SB=Source b OTHER:	lank
	Client ID			Lab ID	Matrix	Date
1	B18-10065			56380	Sediment	07/10/18
2	B18-10066			56381	Sediment	07/10/18
3	B18-10067	-		56382	Sediment	07/10/18
4	B18-10068			56383	Sediment	07/10/18
5						
6						
7			- N			
8						
Notes	:					
1 1					1	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 30, 2019

Parameters:

Chlorinated Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-002

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10065	56380	Sediment	07/10/18
B18-10066	56381	Sediment	07/10/18
B18-10067	56382	Sediment	07/10/18
B18-10068	56383	Sediment	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D/8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56375-BS1/BS2 (All samples in SDG 1807003-002)	Dicofol Endosulfan I Endosulfan II Endrin aldehyde	55 (70-130) 12 (70-130) 37 (70-130) 12 (70-130)	51 (70-130) 14 (70-130) 40 (70-130) 13 (70-130)	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Р
56375-BS1/BS2 (All samples in SDG 1807003-002)	Methoxychlor	150 (70-130)	150 (70-130)	NA	-

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-002	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD %R and results reported below the RL and above the MDL, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Data Qualification Summary - SDG 1807003-002

Sample	Compound	Flag	A or P	Reason (Code)
B18-10065 B18-10066 B18-10067 B18-10068	Dicofol Endosulfan I Endosulfan II Endrin aldehyde	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10065 B18-10066 B18-10067 B18-10068	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG
1807003-002

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 1807003-002

No Sample Data Qualified in this SDG

Labo MET	#: 1807003-002 pratory: Physis Environmental Laboratories HOD: GC/MS Chlorinated Pesticides (EP	s <u>, Inc.</u> A SW 846 I	Level II Method 827	·	R 2nd R	Date:
	samples listed below were reviewed for ea ation findings worksheets.	ach of the fo	ollowing vali	dation areas. Valid	ation findings are i	noted in attached
	Validation Area			Cor	mments	
I.	Sample receipt/Technical holding times	A				
11.	GC/MS Instrument performance check	N				
III.	Initial calibration/ICV	N/N			1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
IV.	Continuing calibration	N				
V.	Laboratory Blanks	A .				
VI.	I. Field blanks					
VII	II. Surrogate spikes					
VIII	Matrix spike/Matrix spike duplicates	N	49			
IX.	Laboratory control samples	W/A	105	D. CAM		
Χ.	Field duplicates	N	'			4.1
XI.	Internal standards	N				
XII.	Compound quantitation RL/LOQ/LODs	N				
XIII	Target compound identification	N				
XIV	System performance	N				
XV.	Overall assessment of data	A				
lote:	N = Not provided/applicable R = Rir	lo compounds nsate ield blank	detected	D = Duplicate TB = Trip blank EB = Equipment b	SB=Sourc OTHER: olank	ce blank
	Client ID			Lab ID	Matrix	Date
1	B18-10065			56380	Sediment	07/10/18
2	B18-10066			56381	Sediment	07/10/18
3	B18-10067			56382	Sediment	07/10/18
4	B18-10068			56383	Sediment	07/10/18
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VALIDATION FINDINGS WORKSHEET

METHOD: Pesticides

A. alpha-HCH	K. Endrin	U. Toxaphene	EE. 2,4'-DDT	OO. oxy-Chlordane
B. beta-HCH	L. Endosulfan II	V. Aroclor-1016	FF. Hexachlorobenzene	PP. cis-Nonachlor
C. delta-HCH	M. 4,4'-DDD	W. Aroclor-1221	GG. Chlordane	QQ. trans-Nonachlor
D. gamma-HCH	N. Endosulfan sulfate	X. Aroclor-1232	HH. Chlordane (Technical)	RR. cis-Chlordane
E. Heptachlor	O. 4,4'-DDT	Y. Aroclor-1242	II. p,p'-DDE	SS. trans-Chlordane
F. Aldrin	P. Methoxychlor	Z. Aroclor-1248	JJ. p,p'-DDD	TT. alpha-Endosulphan
G. Heptachlor epoxide	Q. Endrin ketone	AA. Aroclor-1254	KK. p,p'-DDT	UU. beta-Endosulphan
H. Endosulfan I	R. Endrin aldehyde	BB. Aroclor-1260	LL. o,p'-DDT	VV. Endosulphan Sulphate
I. Dieldrin	S. alpha-Chlordane	CC. 2,4'-DDD	MM. o,p'-DDE	WW. Mirex
J. 4,4'-DDE	T. gamma-Chiordane	DD. 2,4'-DDE	NN. o,p'-DDD	



VALIDATION FINDINGS WORKSHEET <u>Laboratory Control Samples (LCS)</u>

Page: _	of	
Reviewer:	9	
2nd Reviewer:	V6	

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Y/N M/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		56375-BSI	Dicotol	5\$ 10-130	51 70-130	()	AII (ND)	VW 614)
		~852	H	12 ()	14 (1)	()		
				37 ()	40 ()	()		
			R	12 ()	13 ()	()		
			P	150 (V)	150 (V)	()		Jacks/D(HZ
			\	()	()	()		/ / /
				()	()	()		
		56311-00UT		()	()	()		
				()	()	()		
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polychlorinated Biphenyls as Congeners

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-002

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10065	56380	Sediment	07/10/18
B18-10066	56381	Sediment	07/10/18
B18-10067	56382	Sediment	07/10/18
B18-10068	56383	Sediment	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) as Congeners by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
SRM 1944	PCB-105 PCB-118 PCB-128 PCB-156 PCB-206	35 (60-140) 56 (60-140) 19 (60-140) 28 (60-140) 53 (60-140)	All samples in SDG 1807003-002	J (all detects) UJ (all non-detects)	А

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-002	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to CRM %R and results reported below the RL and above the MDL, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG 1807003-002

Sample	Compound	Flag	A or P	Reason (Code)
B18-10065 B18-10066 B18-10067 B18-10068	PCB-105 PCB-118 PCB-128 PCB-156 PCB-206	J (all detects) UJ (all non-detects)	А	Certified reference material (%R) (LP)
B18-10065 B18-10066 B18-10067 B18-10068	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification
Summary - SDG 1807003-002

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Field Blank Data Qualification
Summary - SDG 1807003-002

No Sample Data Qualified in this SDG

SDG a	#:45128A3bVALIDATIO #:1807003-002 atory:_Physis Environmental Laboratorie		PLETENES Level II	SS WORKSHI	R	Date: Of / Reviewer:
The s	AOD: GC/MS PCB as Congeners (EPA samples listed below were reviewed for etion findings worksheets.					
	Validation Area			C	omments	
1.	Sample receipt/Technical holding times	A				
11.	GC/MS Instrument performance check	N				
111.	Initial calibration/ICV	N/N				
IV.	Continuing calibration	N				
V.	Laboratory Blanks	 				
VI.	Field blanks	\mathcal{N}				
VII.	Surrogate spikes	N			W 100 W. F.	
VIII.	Matrix spike/Matrix spike duplicates	N/	09			
IX.	Laboratory control samples	A KW	100	D, AM		***************************************
X.	Field duplicates	N	,			
XI.	Internal standards	N				
XII.	Compound quantitation RL/LOQ/LODs	N				
XIII.	Target compound identification	N				
XIV.	System performance	N				
XV.	Overall assessment of data	1				
Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank N = Not provided/applicable R = Rinsate TB = Trip blank OTHER: SW = See worksheet FB = Field blank EB = Equipment blank						
	Client ID			Lab ID	Matrix	Date
1	B18-10065			56380	Sediment	07/10/18
	B18-10066	56381	Sediment	07/10/18		
	B18-10067	56382	Sediment	07/10/18		
	B18-10068	56383	Sediment	07/10/18		
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Notes:			- 			****
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	_/of_/_
Reviewer:	A
2nd Reviewer:	NG

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

 $\sqrt{Y}NN/A$

Was a LCS required?

YN N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		SRM 19th	PCB105	35 (60-140)	()	()	All (Lat3+ND)	VW (4P)
		•	1118	56 (1)	()	()		
			(28	19 ()	()	()		
					()	()		
			206	<i>5</i> 3 (√)	()	()		V
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: June 4, 2019

Parameters: Metals

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-002

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10065	56380	Sediment	07/10/18
B18-10066	56381	Sediment	07/10/18
B18-10067	56382	Sediment	07/10/18
B18-10068	56383	Sediment	07/10/18
B18-10065(SEM)	56380(SEM)	Sediment	07/10/18
B18-10066(SEM)	56381(SEM)	Sediment	07/10/18
B18-10067(SEM)	56382(SEM)	Sediment	07/10/18
B18-10068(SEM)	56383(SEM)	Sediment	07/10/18
B18-10065MS	56380MS	Sediment	07/10/18
B18-10065MSD	56380MSD	Sediment	07/10/18
B18-10065DUP	56380DUP	Sediment	07/10/18
B18-10065MS(SEM)	56380MS(SEM)	Sediment	07/10/18
B18-10065MSD(SEM)	56380MSD(SEM)	Sediment	07/10/18
B18-10065DUP(SEM)	56380DUP(SEM)	Sediment	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Iron, Lead, Nickel, Phosphorus, Selenium, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-10065 B18-10066 B18-10067 B18-10068	Mercury	182	28	J (all detects)	Р

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10065MS/MSD (All samples in SDG 1807703-002)	Chromium Barium	131 (75-125) -	135 (75-125) 127 (75-125)	J (all detects) J (all detects)	А

For B18-10065MS/MSD, no data were qualified for aluminum and iron percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

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

Spike ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10065MS/MSD (All samples in SDG 1807703-002)	Iron	32 (≤25)	J (all detects)	А

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
B18-10065DUP (All samples in SDG 1807003-002)	Chromium	52 (≤25)	-	J (all detects)	Α

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits.

XI. Field Duplicates

No field duplicates were identified in this SDG.

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-002	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, MS/MSD %R and RPD, DUP RPD, and results reported below the RL and above the MDL, data were qualified as estimated in eight samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-002

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10065 B18-10066 B18-10067 B18-10068	Mercury	J (all detects)	Р	Technical holding times (H)
B18-10065 B18-10066 B18-10067 B18-10068	Chromium Barium	J (all detects) J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (HM)
B18-10065 B18-10066 B18-10067 B18-10068	Iron	J (all detects)	А	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10065 B18-10066 B18-10067 B18-10068	Chromium	J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10065 B18-10066 B18-10067 B18-10068 B18-10065(SEM) B18-10066(SEM) B18-10067(SEM) B18-10068(SEM)	Analyte reported below the RL and above the MDL	J (all detects)	А	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-002

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-002

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-002

LDC #: 45128A4a

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Date: 636
Page: of Reviewer: 2nd Reviewer: 2

METHOD: Metals (EPA SW 846 Method 6020/EPA Method 200.8/EPA Method 245.7)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	ASW	
11.	ICP/MS Tune	N	
III.	Instrument Calibration	N	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Laboratory Blanks	A	
VI.	Field Blanks	N	
VII.	Matrix Spike/Matrix Spike Duplicates	S	
VIII.	Duplicate sample analysis	SV	
IX.	Serial Dilution	\wedge	
X.	Laboratory control samples	A	LSD. RM
XI.	Field Duplicates	\wedge	
XII.	Internal Standard (ICP-MS)	N	
XIII.	Sample Result Verification	N	
ΧIV	Overall Assessment of Data	8	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate TB = Trip blank SB=Source blank OTHER:

EB = Equipment blank

Samples appended with "SEM" were analyzed as Simultaneously Extracted Metals

\rightarrow	Client ID	Lab ID	Matrix	Date
	B18-10065	56380	Sediment	07/10/18
	B18-10066	56381	Sediment	07/10/18
	B18-10067	56382	Sediment	07/10/18
	B18-10068	56383	Sediment	07/10/18
	B18-10065(SEM)	56380(SEM)	Sediment	07/10/18
	B18-10066(SEM)	56381(SEM)	Sediment	07/10/18
	B18-10067(SEM)	56382(SEM)	Sediment	07/10/18
	B18-10068(SEM)	56383(SEM)	Sediment	07/10/18
	B18-10065MS	56380MS	Sediment	07/10/18
	B18-10065MSD	56380MSD	Sediment	07/10/18
	B18-10065DUP	56380DUP	Sediment	07/10/18
	B18-10065MS(SEM)	56380MS(SEM)	Sediment	07/10/18
	B18-10065MSD(SEM)	56380MSD(SEM)	Sediment	07/10/18
	B18-10065DUP(SEM)	56380DUP(SEM)	Sediment	07/10/18
			J	

LDC #: 45128Ala

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: 1 of 1
Reviewer: 2nd reviewer: 1

All circled elements are applicable to each sample.

Sample ID M	latrix	Target Analyte List (TAL)
1-4		(Al, Sb, As, Ba, Be, Cd, Ca(Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni)K, Se, Ag, Na, Tl, V, (Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
5-8		Al, Sb, As, Ba, Be, Co, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, (Ni) K, Se, Ag, Na, Tl, V, Zn) Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
01:9-11		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, (fg, N), K, (e, Ag, Na, Ti, V, Zr), Mo, B, Sn, Ti,
12-14		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu) Fe, F(b,)Mg, Mn, Hg, Ni, K, Se, Ag, Na, Ti, V, Zn,)Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		AI, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	T	Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,

Comments:	Mercury by CVAA if performed	

LDC #: 45128A4a

VALIDATION FINDINGS WORKSHEET <u>Technical Holding Times</u>

Page:___of__ Reviewer:_____ 2nd reviewer:_____

Were samples preserved? Y N N/A All circled dates have exceeded the technical holding time.

	. \	
	11.	\
/	١X	1
l	<i>X</i>)	- 1
\	/ ` '	

METHOD:		Mercury Holding time = 28 days				
Sample ID:	Sampling Date	Analysis Date	Total Time until Analysis (days)	Qualifier Code: 1	Det/ND	
1-4	7/10/18	1/8/19	182	J/R/P	Det	
						1

Technical Holding Time Criteria

Mercury:

28 days

All other metals: 180 days - 1 year if frozen

LDC#145178A4

Y)N N/A

Y (K) N/A

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor

Page:_	of
Reviewer:_	
2nd Reviewer:_	9

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

of 4 or more, no action was taken.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a matrix spike analyzed for each matrix in this SDG?

Y(N)	<u>N/A</u> Were a . IV ONLY:	all duplicate s	ample relative p	ercent difference	s (RPD) ≤ 20%	or samples?			
X N I	. IV ONLY: N/A Were r	ecalculated r	results accentab	le? See Level IV	Recalculation (25)) Vorksheet for rec	ralculations		
	<u> </u>				- Tecalogiation V	volksheet for rec			
#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	, Qual	ifications
	9/10		C	131	135		All	SdettA	(Det) (HM)
			Ba		127			T	1 / 1 /
			re			32		JUJIA	(HO)
	-								
<u> </u>									
 									
<u> </u>			al10: A	IFE 7	1				
Comm	ents:		1110 - 11	1,701	11		· · · · · · · · · · · · · · · · · · ·		

LDC#: USIZSAYA

VALIDATION FINDINGS WORKSHEET Duplicate Analysis

Page:_	(Qf)
Reviewer:	
2nd Reviewer:	4

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Rease see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Was a duplicate sample analyzed for each matrix in this SDG?

Were all duplicate sample relative percent differences (RPD) < 20% for water samples and < 35% for soil samples? If no, see qualifications below. A control limit of +R.L. (+2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y/N)N/A

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications HD
		11		Cr	52(425)		AIL	JUJA (pot)
Н								/
Н								
\vdash								
\parallel								
\Vdash		<u> </u>						·
-								
		<u> </u>						
						×		
\parallel								
-								

Comments:	*		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: June 4, 2019

Parameters: Wet Chemistry

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-002

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10065	56380	Sediment	07/10/18
B18-10066	56381	Sediment	07/10/18
B18-10067	56382	Sediment	07/10/18
B18-10068	56383	Sediment	07/10/18
B18-10065MS	56380MS	Sediment	07/10/18
B18-10065MSD	56380MSD	Sediment	07/10/18
B18-10065DUP	56380DUP	Sediment	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Acid Volatile Sulfide by Plumb 1981
Ammonia as Nitrogen by Standard Method 4500-NH3-D
Particle Size by Standard Method 2560D
Percent Solids by Standard Method 2540B
Total Nitrogen and Total Organic Carbon by Environmental Protection Agency (EPA) SW 846 Method 9060

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
All samples in SDG 1807003-002	Acid volatile sulfide	178 days	14 days	J (all detects)	А
All samples in SDG 1807003-002	Ammonia as N	177 days	28 days	J (all detects)	А
All samples in SDG 1807003-002	Total nitrogen	184 days	28 days	J (all detects)	А

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10065MS/MSD (All samples in SDG 1807703-012)	Acid volatile sulfide	42 (80-120)	40 (80-120)	J (all detects)	A

Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-002	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, MS/MSD %R, and results reported below the RL and above the MDL, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-002

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10065 B18-10066 B18-10067 B18-10068	Acid volatile sulfide Ammonia as N Total nitrogen	J (all detects) J (all detects) J (all detects)	A	Technical holding times (H)
B18-10065 B18-10066 B18-10067 B18-10068	Acid volatile sulfide	J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10065 B18-10066 B18-10067 B18-10068	Analyte reported below the RL and above the MDL	J (all detects)	А	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-002

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-002

No Sample Data Qualified in this SDG

				S WORKSHEE	≣T	Date: <u>613</u> 1
	#: <u>1807003-002</u>		Level II		-	Page: \(\begin{align*}\) of\\\ Reviewer: \(\beta\)
Labora	atory: Physis Environmental Laboratories	s, inc.	NA	Q _E	2nd F	Reviewer:
	100 (A		N.		·500D)	'ON 405 405) T
VIE I H Vitroa	IOD: (Analyte) AVS (Plumb 1981), Ammen (EPA SW846 9060), TOC (EPA SW	<u>nonia as N (</u> 846 Method	SM4500N), P 1 9060)	article Size (SM 2	(560D), % Solids (SM2540B), 10
	amples listed below were reviewed for eation findings worksheets.	ach of the f	ollowing valida	ition areas. Valida	ation findings are	noted in attach
	Validation Area			Con	nments	
l.	Sample receipt/Technical holding times	ARW	Y			
II	Initial calibration	N N				A
111.	Calibration verification	N				
IV	Laboratory Blanks	A			Name and the second	
V	Field blanks	N				
VI.	Matrix Spike/Matrix Spike Duplicates	SW				
VII.	Duplicate sample analysis	A	,			
VIII.	Laboratory control samples	A	LC50.	9RM		
IX.	Field duplicates	\mathcal{N}	17			
Χ.	Sample result verification	N				
ΧI	Overall assessment of data	I H				
ote:	N = Not provided/applicable R = Rir	lo compounds nsate ield blank	s detected	D = Duplicate TB = Trip blank EB = Equipment b	SB=Source OTHER:	ce blank
	Client ID			Lab ID	Matrix	Date
1 E	318-10065			56380	Sediment	07/10/18
	318-10066			56381	Sediment	07/10/18
	318-10067			56382	Sediment	07/10/18
I	318-10068			56383	Sediment	07/10/18
	x ms					
3	mso mso mso)				
7	J. DY					
в						
ı				i	i	1

Notes:_

LDC #: 45128A6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:1	_of_	_1_
Reviewer:	CR	
2nd reviewer:	9	

All circled methods are applicable to each sample.

Sample ID	Parameter (STR/12/C) NAV (STR
1-01	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN/NH3 TKN (TOC) Cr6+ CIO4 (1) 1/3 / 20 / CA (V) (V)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
QC-5,6	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN (VFT) TKN TOC Cr6+ CIO4 (FVS)
7	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN(NH) TKN TOC Cr6+ CIO4 (PS)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ AIk CN NH $_3$ TKN TOC Cr6+ CIO $_4$
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	DH TDS CLE NO, NO, SO, O-PO, Alk CN NH, TKN TOC Cr6+ ClO,

Comments:	

VALIDATION FINDINGS WORKSHEET Technical Holding Times

2nd reviewer:

All circled dates have exceeded the technical holding time.

Y N N/A

Were all samples preserved as applicable to each method?

Y N N/A

Were all cooler temperatures within validation criteria?

Method: Parameters:		Plumb AVS			SM 4500 NH3D Ammonia as N		
Technical h	olding time:		14 days			28 days	
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier
All	7/10/18	1/4/19	178	J/R/A (Det)	1/3/19	177	J/R/A (Det)

Method: Parameters	•	SM2540B Percent solids			EPA 9060 Total nitrogen		
<u>Technical h</u>	olding time:		180 days			28 days	
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis Total		Qualifier
All	7/10/18				1/10/19	184	J/R/A (Det)

LDC #: 45128A6

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	of_
Reviewer:_ 2nd Reviewer:	
a reviewer	-

METHOD: Inorg	ganics, EPA Method See cover
Please see qua	ifications below for all questions answered "N". Not applicable questions are identified as "N/A".
N N/A	Was a matrix spike analyzed for each matrix in this SDG?
	Were matrix spike percent recoveries (%R) within the QAPP limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more,
Ω	no action was taken.
ON N/A	Were all duplicate sample relative percent differences (RPD) within QAPP limits?
LEVEL TO ONL	Y:
Y N(N/A)	Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
	5/6		AVS		40			J/UJ/A (Det)
L								,
L								
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-						le e e e e e e e e e e e e e e e e e e		
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Comments:				
	 			_

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polynuclear Aromatic Hydrocarbons

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-004

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10015	56417	Sediment	07/12/18
B18-10016	56418	Sediment	07/12/18
B18-10438 (overdraw)	56419	Sediment	07/12/18
B18-10020	56420	Sediment	07/12/18
B18-10073	56421	Sediment	07/12/18
B18-10074	56422	Sediment	07/12/18
B18-10075	56423	Sediment	07/12/18
B18-10017	56424	Sediment	07/13/18
B18-10019	56425	Sediment	07/13/18
B18-10069	56426	Sediment	07/11/18
B18-10070	56427	Sediment	07/11/18
B18-10071	56428	Sediment	07/11/18
B18-10072	56429	Sediment	07/11/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56375-BS1/BS2 (All samples in SDG 1807003-004)	1-Methylnaphthalene 2,6-Dimethylnaphthalene 2-Methylnaphthalene Acenaphthene Acenaphthylene Biphenyl Naphthalene	49 (70-130) 59 (70-130) 50 (70-130) 60 (70-130) 59 (70-130) 55 (70-130) 41 (70-130)	53 (70-130) 60 (70-130) 53 (70-130) 61 (70-130) 61 (70-130) 57 (70-130) 46 (70-130)	J (all detects) UJ (all non-detects)	Р
56375-BS1/BS2 (All samples in SDG 1807003-004)	Benzo(a)anthracene Indeno(1,2,3-cd)pyrene	149 (70-130) 131 (70-130)	146 (70-130) -	J (all detects) J (all detects)	Р

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
SRM 1944	2-Methylnaphthalene	56 (60-140)	All samples in SDG 1807003-004	J (all detects)	Α

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-004	Compound reported below the RL and above the MDL	J (all detects)	A

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD %R, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in thirteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-004

B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10019 B18-10070 B18-10070 B18-10070 B18-10071	1-Methylnaphthalene 2,6-Dimethylnaphthalene 2-Methylnaphthalene Acenaphthene Acenaphthylene Biphenyl Naphthalene	J (all detects) UJ (all non-detects)	A or P	Reason (Code) Laboratory control samples (%R) (LL)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071 B18-10072	Benzo(a)anthracene Indeno(1,2,3-cd)pyrene	J (all detects) J (all detects)	Р	Laboratory control samples (%R) (HL)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071	2-Methylnaphthalene	J (all detects)	Α	Certified reference material (%R) (LP)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-004

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 1807003-004

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45128B2b

Level II

SDG #: 1807003-004

Laboratory: Physis Environmental Laboratories, Inc.

2nd Reviewer:

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	ATAT	
VIII.	Matrix spike/Matrix spike duplicates	N.	25
IX.	Laboratory control samples	w Kul	Les D. CRM
X.	Field duplicates		
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	TA	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

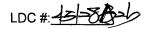
TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10015	56417	Sediment	07/12/18
2	B18-10016	56418	Sediment	07/12/18
3	B18-10438 (overdraw)	56419	Sediment	07/12/18
4	B18-10020	56420	Sediment	07/12/18
5	B18-10073	56421	Sediment	07/12/18
6	B18-10074	56422	Sediment	07/12/18
7	B18-10075	56423	Sediment	07/12/18
8	B18-10017	56424	Sediment	07/13/18
9	B18-10019	56425	Sediment	07/13/18
10	B18-10069	56426	Sediment	07/11/18
11	B18-10070	56427	Sediment	07/11/18
12	B18-10071	56428	Sediment	07/11/18
13	B18-10072	56429	Sediment	07/11/18

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

METHOD: GONNO GVOA				
A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	W. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



VALIDATION FINDINGS WORKSHEET <u>Laboratory Control Samples (LCS)</u>

	Page: _	_/_of_/_
	Reviewer:	<u>`</u>
2nd	Reviewer:	NG

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

"Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

YN N/A Was a LCS required?

YENDN/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		563[5-35]	TTT	49 (70-130)	53 (70-13))	()	\$11 (dots + NO)	JMA (4)
		(XXX	59(1)	60 (1)	()		
			W	50 ()	53()	()		
			44	60 ()	61()	()		
			フカ	59 ()	61 ()	()		
		: 	2222	55 ()	57 ()	()		
			5	4 ()	46 ()	()		<u> </u>
			acc	149 ()	146 ()	()		12 to F (HZ)
			M	13) (V)	()	()		<i>Y</i> ' '
				()	()	()	1 1 1	
		5KM 1944	W	56 (60-40)	()	()	All clots	1/M/X (2P)
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polybrominated Diphenyl Ethers

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-004

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10015	56417	Sediment	07/12/18
B18-10016	56418	Sediment	07/12/18
B18-10438 (overdraw)	56419	Sediment	07/12/18
B18-10020	56420	Sediment	07/12/18
B18-10073	56421	Sediment	07/12/18
B18-10074	56422	Sediment	07/12/18
B18-10075	56423	Sediment	07/12/18
B18-10017	56424	Sediment	07/13/18
B18-10019	56425	Sediment	07/13/18
B18-10069	56426	Sediment	07/11/18
B18-10070	56427	Sediment	07/11/18
B18-10071	56428	Sediment	07/11/18
B18-10072	56429	Sediment	07/11/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polybrominated Diphenyl Ethers (PBDE) by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56375-BS1/BS2 (All samples in SDG	PBDE 190	59 (70-130)	66 (70-130)	J (all detects) UJ (all non-detects)	Р
1807003-004)	PBDE 209	23 (70-130)	25 (70-130)	J (all detects) UJ (all non-detects)	

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-004	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD %R and results reported below the RL and above the MDL, data were qualified as estimated in thirteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polybrominated Diphenyl Ethers - Data Qualification Summary - SDG 1807003-004

Sample	Compound	Flag	A or P	Reason (Code)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071	PBDE 190 PBDE 209	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10075 B18-10075 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Laboratory Blank Data Qualification Summary SDG 1807003-004

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Field Blank Data Qualification Summary - SDG
1807003-004

No Sample Data Qualified in this SDG

LDC #: 45128B2c

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-004

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer 2nd Reviewer:

METHOD: GC/MS Polybrominated Diphenyl Ethers (EPA SW 846 Method 8270D-NCl)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	25
IX.	Laboratory control samples	WA	LCSD. CAN
X.	Field duplicates	N	\
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10015	56417	Sediment	07/12/18
2	B18-10016	56418	Sediment	07/12/18
3	B18-10438 (overdraw)	56419	Sediment	07/12/18
4	B18-10020	56420	Sediment	07/12/18
5	B18-10073	56421	Sediment	07/12/18
6	B18-10074	56422	Sediment	07/12/18
7	B18-10075	56423	Sediment	07/12/18
8	B18-10017	56424	Sediment	07/13/18
9	B18-10019	56425	Sediment	07/13/18
10	B18-10069	56426	Sediment	07/11/18
11	B18-10070	56427	Sediment	07/11/18
12	B18-10071	56428	Sediment	07/11/18
13	B18-10072	56429	Sediment	07/11/18

VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	of
Reviewer:	9-
2nd Reviewer:	12

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Rease see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A". Was a LCS required?

YNN/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		563TS-PS/	78DZ190	59 (70-130)	66 10-130	()	A11 (dets+NO)	-Vay \$ 122)
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: May 31, 2019

Parameters: Fipronil & Degradates

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-004

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10015	56417	Sediment	07/12/18
B18-10016	56418	Sediment	07/12/18
B18-10438 (overdraw)	56419	Sediment	07/12/18
B18-10020	56420	Sediment	07/12/18
B18-10073	56421	Sediment	07/12/18
B18-10074	56422	Sediment	07/12/18
B18-10075	56423	Sediment	07/12/18
B18-10017	56424	Sediment	07/13/18
B18-10019	56425	Sediment	07/13/18
B18-10069	56426	Sediment	07/11/18
B18-10070	56427	Sediment	07/11/18
B18-10071	56428	Sediment	07/11/18
B18-10072	56429	Sediment	07/11/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Fipronil and Degradates by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-004	Compound reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in thirteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Fipronil & Degradates - Data Qualification Summary - SDG 1807003-004

Sample	Compound	Flag	A or P	Reason (Code)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Fipronil & Degradates - Laboratory Blank Data Qualification Summary - SDG 1807003-004

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Fipronil & Degradates - Field Blank Data Qualification Summary - SDG 1807003004

No Sample Data Qualified in this SDG

LDC #: 45128B2d

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-004

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer

METHOD: GC/MS Fipronil & Degradates (EPA SW 846 Method 8270D-NCI)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	C5
IX.	Laboratory control samples	A	1050
X.	Field duplicates	<u> </u>	(
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	1	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10015	56417	Sediment	07/12/18
2	B18-10016	56418	Sediment	07/12/18
3	B18-10438 (overdraw)	56419	Sediment	07/12/18
4	B18-10020	56420	Sediment	07/12/18
5	B18-10073	56421	Sediment	07/12/18
6	B18-10074	56422	Sediment	07/12/18
7	B18-10075	56423	Sediment	07/12/18
8	B18-10017	56424	Sediment	07/13/18
9	B18-10019	56425	Sediment	07/13/18
10	B18-10069	56426	Sediment	07/11/18
11	B18-10070	56427	Sediment	07/11/18
12	B18-10071	56428	Sediment	07/11/18
13	B18-10072	56429	Sediment	07/11/18

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Synthetic Pyrethroid Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-004

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10015	56417	Sediment	07/12/18
B18-10016	56418	Sediment	07/12/18
B18-10438 (overdraw)	56419	Sediment	07/12/18
B18-10020	56420	Sediment	07/12/18
B18-10073	56421	Sediment	07/12/18
B18-10074	56422	Sediment	07/12/18
B18-10075	56423	Sediment	07/12/18
B18-10017	56424	Sediment	07/13/18
B18-10019	56425	Sediment	07/13/18
B18-10069	56426	Sediment	07/11/18
B18-10070	56427	Sediment	07/11/18
B18-10071	56428	Sediment	07/11/18
B18-10072	56429	Sediment	07/11/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Synthetic Pyrethroid Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D-MRM

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-004	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in thirteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Synthetic Pyrethroid Pesticides - Data Qualification Summary - SDG 1807003-004

Sample	Compound	Flag	A or P	Reason (Code)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Laboratory Blank Data Qualification Summary SDG 1807003-004

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Field Blank Data Qualification Summary - SDG
1807003-004

No Sample Data Qualified in this SDG

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VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-004

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer

2nd Reviewer:

METHOD: GC/MS Synthetic Pyrethroid Pesticides (EPA SW 846 Method 8270D-MRM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	14	Johnnand
II.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	C5
IX.	Laboratory control samples	\Rightarrow	200
X.	Field duplicates	M	/
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	1	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

			<u> </u>	
	Client ID	Lab ID	Matrix	Date
1	B18-10015	56417	Sediment	07/12/18
2	B18-10016	56418	Sediment	07/12/18
3	B18-10438 (overdraw)	56419	Sediment	07/12/18
4	B18-10020	56420	Sediment	07/12/18
5	B18-10073	56421	Sediment	07/12/18
6	B18-10074	56422	Sediment	07/12/18
7	B18-10075	56423	Sediment	07/12/18
8	B18-10017	56424	Sediment	07/13/18
9	B18-10019	56425	Sediment	07/13/18
10	B18-10069	56426	Sediment	07/11/18
11	B18-10070	56427	Sediment	07/11/18
12	B18-10071	56428	Sediment	07/11/18
13	B18-10072	56429	Sediment	07/11/18

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: May 30, 2019

Parameters: Chlorinated Pesticides

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-004

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10015	56417	Sediment	07/12/18
B18-10016	56418	Sediment	07/12/18
B18-10438 (overdraw)	56419	Sediment	07/12/18
B18-10020	56420	Sediment	07/12/18
B18-10073	56421	Sediment	07/12/18
B18-10074	56422	Sediment	07/12/18
B18-10075	56423	Sediment	07/12/18
B18-10017	56424	Sediment	07/13/18
B18-10019	56425	Sediment	07/13/18
B18-10069	56426	Sediment	07/11/18
B18-10070	56427	Sediment	07/11/18
B18-10071	56428	Sediment	07/11/18
B18-10072	56429	Sediment	07/11/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D/8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56375-BS1/BS2 (All samples in SDG 1807003-004)	Dicofol Endosulfan I Endosulfan II Endrin aldehyde	55 (70-130) 12 (70-130) 37 (70-130) 12 (70-130)	51 (70-130) 14 (70-130) 40 (70-130) 13 (70-130)	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Р
56375-BS1/BS2 (All samples in SDG 1807003-004)	Methoxychlor	150 (70-130)	150 (70-130)	NA	-

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-004	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD %R and results reported below the RL and above the MDL, data were qualified as estimated in thirteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Data Qualification Summary - SDG 1807003-004

Sample	Compound	Flag	A or P	Reason (Code)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071	Dicofol Endosulfan I Endosulfan II Endrin aldehyde	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10070 B18-10071	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 1807003-004

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 1807003-004

No Sample Data Qualified in this SDG

LDC #: 45128B3a

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-004

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Date: Page: of Page: 2nd Reviewer: 2nd Reviewer: No.

METHOD: GC/MS Chlorinated Pesticides (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area	T	Comments
	Validation Area	 	Comments
<u> </u> .	Sample receipt/Technical holding times	1 1	
11.	GC/MS Instrument performance check	N N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	WA	
VIII.	Matrix spike/Matrix spike duplicates		<i>e9</i>
IX.	Laboratory control samples	MA	1000. CAN
X.	Field duplicates	N	\
XI.	Internal standards	N_	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	IA	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

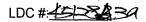
TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10015	56417	Sediment	07/12/18
2	B18-10016	56418	Sediment	07/12/18
3	B18-10438 (overdraw)	56419	Sediment	07/12/18
4	B18-10020	56420	Sediment	07/12/18
5	B18-10073	56421	Sediment	07/12/18
6	B18-10074	56422	Sediment	07/12/18
7	B18-10075	56423	Sediment	07/12/18
8	B18-10017	56424	Sediment	07/13/18
9	B18-10019	56425	Sediment	07/13/18
10	B18-10069	56426	Sediment	07/11/18
11	B18-10070	56427	Sediment	07/11/18
12	B18-10071	56428	Sediment	07/11/18
13	B18-10072	56429	Sediment	07/11/18

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticides

A. alpha-HCH	K. Endrin	U. Toxaphene	EE. 2,4'-DDT	OO. oxy-Chlordane
B. beta-HCH	L. Endosulfan II	V. Aroclor-1016	FF. Hexachlorobenzene	PP. cis-Nonachlor
C. delta-HCH	M. 4,4'-DDD	W. Aroclor-1221	GG. Chlordane	QQ. trans-Nonachlor
D. gamma-HCH	N. Endosulfan sulfate	X. Aroclor-1232	HH. Chlordane (Technical)	RR. cis-Chlordane
E. Heptachlor	O. 4,4'-DDT	Y. Aroclor-1242	II. p,p'-DDE	SS. trans-Chlordane
F. Aldrin	P. Methoxychlor	Z. Aroclor-1248	JJ. p,p'-DDD	TT. alpha-Endosulphan
G. Heptachlor epoxide	Q. Endrin ketone	AA. Aroclor-1254	KK. p,p'-DDT	UU. beta-Endosulphan
H. Endosulfan I	R. Endrin aldehyde	BB. Aroclor-1260	LL. o,p'-DDT	VV. Endosulphan Sulphate
I. Dieldrin	S. alpha-Chlordane	CC. 2,4'-DDD	MM. o,p'-DDE	WW. Mirex
J. 4,4'-DDE	T. gamma-Chlordane	DD. 2,4'-DDE	NN. o,p'-DDD	



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	of
Reviewer:	9
2nd Reviewer:	17/6

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Y/N M/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		563T5-BS1	Dicofol	5\$ TO-130	51 (70-130)	()	All (ND)	VW (4)
		-552	H'	12 ()	14 (1)	()		77
			7	37 ()	40 ()	()		
			R	12 ()	13 ()	()		
			P	150 (V)	150 (V)	()		Jolets D(HZ)
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polychlorinated Biphenyls as Congeners

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-004

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10015	56417	Sediment	07/12/18
B18-10016	56418	Sediment	07/12/18
B18-10438 (overdraw)	56419	Sediment	07/12/18
B18-10020	56420	Sediment	07/12/18
B18-10073	56421	Sediment	07/12/18
B18-10074	56422	Sediment	07/12/18
B18-10075	56423	Sediment	07/12/18
B18-10017	56424	Sediment	07/13/18
B18-10019	56425	Sediment	07/13/18
B18-10069	56426	Sediment	07/11/18
B18-10070	56427	Sediment	07/11/18
B18-10071	56428	Sediment	07/11/18
B18-10072	56429	Sediment	07/11/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) as Congeners by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
SRM 1944	PCB-105 PCB-118 PCB-128 PCB-156 PCB-206	35 (60-140) 56 (60-140) 19 (60-140) 28 (60-140) 53 (60-140)	All samples in SDG 1807003-004	J (all detects) UJ (all non-detects)	А

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-004	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to CRM %R and results reported below the RL and above the MDL, data were qualified as estimated in thirteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG 1807003-004

Sample	Compound	Flag	A or P	Reason (Code)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10072	PCB-105 PCB-118 PCB-128 PCB-156 PCB-206	J (all detects) UJ (all non-detects)	A	Certified reference material (%R) (LP)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification
Summary - SDG 1807003-004

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Field Blank Data Qualification
Summary - SDG 1807003-004

No Sample Data Qualified in this SDG

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VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-004

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer 2nd Reviewer

METHOD: GC/MS PCB as Congeners (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
	Sample receipt/Technical holding times	X	Comments
	GC/MS Instrument performance check	N N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration		
V	Laboratory Blanks	11	
VI.	Field blanks	N.	
VII.	Surrogate spikes	N_	
VIII.	Matrix spike/Matrix spike duplicates	1.4	
IX.	Laboratory control samples	A/W	205 B. CAN
X	Field duplicates	I N	
XI.	Internal standards	\perp N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

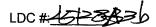
R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10015	56417	Sediment	07/12/18
2	B18-10016	56418	Sediment	07/12/18
3	B18-10438 (overdraw)	56419	Sediment	07/12/18
4	B18-10020	56420	Sediment	07/12/18
5	B18-10073	56421	Sediment	07/12/18
6	B18-10074	56422	Sediment	07/12/18
7	B18-10075	56423	Sediment	07/12/18
8	B18-10017	56424	Sediment	07/13/18
9	B18-10019	56425	Sediment	07/13/18
10	B18-10069	56426	Sediment	07/11/18
11	B18-10070	56427	Sediment	07/11/18
12	B18-10071	56428	Sediment	07/11/18
13	B18-10072	56429	Sediment	07/11/18



VALIDATION FINDINGS WORKSHEET <u>Laboratory Control Samples (LCS)</u>

Page: _	/of_/	
Reviewer:	A	
2nd Reviewer:	De	

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

YN N/A

Was a LCS required?

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		SRU 1944	PCB105	35 (60-40)	()	()	All (Lots+ND)	VUL (2P)
			1118	56 (1)	()	()		///
			128	19 ()	()	()		
			156	28 ()	()	()		
			206	53 (√)	()	()		
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

June 4, 2019

Parameters:

Metals

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-004

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10015	56417	Sediment	07/12/18
B18-10016	56418	Sediment	07/12/18
B18-10438 (overdraw)	56419	Sediment	07/12/18
B18-10020	56420	Sediment	07/12/18
B18-10073	56421	Sediment	07/12/18
B18-10074	56422	Sediment	07/12/18
B18-10075	56423	Sediment	07/12/18
B18-10017	56424	Sediment	07/13/18
B18-10019	56425	Sediment	07/13/18
B18-10069	56426	Sediment	07/11/18
B18-10070	56427	Sediment	07/11/18
B18-10071	56428	Sediment	07/11/18
B18-10072	56429	Sediment	07/11/18
B18-10015(SEM)	56417(SEM)	Sediment	07/12/18
B18-10016(SEM)	56418(SEM)	Sediment	07/12/18
B18-10438 (overdraw)(SEM)	56419(SEM)	Sediment	07/12/18
B18-10020(SEM)	56420(SEM)	Sediment	07/12/18
B18-10073(SEM)	56421(SEM)	Sediment	07/12/18
B18-10074(SEM)	56422(SEM)	Sediment	07/12/18
B18-10075(SEM)	56423(SEM)	Sediment	07/12/18
B18-10017(SEM)	56424(SEM)	Sediment	07/13/18
B18-10019(SEM)	56425(SEM)	Sediment	07/13/18
B18-10069(SEM)	56426(SEM)	Sediment	07/11/18
B18-10070(SEM)	56427(SEM)	Sediment	07/11/18
B18-10071(SEM)	56428(SEM)	Sediment	07/11/18
B18-10072(SEM)	56429(SEM)	Sediment	07/11/18
B18-10020MS	56420MS	Sediment	07/12/18

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10020MSD	56420MSD	Sediment	07/12/18
B18-10020DUP	56420DUP	Sediment	07/12/18
B18-10020MS(SEM)	56420MS(SEM)	Sediment	07/12/18
B18-10020MSD(SEM)	56420MSD(SEM)	Sediment	07/12/18
B18-10020DUP(SEM)	56420DUP(SEM)	Sediment	07/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Iron, Lead, Nickel, Phosphorus, Selenium, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071	Mercury	180	28	J (all detects)	Р

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. For B18-10020MS/MSD, no data were qualified for aluminum and iron percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration. Relative percent differences (RPD) were within QC limits.

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
B18-10020DUP (B18-10015 B18-10016 B18-10438 (overdraw) B18-10070 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071	Cadmium	28 (≤25)	-	J (all detects)	Α

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits.

XI. Field Duplicates

No field duplicates were identified in this SDG.

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-004	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, DUP RPD, and results reported below the RL and above the MDL, data were qualified as estimated in twenty-six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-004

Sample	Analyte	Flag_	A or P	Reason (Code)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10017 B18-10019 B18-10069 B18-10070 B18-10070 B18-10071 B18-10071	Mercury	J (all detects)	Р	Technical holding times (H)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071	Cadmium	J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10015 B18-10016 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10072 B18-10015(SEM) B18-10016(SEM) B18-1003(SEM) B18-10073(SEM) B18-10073(SEM) B18-10073(SEM) B18-10075(SEM) B18-10070(SEM) B18-10070(SEM) B18-10071(SEM) B18-10071(SEM) B18-10072(SEM)	Analyte reported below the RL and above the MDL	J (all detects)	Α	Sample result verification (DL)

2018 Regional Harbor Monitoring Program Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-004

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-004

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET

LDC #: 45128B4a SDG #: 1807003-004

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer

METHOD: Metals (EPA SW 846 Method 6020/EPA Method 200.8/EPA Method 245.7)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	ASW	
II.	ICP/MS Tune	N	
111.	Instrument Calibration	N	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Laboratory Blanks	A	
VI.	Field Blanks	\mathcal{N}	
VII.	Matrix Spike/Matrix Spike Duplicates	SW	27/28: Al, Fe7/K
VIII.	Duplicate sample analysis	SW	
IX.	Serial Dilution	/V	
Χ.	Laboratory control samples	A	LOSID grm
XI.	Field Duplicates	\mathcal{N}	- , , ,
XII.	Internal Standard (ICP-MS)	N	
XIII.	Sample Result Verification	N	
XIV	Overall Assessment of Data	W	

Note:

A = Acceptable

N = Not provided/applicable

ND = No compounds detected R = Rinsate

FB = Field blank

TB = Trip blank EB = Equipment blank

D = Duplicate

SB=Source blank OTHER:

SW = See worksheet Samples appended with "SEM" were analyzed as Simultaneously Extracted Metals

	Client ID	Lab ID	Matrix	Date
1	B18-10015	56417	Sediment	07/12/18
2	B18-10016	56418	Sediment	07/12/18
3	B18-10438 (overdraw)	56419	Sediment	07/12/18
4	B18-10020	56420	Sediment	07/12/18
5	B18-10073	56421	Sediment	07/12/18
6	B18-10074	56422	Sediment	07/12/18
7	B18-10075	56423	Sediment	07/12/18
8	B18-10017	56424	Sediment	07/13/18
9	B18-10019	56425	Sediment	07/13/18
10	B18-10069	56426	Sediment	07/11/18
11	B18-10070	56427	Sediment	07/11/18
12	B18-10071	56428	Sediment	07/11/18
13	B18-10072	56429	Sediment	07/11/18
14	B18-10015(SEM)	56417(SEM)	Sediment	07/12/18
15	B18-10016(SEM)	56418(SEM)	Sediment	07/12/18

LDC #: 45128B4a VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-004

Level II

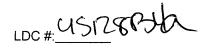
Laboratory: Physis Environmental Laboratories, Inc.

2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6020/EPA Method 200.8/EPA Method 245.7)

		1		1
16	B18-10438 (overdraw)(SEM)	56419(SEM)	Sediment	07/12/18
17	B18-10020(SEM)	56420(SEM)	Sediment	07/12/18
18	B18-10073(SEM)	56421(SEM)	Sediment	07/12/18
19	B18-10074(SEM)	56422(SEM)	Sediment	07/12/18
20	B18-10075(SEM)	56423(SEM)	Sediment	07/12/18
21	B18-10017(SEM)	56424(SEM)	Sediment	07/13/18
22	B18-10019(SEM)	56425(SEM)	Sediment	07/13/18
23	B18-10069(SEM)	56426(SEM)	Sediment	07/11/18
24	B18-10070(SEM)	56427(SEM)	Sediment	07/11/18
25	B18-10071(SEM)	56428(SEM)	Sediment	07/11/18
26	B18-10072(SEM)	56429(SEM)	Sediment	07/11/18
27	B18-10020MS	56420MS	Sediment	07/12/18
28	B18-10020MSD	56420MSD	Sediment	07/12/18
29	B18-10020DUP	56420DUP	Sediment	07/12/18
30	B18-10020MS(SEM)	56420MS(SEM)	Sediment	07/12/18
31	B18-10020MSD(SEM)	56420MSD(SEM)	Sediment	07/12/18
32	B18-10020DUP(SEM)	56420DUP(SEM)	Sediment	07/12/18
33				
34				
35				
Jote	2.			

Notes:_



VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page:1_	_of	1_
Reviewer:	er	
2nd reviewer:_	Ų	

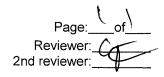
All circled elements are applicable to each sample.

г		
Sample ID	Matrix	Target Analyte List (TAL)
1-15	(Al, Sb, As, Ba, Be, Cd, Ca(Cr),Co,Cu, Fe, Pb,Mg, Mn(Hg, Ni,K,Se, Ag, Na, Tl, V,Zn) Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
14-20		Al, Sb, As, Ba, Be,Cd) Ca, Cr, Co,Cu) Fe,Pb,Mg, Mn, Hg,(Ni) K, Se, Ag,Na, Tl, V(Zn) Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
QC: C1-7	9	(Al, Sb, As, Ba, Be, Cd) Ca, (Cr) Co, (Cu, Fe, Pb) Mg, Mn, (Hg, N), K, Se, Ag, Na, Tl, V(Zn), Mo, B, Sn, Ti,
30-1	33	Al, Sb, As, Ba, Be Cd, Ca, Cr, Co Cu, Fe, Pb)Mg, Mn, Hg, Ni) K, Se, Ag) Na, Tl, V Zn) Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA		Al Sh. As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Ph, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti

Comments:	Mercury by CVAA if performed	

LDC #: 45128B4a

VALIDATION FINDINGS WORKSHEET <u>Technical Holding Times</u>



Were samples preserved? \underline{Y} \underline{N} $\underline{N/A}$ All circled dates have exceeded the technical holding time.

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1	N	1	
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Sampling Date	Analysis Date					1
	Date	Total Time until Analysis (days)	Qualifier Code: 1	Det/ND		
7/12/18	1/8/19	180	J/R/P	Det		
	7/12/18	7/12/18 1/8/19	7/12/18 1/8/19 180	7/12/18 1/8/19 180 J/R/P	7/12/18	7/12/18

Technical Holding Time Criteria

Mercury:

28 days

All other metals: 180 days - 1 year if frozen

LDC#: 45128BHC

VALIDATION FINDINGS WORKSHEET Duplicate Analysis

Page:	<u>~</u> o	<u> </u>	
Reviewer:	<u>~</u>		,
2nd Reviewer:			
	_		

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

-Rease see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A

Was a duplicate sample analyzed for each matrix in this SDG2

Were all duplicate sample relative percent differences (RPD) samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualificație	one -
		29			28		1-13	J/UJ/A (Det)	(HD)
\sqcup						Address and the second			
\vdash									
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H			-						
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${\mathbb H}$									

Comments:		 	 	
	<u> </u>			

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: June 4, 2019

Parameters: Wet Chemistry

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-004

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10015	56417	Sediment	07/12/18
B18-10016	56418	Sediment	07/12/18
B18-10438 (overdraw)	56419	Sediment	07/12/18
B18-10020	56420	Sediment	07/12/18
B18-10073	56421	Sediment	07/12/18
B18-10074	56422	Sediment	07/12/18
B18-10075	56423	Sediment	07/12/18
B18-10017	56424	Sediment	07/13/18
B18-10019	56425	Sediment	07/13/18
B18-10069	56426	Sediment	07/11/18
B18-10070	56427	Sediment	07/11/18
B18-10071	56428	Sediment	07/11/18
B18-10072	56429	Sediment	07/11/18
B18-10015DUP	56417DUP	Sediment	07/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Acid Volatile Sulfide by Plumb 1981 Ammonia as Nitrogen by Standard Method 4500-NH3-D Particle Size by Standard Method 2560D Percent Solids by Standard Method 2540B Total Nitrogen and Total Organic Carbon by Environmental Protection Agency (EPA) SW 846 Method 9060

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10070 B18-10071 B18-10072	Acid volatile sulfide Ammonia as N Total nitrogen	176 days 175 days 182 days	14 days 28 days 28 days	J (all detects) J (all detects) J (all detects)	A

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10015DUP (All samples in SDG 1807003-004)	Grain size: Phi 1.5	44 (≤20)	J (all detects)	· A

VIII. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-004	Analytes reported below the RL and above the MDL	J (all detects)	A

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, DUP RPD, and results reported below the RL and above the MDL, data were qualified as estimated in thirteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-004

Sample	Analyte	Flag	AorP	Reason (Code)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10017 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071	Acid volatile sulfide Ammonia as N Total nitrogen	J (all detects) J (all detects) J (all detects)	A	Technical holding times (H)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071	Grain size: Phi 1.5	J (all detects)	A	Duplicate sample analysis (RPD) (HD)
B18-10015 B18-10016 B18-10438 (overdraw) B18-10020 B18-10073 B18-10074 B18-10075 B18-10017 B18-10019 B18-10069 B18-10070 B18-10071 B18-10071	Analytes reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-004

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-004

No Sample Data Qualified in this SDG

LIDATION COMPLETENESS WORKSHEET	Date 6/3/19
Level II	Page: <u></u> of 1 _
aboratories, Inc.	Reviewer: 2nd Reviewer:
WB V	2nd Reviewer:
	Level II aboratories, Inc.

METHOD: (Analyte) AVS (Plumb 1981), Ammonia as N (SM4500D), Particle Size (SM 2560D), % Solids (SM2540B), Total Nitrogen (EPA SW846 9060), TOC (EPA SW 846 Method 9060)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	ASW	
- 11	Initial calibration	N	
III.	Calibration verification	N	
IV	Laboratory Blanks	A	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	\mathcal{N}	CS
VII.	Duplicate sample analysis	SW	
VIII.	Laboratory control samples	A	LESII), CRM
IX.	Field duplicates	N	, , , , , , , , , , , , , , , , , , , ,
X.	Sample result verification	N	
LxL	Overall assessment of data	A	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank
EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10015	56417	Sediment	07/12/18
2	B18-10016	56418	Sediment	07/12/18
3	B18-10438 (overdraw)	56419	Sediment	07/12/18
4	B18-10020	56420	Sediment	07/12/18
5	B18-10073	56421	Sediment	07/12/18
6	B18-10074	56422	Sediment	07/12/18
7	B18-10075	56423	Sediment	07/12/18
8	B18-10017	56424	Sediment	07/13/18
9	B18-10019	56425	Sediment	07/13/18
10	B18-10069	56426	Sediment	07/11/18
11	B18-10070	56427	Sediment	07/11/18
12	B18-10071	56428	Sediment	07/11/18
13	B18-10072	56429	Sediment	07/11/18
14	B18-10015DUP	56417DUP	Sediment	07/12/18
15				
16				
17				

LDC #: 4512986

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: 1 of 1

Reviewer: CP

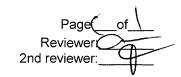
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter
1-13	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN(NH3)TKN(TOC)Cr6+ CIO4 (DVS) (DVS) (DVS)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
2014	PH TDS CLE NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$ (VS)
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLE NO, NO, SO, O-PO, Alk CN NH, TKN TOC Cr6+ ClO,

Comments:	

VALIDATION FINDINGS WORKSHEET Technical Holding Times



All circled dates have exceeded the technical holding time.

Y N N/A

Were all samples preserved as applicable to each method?

Y N N/A

Were all cooler temperatures within validation criteria?

Method:		Plumb			SM 4500 NH3D		
Parameters Technical h	olding time:	AVS 14 days			Ammonia as N 28 days		
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier
All	7/12/18	1/4/19	176	J/R/A (Det)	1/3/19	175	J/R/A (Det)

Method:		SM2540B			EPA 9060		
Parameters	•		Percent solids		Total nitrogen		
Technical h	olding time:		180 days			28 days	
Sample ID	Sampling date	g Analysis Total Analysis date Clays)		Total Time (days)	Qualifier		
All	7/12/18				1/10/19	182	J/R/A (Det)

LDC#: 45178136

VALIDATION FINDINGS WORKSHEET <u>Duplicate Analysis</u>

Page: of
Reviewer: 2nd Reviewer:
Zila Rovionoli.

METHOD: Inorganics, Method_Secall

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y N N/A Were all duplicate sample relative percent differences (RPD) \leq 20% for water and \leq 35% for soil samples (\leq 10% for Method 300.0)? If no, see qualification below. A control limit of ±CRDL (±2X CRDL for soil) was used for samples that were \leq 5X the CRDL, including when only one of the duplicate sample values

were ≤5X the CRDL. If field blanks were used for laboratory duplicates, see overall assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	Duplicate ID	Matrix	Analyte	RPD (Limits) 🛬	Difference (Limits)	Associated Samples	Qualifications
-	Date	14		GEALASTE	: 44 (470)	- 12Merence y mins)	AI)	Qualifications JUSA (QUL)
		* \		Grainsize Philis	1 (165 00)			J105 (11 (#CC)
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			<u> </u>					
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Comments:		 		 	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: May 31, 2019

Parameters: Polynuclear Aromatic Hydrocarbons

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-006

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10023	56514	Sediment	07/16/18
B18-10030	56515	Sediment	07/16/18
B18-10078	56516	Sediment	07/16/18
B18-10079	56517	Sediment	07/16/18
B18-10117	56518	Sediment	07/16/18
B18-10080	56519	Sediment	07/17/18
B18-10081	56520	Sediment	07/17/18
B18-10082	56521	Sediment	07/17/18
B18-10083	56522	Sediment	07/17/18
B18-10084	56523	Sediment	07/17/18
B18-10023MS	56514MS	Sediment	07/16/18
B18-10023MSD	56514MSD	Sediment	07/16/18
B18-10023DUP	56514DUP	Sediment	07/16/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10023MS/MSD (B18-10023)	1-Methylnaphthalene 2-Methylnaphthalene Naphthalene	48 (50-150) 48 (50-150) 37 (50-150)	47 (50-150) 47 (50-150) 32 (50-150)	J (all detects) J (all detects) J (all detects)	А
B18-10023MS/MSD (B18-10023)	Benzo(a)anthracene	154 (50-150)	154 (50-150)	J (all detects)	Α

Relative percent differences (RPD) were within QC limits.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10023DUP (B18-10023)	Acenaphthene	92 (≤25)	NA	-
B18-10023DUP (B18-10023)	Benzo(a)pyrene Benzo(e)pyrene Benzo(k)fluoranthene Chrysene Fluoranthene Pyrene	34 (≤25) 26 (≤25) 26 (≤25) 27 (≤25) 43 (≤25) 42 (≤25)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
20646-BS1/BS2 (B18-10023 B18-10030 B18-10078)	1-Methylnaphthalene 2,6-Dimethylnaphthalene 2-Methylnaphthalene Acenaphthene Acenaphthylene Biphenyl Naphthalene	49 (70-130) 59 (70-130) 50 (70-130) 60 (70-130) 59 (70-130) 55 (70-130) 41 (70-130)	53 (70-130) 60 (70-130) 53 (70-130) 61 (70-130) 61 (70-130) 57 (70-130) 46 (70-130)	J (all detects) UJ (all non-detects)	P
20646-BS1/BS2 (B18-10023 B18-10030 B18-10078)	Benzo(a)anthracene Indeno(1,2,3-cd)pyrene	149 (70-130) 131 (70-130)	146 (70-130) -	J (all detects) J (all detects)	Р
56510-BS1/BS2 (B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084)	1-Methylnaphthalene 2-Methylnaphthalene Biphenyl Naphthalene 2,6-Dimethylnaphthalene Acenaphthene	59 (70-130) 61 (70-130) 64 (70-130) 48 (70-130) - -	54 (70-130) 55 (70-130) 60 (70-130) 42 (70-130) 65 (70-130) 67 (70-130)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р
56510-BS1/BS2 (B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084)	Benzo(a)anthracene Benzo(b)fluoranthene Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene Fluoranthene	171 (70-130) 131 (70-130) 139 (70-130) - -	171 (70-130) 135 (70-130) 144 (70-130) 134 (70-130) 131 (70-130)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
20647-CRM (SRM 1994)	2-Methylnaphthalene	56 (60-140)	B18-10023 B18-10030 B18-10078	J (all detects)	А

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-006	Compound reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R, DUP RPD, LCS/LCSD %R, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in ten samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-006

Sample	Compound	Flag	A or P	Reason (Code)
B18-10023	1-Methylnaphthalene 2-Methylnaphthalene Naphthalene	J (all detects) J (all detects) J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10023	Benzo(a)anthracene	J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (HM)
B18-10023	Benzo(a)pyrene Benzo(e)pyrene Benzo(k)fluoranthene Chrysene Fluoranthene Pyrene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10023 B18-10030 B18-10078	1-Methylnaphthalene 2,6-Dimethylnaphthalene 2-Methylnaphthalene Acenaphthene Acenaphthylene Biphenyl Naphthalene	J (all detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10023 B18-10030 B18-10078	Benzo(a)anthracene Indeno(1,2,3-cd)pyrene	J (all detects) J (all detects)	Р	Laboratory control samples (%R) (HL)
B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	1-Methylnaphthalene 2-Methylnaphthalene Biphenyl Naphthalene 2,6-Dimethylnaphthalene Acenaphthene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р	Laboratory control samples (%R) (LL)
B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Benzo(a)anthracene Benzo(b)fluoranthene Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene Fluoranthene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р	Laboratory control samples (%R) (HL)
B18-10023 B18-10030 B18-10078	2-Methylnaphthalene	J (all detects)	Α	Certified reference material (%R) (LP)

Sample	Compound	Flag	A or P	Reason (Code)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-006

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary SDG 1807003-006

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45128C2b

SDG #: 1807003-006

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer 2nd Reviewer:

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	And	
VIII.	Matrix spike/Matrix spike duplicates	www	/
IX.	Laboratory control samples	IN KW	Les/O. exM
X.	Field duplicates	/N	/
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

SW = See worksheet

N = Not provided/applicable

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank

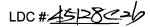
SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10023	56514	Sediment	07/16/18
2	B18-10030	56515	Sediment	07/16/18
3	B18-10078	56516	Sediment	07/16/18
4	B18-10079	56517	Sediment	07/16/18
5	B18-10 617	56518	Sediment	07/16/18
6	B18-10080	56519	Sediment	07/17/18
7	B18-10081	56520	Sediment	07/17/18
8	B18-10082	56521	Sediment	07/17/18
9	B18-10083	56522	Sediment	07/17/18
10	B18-10084	56523	Sediment	07/17/18
11	B18-10023MS	56514MS	Sediment	07/16/18
12	B18-10023MSD	56514MSD	Sediment	07/16/18
13	B18-10023DUP	56514DUP	Sediment	07/16/18

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	W. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	<u>/</u> of/
Reviewer:	8
2nd Reviewer:	9/6

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

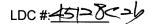
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

[N] N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

 U	N/N/A were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?							
#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications	
	11/12	TTT	48 (50-150)	AT (50-150)	()	(Colets)	VALA(ZM)	
<u> </u>		W	48 (1)	47 (1)	()	,		
		S	37. ()	32 ()	()		, , , , , , , , , , , , , , , , , , ,	
		CCC	154 ()	154 (1)	()		Idets/s(HM)	
			' ()	()	()		/ 5	
			()	()	()			
			()	()	(25)			
	13	44	()	()	92 (30)	1 (dets) (NO	I dots/A (HO)	
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		WWW	()	()	26()			
		HHH	()	()	26()			
		DD D	()	()	27()			
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		22	()	()	45 ()		V	
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VALIDATION FINDINGS WORKSHEET <u>Laboratory Control Samples (LCS)</u>

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

YN N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		20646-BSV	TTT	49 (70-130)	53 (TO-130)	()	1-3.MD	1/1/7/21
		-BS2	XXX	59 (1)	60 (1)	()	1-3.MD (dets+ND)	7.1
			W	50 ()		()		
			44	60 ()	53 ()	()		
			DB	59 ()	61 ()	()		
			2628	55 ()	ST ()	()		
			5	41 ()	46 ()	()		/
			uc	H9 ()	146 (1)	()		Vets (HZ)
			W	131 (V)	()	()		
				()	()	()		
		2064T-CRM	W	56 (60-140)	()	()	1-3. MB (duts)	1/4/A(LP)
		SRM 1944		()	()	()	(dets)	/ / /
				()	()	()		
		56510-BSI	THE		54 (70-130)	()	4-10.MB (det3)	-1/4/ (~Z)
ļ		_B52		61, (1)	55 ()	()	(det3)	///
			2626	64 ()	60 ()	()		
 			S	48 ()	42()	()		1
<u> </u>			cce	171 ()	17/()	()		163A(HZ)
ļ			444	(3/ ()	18 BS()	()		,
 			111	139 (V)	144 ()	()		V
 			XXX	()	65 ()	()		NUX (KL)
-			44	()	67, ()	()		
-			tkk Yy	()	13 ()	()		1137 (HZ)
\vdash			177	()		()		
<u></u>	<u> </u>		<u> </u>	<u> </u>			<u> </u>	<u> </u>

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polybrominated Diphenyl Ethers

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-006

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10023	56514	Sediment	07/16/18
B18-10030	56515	Sediment	07/16/18
B18-10078	56516	Sediment	07/16/18
B18-10079	56517	Sediment	07/16/18
B18-10117	56518	Sediment	07/16/18
B18-10080	56519	Sediment	07/17/18
B18-10081	56520	Sediment	07/17/18
B18-10082	56521	Sediment	07/17/18
B18-10083	56522	Sediment	07/17/18
B18-10084	56523	Sediment	07/17/18
B18-10023MS	56514MS	Sediment	07/16/18
B18-10023MSD	56514MSD	Sediment	07/16/18
B18-10023DUP	56514DUP	Sediment	07/16/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polybrominated Diphenyl Ethers (PBDE) by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10023MS/MSD (B18-10023)	PBDE 190	39 (50-150)	46 (50-150)	J (all detects) UJ (all non-detects)	Α
,	PBDE 209	19 (50-150)	25 (50-150)	J (all detects) UJ (all non-detects)	

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10023MS/MSD (B18-10023)	PBDE 183	26 (≤25)	NA	-
B18-10023MS/MSD (B18-10023)	PBDE 209	27 (≤25)	J (all detects)	A

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
20646-BS1/BS2 (B18-10023 B18-10030 B18-10078)	PBDE 190 PBDE 209	59 (70-130) 23 (70-130)	66 (70-130) 25 (70-130)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	Р
56510-BS1/BS2 (B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084)	PBDE 190 PBDE 209	65 (70-130) 22 (70-130)	- 51 (70-130)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	Р

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

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
56510-BS1/BS2 (B18-10079 B18-10117 B18-10081 B18-10082 B18-10083 B18-10084)	PBDE 209	79 (≤30)	J (all detects)	Р
56510-BS1/BS2 (B18-10080)	PBDE 209	79 (≤30)	NA	-

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-006	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R and RPD, LCS/LCSD %R and RPD, and results reported below the RL and above the MDL, data were qualified as estimated in ten samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polybrominated Diphenyl Ethers - Data Qualification Summary - SDG 1807003-006

Sample	Compound	Flag	A or P	Reason (Code)
B18-10023	PBDE 190 PBDE 209	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10023	PBDE 209	J (all detects)	А	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	PBDE 190 PBDE 209	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10079 B18-10117 B18-10081 B18-10082 B18-10083 B18-10084	PBDE 209	J (all detects)	Р	Laboratory control samples (RPD) (HD)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Laboratory Blank Data Qualification Summary SDG 1807003-006

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Field Blank Data Qualification Summary - SDG
1807003-006

No Sample Data Qualified in this SDG

LDC #: 45128C2c VALIDATIO

SDG #: 1807003-006

VALIDATION COMPLETENESS WORKSHEET

Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: GC/MS Polybrominated Diphenyl Ethers (EPA SW 846 Method 8270D-NCI)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
J.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	, N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	4	
VI.	Field blanks	N	
VII.	Surrogate spikes	AGOV	
VIII.	Matrix spike/Matrix spike duplicates	W/A	
IX.	Laboratory control samples	WA	Les D. eRM
X.	Field duplicates	N	
XI.	Internal standards	\ \ !	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10023	56514	Sediment	07/16/18
2	B18-10030	56515	Sediment	07/16/18
3	B18-10078	56516	Sediment	07/16/18
4	B18-10079	56517	Sediment	07/16/18
5	B18-10 017	56518	Sediment	07/16/18
6	B18-10080	56519	Sediment	07/17/18
7	B18-10081	56520	Sediment	07/17/18
8	B18-10082	56521	Sediment	07/17/18
9	B18-10083	56522	Sediment	07/17/18
10	B18-10084	56523	Sediment	07/17/18
11	B18-10023MS	56514MS	Sediment	07/16/18
12	B18-10023MSD	56514MSD	Sediment	07/16/18
13	B18-10023DUP	56514DUP	Sediment	07/16/18

LDC #:45128C 28C

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	_ <u>/</u> `of
Reviewer:	4
2nd Reviewer:	W

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

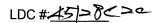
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

YN) N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	11/12	PBDZ 190		46 50-150		1 (dets+ND)	JAJA (ZM)
		PBDZ 190 V 209	19 (V)	25 (V)	()	,	
		PB00183	()	()	26 (475)	(NO)	Slots/A(HD)
		PB0C183	()	()	2T(1)	(NO) (dets)	
			()	()	()		
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VALIDATION FINDINGS WORKSHEET <u>Laboratory Control Samples (LCS)</u>

Page: _	<i>)</i> of <i>/</i>
Reviewer:	~~
2nd Reviewer:	014

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?
Were the LCS/LCSD p

N)N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		20646-BSI/	PBDZ190	59 (70-130)	66 (70-130)	()	1-3. MB	Jay (LL)
		-B5*	1 zog	23 (V)	25 (V)	()	1-3. MB Wets+ND)	
				()	()	()		
				()	()	()		
				()	()	()		\
		56510-BSI/	PBDZ-190	65 (0-170)	()	()	4-10.UB	MAX (24)
		-BSI	1 209	22 (V)	5 (70-130)	()	(dets+ND)	
			\$B\$€209	()	()	T9 (≤30)	4-10. UB (dets+ND) (dets=4-5,7-10)	Ilots & (HD)
				()		()	/ /	/ \ - /
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: May 31, 2019

Parameters: Fipronil & Degradates

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-006

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10023	56514	Sediment	07/16/18
B18-10030	56515	Sediment	07/16/18
B18-10078	56516	Sediment	07/16/18
B18-10079	56517	Sediment	07/16/18
B18-10117	56518	Sediment	07/16/18
B18-10080	56519	Sediment	07/17/18
B18-10081	56520	Sediment	07/17/18
B18-10082	56521	Sediment	07/17/18
B18-10083	56522	Sediment	07/17/18
B18-10084	56523	Sediment	07/17/18
B18-10023MS	56514MS	Sediment	07/16/18
B18-10023MSD	56514MSD	Sediment	07/16/18
B18-10023DUP	56514DUP	Sediment	07/16/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Fipronil and Degradates by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-006	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in ten samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Fipronil & Degradates - Data Qualification Summary - SDG 1807003-006

Sample	Compound	Flag	A or P	Reason (Code)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program

Fipronil & Degradates - Laboratory Blank Data Qualification Summary - SDG 1807003-006

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program

Fipronil & Degradates - Field Blank Data Qualification Summary - SDG 1807003-006

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45128C2d

SDG #: 1807003-006

Level II

2nd Reviewer

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: GC/MS Fipronil & Degradates (EPA SW 846 Method 8270D-NCI)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Volidation Avec		
-	Validation Area	- A	Comments
1.	Sample receipt/Technical holding times	N	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	AA	
IX.	Laboratory control samples	A	1090
X.	Field duplicates	N	1
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10023	56514	Sediment	07/16/18
2	B18-10030	56515	Sediment	07/16/18
3	B18-10078	56516	Sediment	07/16/18
4	B18-10079	56517	Sediment	07/16/18
5	B18-10 017-	56518	Sediment	07/16/18
6	B18-10080	56519	Sediment	07/17/18
7	B18-10081	56520	Sediment	07/17/18
8	B18-10082	56521	Sediment	07/17/18
9	B18-10083	56522	Sediment	07/17/18
10	B18-10084	56523	Sediment	07/17/18
11	B18-10023MS	56514MS	Sediment	07/16/18
12	B18-10023MSD	56514MSD	Sediment	07/16/18
13	B18-10023DUP	56514DUP	Sediment	07/16/18

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Synthetic Pyrethroid Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-006

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10023	56514	Sediment	07/16/18
B18-10030	56515	Sediment	07/16/18
B18-10078	56516	Sediment	07/16/18
B18-10079	56517	Sediment	07/16/18
B18-10117	56518	Sediment	07/16/18
B18-10080	56519	Sediment	07/17/18
B18-10081	56520	Sediment	07/17/18
B18-10082	56521	Sediment	07/17/18
B18-10083	56522	Sediment	07/17/18
B18-10084	56523	Sediment	07/17/18
B18-10023MS	56514MS	Sediment	07/16/18
B18-10023MSD	56514MSD	Sediment	07/16/18
B18-10023DUP	56514DUP	Sediment	07/16/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Synthetic Pyrethroid Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D-MRM

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to nonconformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10023MS/MSD (B18-10023)	Allethrin Cyhalothrin, total lambda Permethrin, cis-	159 (50-150) 154 (50-150) -	162 (50-150) 167 (50-150) 154 (50-150)	NA	-
B18-10023MS/MSD (B18-10023)	Prallethrin	5 (50-150)	3 (50-150)	UJ (all non-detects)	А

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10023MS/MSD (B18-10023)	Fluvalinate Prallethrin	26 (≤25) 50 (≤25)	NA	-

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	AorP
All samples in SDG 1807003-006	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R and results reported below the RL and above the MDL, data were qualified as estimated in ten samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Synthetic Pyrethroid Pesticides - Data Qualification Summary - SDG 1807003-006

Sample	Compound	Flag	A or P	Reason (Code)
B18-10023	Prallethrin	UJ (all non-detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Laboratory Blank Data Qualification Summary SDG 1807003-006

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program Synthetic Pyrethroid Pesticides - Field Blank Data Qualification Summary - SDG 1807003-006

No Sample Data Qualified in this SDG

LDC #: 45128C2e VALIDATION COMPLETENESS WORKSHEET

SDG #:__1807003-006____

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer:___
2nd Reviewer:___

METHOD: GC/MS Synthetic Pyrethroid Pesticides (EPA SW 846 Method 8270D-MRM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N/	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	WA	-
IX.	Laboratory control samples	\blacksquare	1C5 B
X.	Field duplicates	N	
XI.	Internal standards	IÑ	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptal

A = Acceptable N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

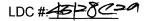
TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10023	56514	Sediment	07/16/18
2	B18-10030	56515	Sediment	07/16/18
3	B18-10078	56516	Sediment	07/16/18
4	B18-10079	56517	Sediment	07/16/18
5	B18-10 017-	56518	Sediment	07/16/18
6	B18-10080	56519	Sediment	07/17/18
7	B18-10081	56520	Sediment	07/17/18
8	B18-10082	56521	Sediment	07/17/18
9	B18-10083	56522	Sediment	07/17/18
10	B18-10084	56523	Sediment	07/17/18
11	B18-10023MS	56514MS	Sediment	07/16/18
12	B18-10023MSD	56514MSD	Sediment	07/16/18
13	B18-10023DUP	56514DUP	Sediment	07/16/18

VALIDATION FINDINGS WORKSHEET

METHOD: Pyrethroids

WIETHOD: Pyrethrolds		
A. Allethrin		
B. Bifenthrin		
C. Cyfluthrin		
D. Cyhalothrin, Total Lambda		
E. Cypermethrin		
F. Danitol (Fenpropathrin)		
G. Deltamethrin/Tralomethrin		
H. Esfenvalerate		
I. Fluvalinate		
J. Permethrin, cis-		
K. Permethrin, trans-		
L. Prallethrin		



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:	of
Reviewer:	9
2nd Reviewer:_	TV6

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

<u>NNA</u> Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

	Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?							
#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications	
	11/12	AHEAR A	159 90-190	162 90-150	()	1 (ND)	IletsA(HM)	
		A	154 (1)	16T (1)	()		V/	
			5 (1)	3 ()	()		-MA(LM)	
		J	()	154 ()	()		Hets A (HU)	
		7	()	()	26 KX5T		(HD)	
		7	()	()	50 (11)		VV'	
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 30, 2019

Parameters:

Chlorinated Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-006

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10023	56514	Sediment	07/16/18
B18-10030	56515	Sediment	07/16/18
B18-10078	56516	Sediment	07/16/18
B18-10079	56517	Sediment	07/16/18
B18-10117	56518	Sediment	07/16/18
B18-10080	56519	Sediment	07/17/18
B18-10081	56520	Sediment	07/17/18
B18-10082	56521	Sediment	07/17/18
B18-10083	56522	Sediment	07/17/18
B18-10084	56523	Sediment	07/17/18
B18-10023MS	56514MS	Sediment	07/16/18
B18-10023MSD	56514MSD	Sediment	07/16/18
B18-10023DUP	56514DUP	Sediment	07/16/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D/8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10023MS/MSD (B18-10023)	Dicofol Endosulfan I Endosulfan II Endrin aldehyde	46 (50-150) 20 (50-150) 41 (50-150) 18 (50-150)	23 (50-150) 43 (50-150) 29 (50-150)	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	А

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10023MS/MSD (B18-10023)	Endrin aldehyde	47 (≤25)	NA	-

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
20646-BS1 (B18-10023 B18-10030 B18-10078)	Dicofol Endosulfan I Endosulfan II Endrin aldehyde	55 (70-130) 12 (70-130) 37 (70-130) 12 (70-130)	51 (70-130) 14 (70-130) 40 (70-130) 13 (70-130)	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Р
20646-BS1 (B18-10023 B18-10030 B18-10078)	Methoxychlor	150 (70-130)	150 (70-130)	NA	-
56510-BS1/BS2 (B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084)	Endosulfan I	3 (70-130)	3 (70-130)	R (all non-detects)	Р
56510-BS1/BS2 (B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084)	Endosulfan II Endrin aldehyde	21 (70-130) 10 (70-130)	22 (70-130) 29 (70-130)	UJ (all non-detects) UJ (all non-detects)	Р
56510-BS1/BS2 (B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084)	Methoxychlor Perthane	142 (70-130) 131 (70-130)	144 (70-130) 135 (70-130)	NA	-

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

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
56510-BS1/BS2 (B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084)	Endrin aldehyde	97 (≤30)	NA	-

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-006	Compound reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to LCS/LCSD %R, data were rejected in seven samples.

Due to MS/MSD %R, LCS/LCSD %R, and results reported below the RL and above the MDL, data were qualified as estimated in ten samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Data Qualification Summary - SDG 1807003-006

Sample	Compound	Flag	A or P	Reason (Code)
B18-10023	Dicofol Endosulfan I Endosulfan II Endrin aldehyde	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10023 B18-10030 B18-10078	Dicofol Endosulfan I Endosulfan II Endrin aldehyde	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Endosulfan I	R (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Endosulfan II Endrin aldehyde	UJ (all non-detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 1807003-006

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 1807003-006

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45128C3a

SDG #: 1807003-006

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: GC/MS Chlorinated Pesticides (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N,	
VII.	Surrogate spikes	Ant	
VIII.	Matrix spike/Matrix spike duplicates	WA	
IX.	Laboratory control samples	W KW	Les D. ARM
Χ.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank

OTHER:

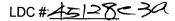
				
	Client ID	Lab ID	Matrix	Date
1 1	B18-10023	56514	Sediment	07/16/18
2	B18-10030	56515	Sediment	07/16/18
3 l	B18-10078	56516	Sediment	07/16/18
₄ >	B18-10079	56517	Sediment	07/16/18
₅ 2	B18-10 017-	56518	Sediment	07/16/18
و ک	B18-10080	56519	Sediment	07/17/18
7 2	B18-10081	56520	Sediment	07/17/18
₈ >	B18-10082	56521	Sediment	07/17/18
9 2	B18-10083	56522	Sediment	07/17/18
10 ²	B18-10084	56523	Sediment	07/17/18
11 /	B18-10023MS	56514MS	Sediment	07/16/18
12 /	B18-10023MSD	56514MSD	Sediment	07/16/18
13	B18-10023DUP	56514DUP	Sediment	07/16/18

0-21008,

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticides

A. alpha-HCH	K. Endrin	U. Toxaphene	EE. 2,4'-DDT	OO. oxy-Chlordane
B. beta-HCH	L. Endosulfan II	V. Aroclor-1016	FF. Hexachlorobenzene	PP. cis-Nonachlor
C. delta-HCH	M. 4,4'-DDD	W. Aroclor-1221	GG. Chlordane	QQ. trans-Nonachlor
D. gamma-HCH	N. Endosulfan sulfate	X. Aroclor-1232	HH. Chlordane (Technical)	RR. cis-Chlordane
E. Heptachlor	O. 4,4'-DDT	Y. Aroclor-1242	II. p,p'-DDE	SS. trans-Chlordane
F. Aldrin	P. Methoxychlor	Z. Aroclor-1248	JJ. p,p'-DDD	TT. alpha-Endosulphan
G. Heptachlor epoxide	Q. Endrin ketone	AA. Aroclor-1254	KK. p,p'-DDT	UU. beta-Endosulphan
H. Endosulfan I	R. Endrin aldehyde	BB. Aroclor-1260	LL. o,p'-DDT	VV. Endosulphan Sulphate
I. Dieldrin	S. alpha-Chlordane	CC. 2,4'-DDD	MM. o,p'-DDE	WW. Mirex
J. 4,4'-DDE	T. gamma-Chlordane	DD. 2,4'-DDE	NN. o,p'-DDD	



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	of
Reviewer:	9
2nd Reviewer:_	W

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

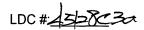
N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

			ms	MSD	l b) walling the Qo	limito:	
#	MS/MSD ID	Compound	%R (Limits)	%R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	11/12	Dicofol	46 (50-150)	()	()	1 (ND)	JMAKM)
		H 1	20 ()	23 (50-150) 43 (1,)	()		
			41 ()		()		
		R	18 (V)	29 (V)	()		
ļ		R	()	()	47 (=25)		Slots A (HO)
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: .	(of
Reviewer:	9
2nd Reviewer:	- the

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

YN N/A YN N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		20646-BSI	Dicofol	55 (70-130)	5 (70-130)	()	1-3. MB (ND)	Var (22)
)	12 (1)	14 ()	()		
				37 ()	40 ()	()		
			R	12 ()	13()	()		V
	· · · ·		₽	150 (V)	150 (V)	()		USS (HZ)
			\	()	()	()		
				()	()	()		
		\$ 55510-BSY	+	3 70-130	3 70-130	()	4-10. MB(ND)	1/B\$(LL)
		l /		<u> </u>	22 ()	()		JAJA
		/ - BS>	R	(0)	29 ()	()		
			₽,	142 ()	H ()	()		Wet3 (HL)
			Perthan	e 131 (V)	i35 (V)	()		
			R	()	()	9T ()		blets (HD)
				()	()	()		/ /
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: May 31, 2019

Parameters: Polychlorinated Biphenyls as Congeners

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-006

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10023	56514	Sediment	07/16/18
B18-10030	56515	Sediment	07/16/18
B18-10078	56516	Sediment	07/16/18
B18-10079	56517	Sediment	07/16/18
B18-10117	56518	Sediment	07/16/18
B18-10080	56519	Sediment	07/17/18
B18-10081	56520	Sediment	07/17/18
B18-10082	56521	Sediment	07/17/18
B18-10083	56522	Sediment	07/17/18
B18-10084	56523	Sediment	07/17/18
B18-10023MS	56514MS	Sediment	07/16/18
B18-10023MSD	56514MSD	Sediment	07/16/18
B18-10023DUP	56514DUP	Sediment	07/16/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) as Congeners by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56510-BS1/BS2 (B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084)	PCB-169	133 (70-130)	-	NA	-

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
20647-CRM1	PCB-105 PCB-118 PCB-128 PCB-156 PCB-206	35 (60-140) 58 (60-140) 19 (60-140) 28 (60-140) 53 (60-140)	B18-10023 B18-10030 B18-10078	J (all detects) UJ (all non-detects)	А
56512-CRM1	PCB-105 PCB-118 PCB-128 PCB-156 PCB-194	40 (60-140) 53 (60-140) 40 (60-140) 40 (60-140) 58 (60-140)	B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	J (all detects) UJ (all non-detects)	A

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-006	Compound reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to CRM %R and results reported below the RL and above the MDL, data were qualified as estimated in ten samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG 1807003-006

Sample	Compound	Flag	A or P	Reason (Code)
B18-10023 B18-10030 B18-10078	PCB-105 PCB-118 PCB-128 PCB-156 PCB-206	J (all detects) UJ (all non-detects)	А	Certified reference material (%R) (LP)
B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	PCB-105 PCB-118 PCB-128 PCB-156 PCB-194	J (all detects) UJ (all non-detects)	А	Certified reference material (%R) (LP)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification
Summary - SDG 1807003-006

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Field Blank Data Qualification
Summary - SDG 1807003-006

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45128C3b

SDG #: 1807003-006

Level II

Laboratory: Physis Environmental Laboratories, Inc.

2nd Reviewer

METHOD: GC/MS PCB as Congeners (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	\blacksquare	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	AA	
IX.	Laboratory control samples	KW KW	Les D. CAN
Χ.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	·
XIV.	System performance	N	
XV.	Overall assessment of data	K	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank

OTHER:

	Client ID	Labin	Blatein	Deta.
	Ciletti ID	Lab ID	Matrix	Date
1	B18-10023	56514	Sediment	07/16/18
2	B18-10030	56515	Sediment	07/16/18
3	B18-10078	56516	Sediment	07/16/18
4	B18-10079	56517	Sediment	07/16/18
5	B18-10 017	56518	Sediment	07/16/18
6	B18-10080	56519	Sediment	07/17/18
7	B18-10081	56520	Sediment	07/17/18
8	B18-10082	56521	Sediment	07/17/18
9	B18-10083	56522	Sediment	07/17/18
10	B18-10084	56523	Sediment	07/17/18
11	B18-10023MS	56514MS	Sediment	07/16/18
12	B18-10023MSD	56514MSD	Sediment	07/16/18
13	B18-10023DUP	56514DUP	Sediment	07/16/18

0-21008 /0-21010



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		SPM 1944	FCB105	35 60-40)	()	()	1-3, UB	JMAUP)
		SPM (244 (2064T-CPMI)	1118	58 (1)	()	()	1-3. MB (SetS+ND)	1
			128	19 ()	()	()		
				≥8 (,)	()	()		
			1 206	53 ()	()	()		V
				()	()	()		
		56510-BSV	7CB169	133 (70-130)	()	()	4-10.MB	Jolota & (HP)
		/8 52		()	()	()	(ND)	
				()	()	()	/	
				()	()	()		
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		(56512-CRUI)	1118	53 ()	()	()	(dots+ND)	//
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: June 4, 2019

Parameters: Metals

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-006

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10023	56514	Sediment	07/16/18
B18-10030	56515	Sediment	07/16/18
B18-10078	56516	Sediment	07/16/18
B18-10079	56517	Sediment	07/16/18
B18-10117	56518	Sediment	07/16/18
B18-10080	56519	Sediment	07/17/18
B18-10081	56520	Sediment	07/17/18
B18-10082	56521	Sediment	07/17/18
B18-10083	56522	Sediment	07/17/18
B18-10084	56523	Sediment	07/17/18
B18-10023(SEM)	56514(SEM)	Sediment	07/16/18
B18-10030(SEM)	56515(SEM)	Sediment	07/16/18
B18-10078(SEM)	56516(SEM)	Sediment	07/16/18
B18-10079(SEM)	56517(SEM)	Sediment	07/16/18
B18-10117(SEM)	56518(SEM)	Sediment	07/16/18
B18-10080(SEM)	56519(SEM)	Sediment	07/17/18
B18-10081(SEM)	56520(SEM)	Sediment	07/17/18
B18-10082(SEM)	56521(SEM)	Sediment	07/17/18
B18-10083(SEM)	56522(SEM)	Sediment	07/17/18
B18-10084(SEM)	56523(SEM)	Sediment	07/17/18
B18-10023MS	56514MS	Sediment	07/16/18
B18-10023MSD	56514MSD	Sediment	07/16/18
B18-10023DUP	56514DUP	Sediment	07/16/18
B18-10023MS(SEM)	56514MS(SEM)	Sediment	07/16/18
B18-10023MSD(SEM)	56514MSD(SEM)	Sediment	07/16/18
B18-10023DUP(SEM)	56514DUP(SEM)	Sediment	07/16/18

Samples appended with "SEM" were analyzed for Simultaneously Extracted Metals

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Iron, Lead, Nickel, Phosphorus, Selenium, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117	Mercury	176	28	J (all detects)	P
B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Mercury	175	28	J (all detects)	Р

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

(Associated Samples)	MS (%R)	MSD (%R) (Limits)	Flag	A or P
B18-10023MS/MSD(SEM) (B18-10023(SEM) B18-10030(SEM) B18-10078(SEM) B18-10079(SEM) B18-10117(SEM) B18-10080(SEM) B18-10081(SEM) B18-10082(SEM) B18-10083(SEM) B18-10084(SEM)	-	66 (75-125)	UJ (all non-detects)	A

For B18-10023MS/MSD, no data were qualified for aluminum and iron percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

Relative percent differences (RPD) were within QC limits.

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits.

XI. Field Duplicates

No field duplicates were identified in this SDG.

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-006	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, MS/MSD %R, and results reported below the RL and above the MDL, data were qualified as estimated in twenty samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-006

Sample	Analyte	Flag	AorP	Reason (Code)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Mercury	J (all detects)	Р	Technical holding times (H)
B18-10023(SEM) B18-10030(SEM) B18-10078(SEM) B18-10079(SEM) B18-10117(SEM) B18-10080(SEM) B18-10081(SEM) B18-10082(SEM) B18-10083(SEM) B18-10084(SEM)	Silver	UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10023(SEM) B18-10078(SEM) B18-10079(SEM) B18-10017(SEM) B18-10017(SEM) B18-10080(SEM) B18-10080(SEM) B18-10081(SEM) B18-10081(SEM) B18-10082(SEM) B18-10083(SEM) B18-10083(SEM) B18-10084(SEM)	Analyte reported below the RL and above the MDL	J (all detects)	A	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-006

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-006

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET

LDC #: 45128C4a SDG #: 1807003-006

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Date: \$\frac{5}{3}\frac{9}{1}\frac{9}{1}\frac{1}{2}\fra

METHOD: Metals (EPA SW 846 Method 6020/EPA Method 200.8/EPA Method 245.7)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	ASV	
11.	ICP/MS Tune	N	
111.	Instrument Calibration	N	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Laboratory Blanks	A	
VI.	Field Blanks	\sim	
VII.	Matrix Spike/Matrix Spike Duplicates	SW	21/22:A1, Fe 74x
VIII.	Duplicate sample analysis	A	,
IX.	Serial Dilution	Ņ	
Χ.	Laboratory control samples	A	USID am
XI.	Field Duplicates	Ν	<i>)</i> •
XII.	Internal Standard (ICP-MS)	N	
XIII.	Sample Result Verification	N	
XIV	Overall Assessment of Data	\square	

Note: A = Acceptable
N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

nsate

FB = Field blank

D = Duplicate TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

Samples appended with "SEM" were analyzed as Simultaneously Extracted Metals

<u> </u>	oles appended with SEM were analyzed as Simultaneously Extracted Metals			
	Client ID	Lab ID	Matrix	Date
1	B18-10023	56514	Sediment	07/16/18
2	B18-10030	56515	Sediment	07/16/18
3	B18-10078	56516	Sediment	07/16/18
4	B18-10079	56517	Sediment	07/16/18
5	B18-10 017	56518	Sediment	07/16/18
6	B18-10080	56519	Sediment	07/17/18
7	B18-10081	56520	Sediment	07/17/18
8	B18-10082	56521	Sediment	07/17/18
9	B18-10083	56522	Sediment	07/17/18
10	B18-10084	56523	Sediment	07/17/18
11	B18-10023(SEM)	56514(SEM)	Sediment	07/16/18
12	B18-10030(SEM)	56515(SEM)	Sediment	07/16/18
13	B18-10078(SEM)	56516(SEM)	Sediment	07/16/18
14	B18-10079(SEM)	56517(SEM)	Sediment	07/16/18
15	B18-10017(SEM)	56518(SEM)	Sediment	07/16/18

LDC #: 45128C4a VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-006

Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: Metals (EPA SW 846 Method 6020/EPA Method 200.8/EPA Method 245.7)

Date: \$1319
Page: Zof Z
Reviewer: 2nd Reviewer:

B18-10080(SEM) B18-10082(SEM) B18-10083(SEM)	56519(SEM) 56520(SEM) 56521(SEM)	Sediment Sediment	07/17/18
B18-10082(SEM)	`		07/17/18
	56521(SEM)	l a	1
R18-10083(SEM)		Sediment	07/17/18
B10-10003(CEW)	56522(SEM)	Sediment	07/17/18
B18-10084(SEM)	56523(SEM)	Sediment	07/17/18
B18-10023MS	56514MS	Sediment	07/16/18
B18-10023MSD	56514MSD	Sediment	07/16/18
B18-10023DUP	56514DUP	Sediment	07/16/18
B18-10023MS(SEM)	56514MS(SEM)	Sediment	07/16/18
B18-10023MSD(SEM)	56514MSD(SEM)	Sediment	07/16/18
B18-10023DUP(SEM)	56514DUP(SEM)	Sediment	07/16/18
	B18-10023MS B18-10023MSD B18-10023DUP B18-10023MS(SEM) B18-10023MSD(SEM)	B18-10023MS 56514MS B18-10023MSD 56514MSD B18-10023DUP 56514DUP B18-10023MS(SEM) 56514MS(SEM) B18-10023MSD(SEM) 56514MSD(SEM)	B18-10023MS 56514MS Sediment B18-10023MSD 56514MSD Sediment B18-10023DUP 56514DUP Sediment B18-10023MS(SEM) 56514MS(SEM) Sediment B18-10023MSD(SEM) 56514MSD(SEM) Sediment

LDC#: 45128CYa

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: 1 of 1
Reviewer: CR
2nd reviewer:

All circled elements are applicable to each sample.

I		
_		
Sample ID	Matrix	Target Analyte List (TAL)
1-()		Al, Sb, As, Ba, Be, Cd) Ca, Cr) Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K Se, Ag, Na, Tl, V Zn Mo, B, Sn, Ti,
(1-,9()		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu) Fe Pb) Mg, Mn, Hg(Ni) K, Se, Ag) Na, Tl, V(Zn) Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
QC:212	3_	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
24-	76	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr. Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA		Al Sh As Ba Be Cd Ca Cr Co Cu Fe Ph Mg Mn Hg Ni K Se Ag Na Tl V Zn Mo B Sn Ti

Comments:	Mercury by CVAA if performed		

LDC #: 45128C4a

VALIDATION FINDINGS WORKSHEET Technical Holding Times

Were samples preserved? Y N N/A All circled dates have exceeded the technical holding time.

METHOD:		METHOD:		Mercury Holding time = 28 days				
Sample ID:	Sampling Date	Analysis Date	Total Time until Analysis (days)	Qualifier Code: 1	Det/ND			
1-5	7/16/18	1/8/19	176	J/R/P	Det			
6-10	7/17/18	1/8/19	175	J/R/P	Det			
<u> </u>								
				,				
			-					

Technical Holding Time Criteria

28 days

All other metals: 180 days - 1 year if frozen

LDC #: 45128C4a

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

	Page:_	<u>_</u> of_	<u></u>
	Reviewer:		
ZHU	i veviewei		

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a matrix spike analyzed for each matrix in this SDG? Y N N/A

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor Y N N/A

of 4 or more, no action was taken.

Were all duplicate sample relative percent differences (RPD) \leq 20% for samples? Y N N/A

LEVEL IV ONLY:

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations. Y N N/A

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualificatio	ns.
	24/25		Ag		66				(LM)
					-				
								Ĺ <u></u>	
L									
L									
L									
		<u> </u>							

Comments:			 _	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

June 4, 2019

Parameters:

Wet Chemistry

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-006

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10023	56514	Sediment	07/16/18
B18-10030	56515	Sediment	07/16/18
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B18-10079	56517	Sediment	07/16/18
B18-10117	56518	Sediment	07/16/18
B18-10080	56519	Sediment	07/17/18
B18-10081	56520	Sediment	07/17/18
B18-10082	56521	Sediment	07/17/18
B18-10083	56522	Sediment	07/17/18
B18-10084	56523	Sediment	07/17/18
B18-10023MS	56514MS	Sediment	07/16/18
B18-10023MSD	56514MSD	Sediment	07/16/18
B18-10023DUP	56514DUP	Sediment	07/16/18
B18-10079DUP	56517DUP	Sediment	07/16/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Acid Volatile Sulfide by Plumb 1981
Ammonia as Nitrogen by Standard Method 4500-NH3-D
Particle Size by Standard Method 2560D
Percent Solids by Standard Method 2540B
Total Nitrogen and Total Organic Carbon by Environmental Protection Agency (EPA) SW 846 Method 9060

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
B18-10023 B18-10030 B18-10078	Acid volatile sulfide Ammonia as N Total nitrogen	172 days 171 days 178 days	14 days 28 days 28 days	J (all detects) J (all detects) J (all detects)	А
B18-10079 B18-10117	Acid volatile sulfide Ammonia as N Total nitrogen	172 days 171 days 179 days	14 days 28 days 28 days	J (all detects) J (all detects) J (all detects)	А
B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Acid volatile sulfide Ammonia as N Total nitrogen	171 days 170 days 178 days	14 days 28 days 28 days	J (all detects) J (all detects) J (all detects)	А

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-006	Analytes reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time and results reported below the RL and above the MDL, data were qualified as estimated in ten samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-006

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Acid volatile sulfide Ammonia as N Total nitrogen	J (all detects) J (all detects) J (all detects)	A	Technical holding times (H)
B18-10023 B18-10030 B18-10078 B18-10079 B18-10117 B18-10080 B18-10081 B18-10082 B18-10083 B18-10084	Analytes reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-006

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-006

No Sample Data Qualified in this SDG

	44.	45128C6
LDC	#.	4012000

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-006

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

MB D METHOD: (Analyte) AVS (Plumb 1981), Ammonia as N (SM45000), Particle Size (SM 2560D), % Solids (SM2540B), Total Nitrogen (EPA SW846 9060), TOC (EPA SW 846 Method 9060)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		; Comments
1.	Sample receipt/Technical holding times	15W	
- 11	Initial calibration	N	
111.	Calibration verification	N	
IV	Laboratory Blanks	A	
V	Field blanks	\mathcal{N}	
VI.	Matrix Spike/Matrix Spike Duplicates	A	
VII.	Duplicate sample analysis	A	
VIII.	Laboratory control samples	A	LCSID CRM
IX.	Field duplicates	\mathcal{N}	
X.	Sample result verification	N	
ΧI	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank

OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10023	56514	Sediment	07/16/18
2	B18-10030	56515	Sediment	07/16/18
3	B18-10078	56516	Sediment	07/16/18
4	B18-10079	56517	Sediment	07/16/18
5	B18-10 01//	56518	Sediment	07/16/18
6	B18-10080	56519	Sediment	07/17/18
7	B18-10081	56520	Sediment	07/17/18
8	B18-10082	56521	Sediment	07/17/18
9	B18-10083	56522	Sediment	07/17/18
10	B18-10084	56523	Sediment	07/17/18
11	B18-10023MS	56514MS	Sediment	07/16/18
12	B18-10023MSD	56514MSD	Sediment	07/16/18
13	B18-10023DUP	56514DUP	Sediment	07/16/18
14	B18-10079DUP	56517DUP	Sediment	07/16/18
15				
16				
17				



VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:_	_1_	of_	_1_	-
Reviewer:_	() R ~	١.	
2nd reviewe	er:	J		

All circled methods are applicable to each sample.

Sample ID	Parameter (Control of the Control of
	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN (PH3)TKN (TOC) Cr6+ CIO4 (AVS) (151/V) (15)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
QC11,12	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
13	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN(TOC)Cr6+ CIO ₄
14	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO, NO, SO, O-PO, Alk CN NH, TKN TOC Cr6+ ClO,

Comments:				

LDC #: 45128C6

VALIDATION FINDINGS WORKSHEET Technical Holding Times

2nd reviewe

All circled dates have exceeded the technical holding time.

Y N N/A Were all samples preserved as applicable to each method?

Y N N/A Were all cooler temperatures within validation criteria?

Method:			Plumb		SM 4500 NH3D		
Parameters	:		AVS			Ammonia as	N
Technical h	olding time:		14 days			28 days	
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier
1-5	7/16/18	1/4/19	172	J/R/A (Det)	1/3/19	171	J/R/A (Det)
6-10	7/17/18	1/4/19	171	J/R/A (Det)	1/3/19	170	J/R/A (Det)

Method:		SM2540B			EPA 9060		
Parameters	Parameters:		Percent solids	.		Total nitroge	n
Technical h	olding time:		180 days	·		28 days	
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier
1-3	7/16/18				1/10/19	178	J/R/A (Det)
4, 5	7/16/18				1/11/19	179	J/R/A (Det)
6-10	7/17/18				1/11/19	178	J/R/A (Det)

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: May 30, 2019

Parameters: Polynuclear Aromatic Hydrocarbons

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-008

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10022	56582	Sediment	07/18/18
B18-10076	56583	Sediment	07/18/18
B18-10077	56584	Sediment	07/18/18
B18-10112	56585	Sediment	07/18/18
B18-10113	56586	Sediment	07/18/18
B18-10024	56587	Sediment	07/19/18
B18-10029	56588	Sediment	07/19/18
B18-10114	56589	Sediment	07/19/18
B18-10115	56590	Sediment	07/19/18
B18-10116	56591	Sediment	07/19/18
B18-20116	56592	Sediment	07/19/18
B18-10031	56593	Sediment	07/20/18
B18-10032	56594	Sediment	07/20/18
B18-10119	56595	Sediment	07/20/18
B18-10121	56596	Sediment	07/20/18
B18-10123	56597	Sediment	07/20/18
B18-10178	56598	Sediment	07/20/18
B18-10076MS	56583MS	Sediment	07/18/18
B18-10076MSD	56583MSD	Sediment	07/18/18
B18-10076DUP	56583DUP	Sediment	07/18/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	Benzo(b)fluoranthene Fluoranthene	194 (50-150) 162 (50-150)	183 (50-150) -	J (all detects) J (all detects)	A
B18-10076MS/MSD (B18-10076)	Naphthalene	43 (50-150)	-	J (all detects)	A

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	Naphthalene	28 (≤25)	J (all detects)	Α

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076DUP	1-Methylnaphthalene	32 (≤25)	J (all detects)	A
(B18-10076)	2-Methylnaphthalene	26 (≤25)	J (all detects)	

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
20904-BS1/BSD (B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-20116 B18-20116 B18-10031 B18-10032)	1-Methylnaphthalene 2-Methylnaphthalene Biphenyl Naphthalene 2,6-Dimethylnaphthalene Acenaphthene	59 (70-130) 61 (70-130) 64 (70-130) 48 (70-130) - -	54 (70-130) 55 (70-130) 60 (70-130) 42 (70-130) 65 (70-130) 67 (70-130)	J (all detects) UJ (all non-detects)	Р
20904-BS1/BSD (B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-20116 B18-20116 B18-10031 B18-10032)	Benzo(a)anthracene Benzo(b)fluoranthene Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene Fluoranthene	171 (70-130) 131 (70-130) 139 (70-130) - -	171 (70-130) 135 (70-130) 144 (70-130) 134 (70-130) 131 (70-130)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56578-BS1/BS2 (B18-10119 B18-10121 B18-10123 B18-10178)	1-Methylnaphthalene 2-Methylnaphthalene Acenaphthene Biphenyl Naphthalene 2,6-Dimethylnaphthalene	59 (70-130) 63 (70-130) 67 (70-130) 64 (70-130) 51 (70-130)	57 (70-130) 60 (70-130) 66 (70-130) 62 (70-130) 49 (70-130) 68 (70-130)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р
56578-BS1/BS2 (B18-10119 B18-10121 B18-10123 B18-10178)	Benzo(a)anthracene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Fluoranthene Indeno(1,2,3-cd)pyrene	196 (70-130) 147 (70-130) 142 (70-130) 131 (70-130) 156 (70-130)	200 (70-130) 148 (70-130) 147 (70-130) - 163 (70-130)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
56580-CRM1 (SRM 1994)	Benzo(k)fluoranthene	41 (60-140)	B18-10119 B18-10121 B18-10123 B18-10178	J (all detects)	А

X. Field Replicates

Samples B18-10116 and B18-20116 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentr		
Compound	B18-10116	B18-20116	RPD
1,6,7-Trimethylnaphthalene	1.27	1.38	8
1-Methylnaphthalene	0.814	0.836	3
1-Methylphenanthrene	1.51	1.32	13
2,6-Dimethylnaphthalene	0.577	0.624	8
2-Methylnaphthalene	1.64	1.70	4
Acenaphthene	0.50U	0.157	Not calculable
Acenaphthylene	0.233	0.331	35

	Concent	ration (ng/g)	
Compound	B18-10116	B18-20116	RPD
Anthracene	0.762	0.767	1
Benzo(a)anthracene	21.8	6.02	113
Benzo(a)pyrene	8.1	3.69	75
Benzo(b)fluoranthene	11.8	5.47	. 73
Benzo(e)pyrene	7.06	3.58	65
Benzo(g,h,i)perylene	4.66	3.77	21
Benzo(k)fluoranthene	8.53	4.3	66
Biphenyl	0.291	0.275	6
Chrysene	7.27	2.52	97
Dibenzo(a,h)anthracene	4.79	3.2	40
Dibenzothiophene	0.324	0.357	10
Fluoranthene	10.4	4.96	71
Fluorene	0.643	0.605	6
Indeno(1,2,3-cd)pyrene	19.4	14.2	31
Naphthalene	2.17	1.91	13
Perylene	1.64	0.766	73
Phenanthrene	4.51	4.29	5
Pyrene	9.84	5.13	63

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-008	Compound reported below the RL and above the MDL	J (all detects)	A

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R and RPD, DUP RPD, LCS/LCSD %R, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in seventeen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-008

Sample	Compound	Flag	A or P	Reason (Code)
B18-10076 Benzo(b)fluoranthene Fluoranthene		J (all detects) J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (HM)
B18-10076	Naphthalene	J (all detects)	Α	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10076	Naphthalene	J (all detects)	А	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10076	1-Methylnaphthalene 2-Methylnaphthalene	J (all detects) J (all detects)	Α	Duplicate sample analysis (RPD) (HD)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116 B18-20116 B18-10031 B18-10032	1-Methylnaphthalene 2-Methylnaphthalene Biphenyl Naphthalene 2,6-Dimethylnaphthalene Acenaphthene	J (all detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116 B18-10031 B18-10032		J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р	Laboratory control samples (%R) (HL)
B18-10119 B18-10121 B18-10123 B18-10178	1-Methylnaphthalene 2-Methylnaphthalene Acenaphthene Biphenyl Naphthalene 2,6-Dimethylnaphthalene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р	Laboratory control samples (%R) (LL)
B18-10119 B18-10121 B18-10123 B18-10178	Benzo(a)anthracene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Fluoranthene Indeno(1,2,3-cd)pyrene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р	Laboratory control samples (%R) (HL)

Sample	Compound	Flag	A or P	Reason (Code)
B18-10119 B18-10121 B18-10123 B18-10178	Benzo(k)fluoranthene	J (all detects)	A	Certified reference material (%R) (LP)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116 B18-20116 B18-10032 B18-10119 B18-10121 B18-10123 B18-10123 B18-10178	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary SDG 1807003-008

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45128D2b

SDG #: 1807003-008

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer 2nd Reviewer

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	XW.	
VIII.	Matrix spike/Matrix spike duplicates	IN/W	
IX.	Laboratory control samples	Www	LCS D. ORM
Χ.	Field duplicates	14	0=10+11
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

A = Acceptable Note:

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank EB = Equipment blank

SB=Source blank OTHER:

				
	Client ID	Lab ID	Matrix	Date
1	B18-10022	56582	Sediment	07/18/18
2	B18-10076	56583	Sediment	07/18/18
3	B18-10077	56584	Sediment	07/18/18
4	B18-10112	56585	Sediment	07/18/18
5	B18-10113	56586	Sediment	07/18/18
6	B18-10024	56587	Sediment	07/19/18
7	B18-10029	56588	Sediment	07/19/18
8	B18-10114	56589	Sediment	07/19/18
9	B18-10115	56590	Sediment	07/19/18
10	B18-10116	56591	Sediment	07/19/18
11	B18-20116	56592	Sediment	07/19/18
12	B18-10031	56593	Sediment	07/20/18
13	B18-10032	56594	Sediment	07/20/18

SDG Labo	DC #: 45128D2b VALIDATION COMPLETENESS WORKSHEET DG #: 1807003-008 Level II aboratory: Physis Environmental Laboratories, Inc. IETHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D)		Date: <u>5/3</u> Page: 2 0 Reviewer: 2nd Reviewer:			
						<u> </u>
14	B18-10119			56595	Sediment	07/20/18
15	B18-10121			 56596	Sediment	07/20/18
16	B18-10123		****	 56597	Sediment	07/20/18
17	B18-10178			56598	Sediment	07/20/18
18	B18-10076MS			56583MS	Sediment	07/18/18
19	B18-10076MSD			56583MSD	Sediment	07/18/18
20	B18-10076DUP			56583DUP	Sediment	07/18/18
21						
22						
23						
Note	es:					
						<u> </u>

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine

LDC #: 4512810-1

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

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2nd Reviewer:_	176

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

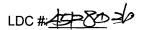
N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

<u>I N/A</u> Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

	VN/A	vveie the Monviou p	ercent recove	eries (76K) and the rei	ative percent differen	ces (RPD) within the t	ZC IIIIIIS?	
#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		18/19	444	194 50-150	183 (50-150)	()	2(dots)	Llots A (HM)
			\ <u>\</u>	162()	()	()		//
Ш			<u> </u>	43 ()	()	()		J/WA (ZM)
$\parallel \perp \mid$			5	()	()	28 (<25)		Jolots A (HD)
\Vdash				()	()	()		
\Vdash		– 40		()	()			111/6/11/20
\vdash		20	TTT	()	()	32 (<25)	= (det=)	Jat A (HD)
$\Vdash +$			N .	()	()	26 (V)		
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

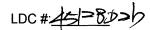
METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

N N/A
Y D N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

	IN/A		1		T T	icco (rti b) within the	T T T T T T T T T T T T T T T T T T T	1
#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		20904-BSV	TIT	59 (70-130)	54 70-130	()	1-13.MB	VMA (24)
		-BS3	W	6 ()	55()	()	(dets+ND)	
			2335	64 () 48 ()	60 ()	()		
			5	48 ()	1 2 - ()	()		
			XXX	()	65 ()	()		
			44	()	67 ()	()		V .
	·		cu	17 ()	171 ()	()	(duts)	WOBA (HA)
			444	13/ ()	135 ()	()		
			71/	139 (V)	144 ()	()		
			tokk	, ()	134 (/)	()		
			YY	()	13/ (/)	()	V	V
				()	()	()		
		56518-351/	777	59 (70-131)	5T (TO-130)	()	H-17. MB	1/1/2(ZZ)
		B52	W	63 ()	60 ()	()	(dets)	/ / '
		/		67 ()	66 ()	()	/	
			EEEE		62()	()		
			5	5 ()	49 ()	()		
			\times	()	68 ()	()		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
			CCC	196 ()	200 ()	()		JOB/P(HL)
			444	H7 ()	H8 ()	()		
			KKK	HZ ()	H7 ()	()		
			λ	13 ()	()	()		
			717	156 (V)	163 (1)	()		
				()	()	()		<u> </u>
<u> </u>			L	()		()		



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

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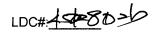
METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		56580-CAU	444	41 60-140	()	()	4-17. MB	1/4/A(27)
		56580-CANI (SRM1994)	1	()	()	()	14-17. MB (dets)	
				()	()	()	/	
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VALIDATION FINDINGS WORKSHEET <u>Field Duplicates</u>

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METHOD: GCMS PAH 8270D

	Concentra	Concentration (ng/g)			
Compound	10	11	RPD		
YYY	1.27	1.38	8		
ттт	0.814	0.836	3		
нннн	1.51	1.32	13		
xxx	0.577	0.624	8		
w	1.64	1.70	4		
GG	0.50U	0.157	NC		
DD	0.233	0.331	35		
W	0.762	0.767	1		
ccc	21.8	6.02	113		
Ш	8.1	3.69	75		
GGG	11.8	5.47	73		
www	7.06	3.58	65		
LLL	4.66	3.77	21		
ннн	8.53	4.3	66		
EEEE	0.291	0.275	6		
DDD	7.27	2.52	97		
ккк	4.79	3.2	40		
АААА	0.324	0.357	10		
YY	10.4	4.96	71		
NN	0.643	0.605	6		
าาา	19.4	14.2	31		
s	2.17	1.91	13		
ZZZ	1.64	0.766	73		
UU	4.51	4.29	5		
ZZ	9.84	5.13	63		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polybrominated Diphenyl Ethers

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-008

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10022	56582	Sediment	07/18/18
B18-10076	56583	Sediment	07/18/18
B18-10077	56584	Sediment	07/18/18
B18-10112	56585	Sediment	07/18/18
B18-10113	56586	Sediment	07/18/18
B18-10024	56587	Sediment	07/19/18
B18-10029	56588	Sediment	07/19/18
B18-10114	56589	Sediment	07/19/18
B18-10115	56590	Sediment	07/19/18
B18-10116	56591	Sediment	07/19/18
B18-20116	56592	Sediment	07/19/18
B18-10031	56593	Sediment	07/20/18
B18-10032	56594	Sediment	07/20/18
B18-10119	56595	Sediment	07/20/18
B18-10121	56596	Sediment	07/20/18
B18-10123	56597	Sediment	07/20/18
B18-10178	56598	Sediment	07/20/18
B18-10076MS	56583MS	Sediment	07/18/18
B18-10076MSD	56583MSD	Sediment	07/18/18
B18-10076DUP	56583DUP	Sediment	07/18/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polybrominated Diphenyl Ethers (PBDE) by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	PBDE 190 PBDE 209 PBDE 183	36 (50-150) 12 (50-150) -	28 (50-150) 7 (50-150) 45 (50-150)	J (all detects) UJ (all non-detects)	А

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	PBDE 209	53 (≤25)	J (all detects)	А

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076DUP (B18-10076)	PBDE 099 PBDE 100 PBDE 153 PBDE 154 PBDE 209	49 (≤25) 35 (≤25) 93 (≤25) 26 (≤25) 36 (≤25)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	А

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
20904-BS1/BS2 (B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116 B18-10031 B18-10032)	PBDE 190 PBDE 209	65 (70-130) 22 (70-130)	- 51 (70-130)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	Р
56578-BS1/BS2 (B18-10119 B18-10121 B18-10123 B18-10178)	PBDE 190 PBDE 209	67 (70-130) 22 (70-130)	61 (70-130) 17 (70-130)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	Р

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

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
20904-BS1/BS2 (B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10031 B18-10032)	PBDE 209	79 (≤30)	J (all detects)	Р
20904-BS1/BS2 (B18-10022 B18-10116 B18-20116)	PBDE 209	79 (≤30)	NA	-

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Replicates

Samples B18-10116 and B18-20116 were identified as field replicates. No results were detected in any of the samples.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-008	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R and RPD, DUP RPD, LCS/LCSD %R and RPD, and results reported below the RL and above the MDL, data were qualified as estimated in seventeen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polybrominated Diphenyl Ethers - Data Qualification Summary - SDG 1807003-008

	T	I		
Sample	Compound	Flag	A or P	Reason (Code)
B18-10076	PBDE 190 PBDE 209 PBDE 183	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10076	PBDE 209	J (all detects)	Α	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10076	PBDE 099 PBDE 100 PBDE 153 PBDE 154 PBDE 209	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10115 B18-10116 B18-20116 B18-20116 B18-10031 B18-10119 B18-10123 B18-10123 B18-10178	PBDE 190 PBDE 209	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10031 B18-10032	PBDE 209	J (all detects)	Р	Laboratory control samples (RPD) (HD)

Sample	Compound	Flag	A or P	Reason (Code)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10115 B18-10116 B18-20116 B18-20116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10121 B18-10123 B18-10178	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Laboratory Blank Data Qualification Summary SDG 1807003-008

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Field Blank Data Qualification Summary - SDG
1807003-008

No Sample Data Qualified in this SDG

LDC #: 45128D2c

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-008

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Page: /of Z Reviewer: 1 2nd Reviewer: 1

METHOD: GC/MS Polybrominated Diphenyl Ethers (EPA SW 846 Method 8270D-NCI)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	MAST	
VIII.	Matrix spike/Matrix spike duplicates	wku	
IX.	Laboratory control samples	AWA.	LCS/D. CRM
X.	Field duplicates	ND	D=10+11
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate

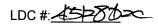
FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

Client ID Lab ID Matrix Date B18-10022 56582 Sediment 07/18/18 B18-10076 56583 Sediment 07/18/18 3 B18-10077 56584 Sediment 07/18/18 B18-10112 56585 Sediment 07/18/18 5 B18-10113 56586 Sediment 07/18/18 6 B18-10024 56587 Sediment 07/19/18 B18-10029 56588 Sediment 07/19/18 8 B18-10114 56589 Sediment 07/19/18 56590 9 B18-10115 Sediment 07/19/18 10 B18-10116 56591 Sediment 07/19/18 11 B18-20116 56592 07/19/18 Sediment 12 B18-10031 56593 Sediment 07/20/18 07/20/18 B18-10032 56594 Sediment

SDG Labo	#:45128D2c	R 2nd R	Date: 4/1/2012 Page: 2012 Page: 2	
14	B18-10119	56595	Sediment	07/20/18
15	B18-10121	56596	Sediment	07/20/18
16	B18-10123	56597	Sediment	07/20/18
17	B18-10178	56598	Sediment	07/20/18
18	B18-10076MS	56583MS	Sediment	07/18/18
19	B18-10076MSD	56583MSD	Sediment	07/18/18
20	B18-10076DUP	56583DUP	Sediment	07/18/18
21				
22				
23				
Note	S:			



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:	(of
Reviewer:_	0,
2nd Reviewer:	124

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

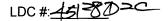
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

	N) N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?							
#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		18/19	FBDE 90	36 (50-150)	28 (50-150)	_ ()	2 (dots+ND)	JAH A(ZM)
Ш			1 209	12 (V)	T (),	()	/	
$\ \cdot \ $			183	()	45 (V)	()		V
\Vdash			PBDE 209	()	()	53 (< 25)		Joets & (HD)
\parallel			_	()	()	()		
\parallel		<i>≥0</i>	DBDE099	()	()	49 (<25)	2 (det3)	Jots A (HO)
H			1 100	()	()	35(1)	2 (ae(5)	TOTAL (HO)
H			1 153	()	()	93()		
			154	()	()	26 ()		7
			1 209	()	()	36(1)		
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	<u>} of </u>
Reviewer:	9
2nd Reviewer:	14

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Y N N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		20904-351/	PBOZMO	65 (70-130)	()	()	1-13. MB	V4X7 (LL)
		1352	1 209		51 TO-13U	()	(dot3+ND)	777
			18DZ-209	()	* ()	79 (530)	(det=2-9,12-13)	Slots/P(HD)
				()	()	()		
				()	()	()		
		56518-BSI/	PBDZ 194	6T (TO-170)	G1 (TO-100)	()	(4-17. MB)	VUV (44)
		-B52	209	22(/)	(V)	()	(dets+ND)	
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Fipronil & Degradates

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-008

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10022	56582	Sediment	07/18/18
B18-10076	56583	Sediment	07/18/18
B18-10077	56584	Sediment	07/18/18
B18-10112	56585	Sediment	07/18/18
B18-10113	56586	Sediment	07/18/18
B18-10024	56587	Sediment	07/19/18
B18-10029	56588	Sediment	07/19/18
B18-10114	56589	Sediment	07/19/18
B18-10115	56590	Sediment	07/19/18
B18-10116	56591	Sediment	07/19/18
B18-20116	56592	Sediment	07/19/18
B18-10031	56593	Sediment	07/20/18
B18-10032	56594	Sediment	07/20/18
B18-10119	56595	Sediment	07/20/18
B18-10121	56596	Sediment	07/20/18
B18-10123	56597	Sediment	07/20/18
B18-10178	56598	Sediment	07/20/18
B18-10076MS	56583MS	Sediment	07/18/18
B18-10076MSD	56583MSD	Sediment	07/18/18
B18-10076DUP	56583DUP	Sediment	07/18/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Fipronil and Degradates by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	Fipronil desulfinyl	156 (50-150)	164 (50-150)	NA	-

Relative percent differences (RPD) were within QC limits.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Replicates

Samples B18-10116 and B18-20116 were identified as field replicates. No results were detected in any of the samples.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-008	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in seventeen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Fipronil & Degradates - Data Qualification Summary - SDG 1807003-008

Sample	Compound	Flag	A or P	Reason (Code)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116 B18-20116 B18-10032 B18-10119 B18-10121 B18-10121	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Fipronil & Degradates - Laboratory Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Fipronil & Degradates - Field Blank Data Qualification Summary - SDG 1807003008

No Sample Data Qualified in this SDG

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L	DC	#:	45128D2d

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-008

Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: GC/MS Fipronil & Degradates (EPA SW 846 Method 8270D-NCI)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	\mathbb{N}	
VII.	Surrogate spikes	\mathcal{N}	
VIII.	Matrix spike/Matrix spike duplicates	W A	
IX.	Laboratory control samples	4	1090
X.	Field duplicates	ND	* D=10+11
XI.	Internal standards	l Ñ	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10022	56582	Sediment	07/18/18
2	B18-10076	56583	Sediment	07/18/18
3	B18-10077	56584	Sediment	07/18/18
4	B18-10112	56585	Sediment	07/18/18
5	B18-10113	56586	Sediment	07/18/18
6	B18-10024	56587	Sediment	07/19/18
7	B18-10029	56588	Sediment	07/19/18
8	B18-10114	56589	Sediment	07/19/18
9	B18-10115	56590	Sediment	07/19/18
10 յ	B18-10116	56591	Sediment	07/19/18
11	B18-20116	56592	Sediment	07/19/18
12	B18-10031	56593	Sediment	07/20/18
13	B18-10032	56594	Sediment	07/20/18

LDC #: 45128D2d	VALIDATION COMPLETENESS WORKSHEET
SDG #: 1807003-008	Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: GC/MS Fipronil & Degradates (EPA SW 846 Method 8270D-NCI)

	Client ID	Lab ID	Matrix	Date
14	B18-10119	56595	Sediment	07/20/18
15	B18-10121	56596	Sediment	07/20/18
16	B18-10123	56597	Sediment	07/20/18
17	B18-10178	56598	Sediment	07/20/18
18	B18-10076MS	56583MS	Sediment	07/18/18
19	B18-10076MSD	56583MSD	Sediment	07/18/18
20	B18-10076DUP	56583DUP	Sediment	07/18/18
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LDC #:45128102d

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	/_of/_
Reviewer:	Q-
2nd Reviewer:	11/6

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Was a MS/MSD analyzed every 20 samples of each matrix?

Y (N)N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		18/19	*	156 (50-150)	164 (50-150)	()	2(ND)	Usts/A(HM)
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Synthetic Pyrethroid Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-008

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10022	56582	Sediment	07/18/18
B18-10076	56583	Sediment	07/18/18
B18-10077	56584	Sediment	07/18/18
B18-10112	56585	Sediment	07/18/18
B18-10113	56586	Sediment	07/18/18
B18-10024	56587	Sediment	07/19/18
B18-10029	56588	Sediment	07/19/18
B18-10114	56589	Sediment	07/19/18
B18-10115	56590	Sediment	07/19/18
B18-10116	56591	Sediment	07/19/18
B18-20116	56592	Sediment	07/19/18
B18-10031	56593	Sediment	07/20/18
B18-10032	56594	Sediment	07/20/18
B18-10119	56595	Sediment	07/20/18
B18-10121	56596	Sediment	07/20/18
B18-10123	56597	Sediment	07/20/18
B18-10178	56598	Sediment	07/20/18
B18-10076MS	56583MS	Sediment	07/18/18
B18-10076MSD	56583MSD	Sediment	07/18/18
B18-10076DUP	56583DUP	Sediment	07/18/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Synthetic Pyrethroid Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D-MRM

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	Cyhalothrin, total lambda	169 (50-150)	165 (50-150)	NA	-
B18-10076MS/MSD (B18-10076)	Deltamethrin/Tralomethrin Prallethrin	37 (50-150) 38 (50-150)	44 (50-150) 38 (50-150)	UJ (all non-detects) UJ (all non-detects)	А

Relative percent differences (RPD) were within QC limits.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076DUP (B18-10076)	Danitol (Fenpropathrin)	26 (≤25)	J (all detects)	А

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Replicates

Samples B18-10116 and B18-20116 were identified as field replicates. No results were detected in any of the samples.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-008	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R, DUP RPD, and results reported below the RL and above the MDL, data were qualified as estimated in seventeen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Synthetic Pyrethroid Pesticides - Data Qualification Summary - SDG 1807003-008

Sample	Compound	Flag	A or P	Reason (Code)
B18-10076	Deltamethrin/Tralomethrin Prallethrin	UJ (all non-detects) UJ (all non-detects)	Α	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10076	Danitol (Fenpropathrin)	J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10115 B18-10116 B18-20116 B18-20116 B18-10032 B18-10119 B18-10121 B18-10123 B18-10123 B18-10178	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Laboratory Blank Data Qualification Summary SDG 1807003-008

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Field Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

LDC #: 45128D2e

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-008

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: GC/MS Synthetic Pyrethroid Pesticides (EPA SW 846 Method 8270D-MRM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1	Sample receipt/Technical holding times	1	
11.	GC/MS Instrument performance check	, N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	N.	
VIII.	Matrix spike/Matrix spike duplicates	W/W	
IX.	Laboratory control samples	A	205/8
Χ.	Field duplicates	112	→=10+11
XI.	Internal standards		
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

Client ID Date Matrix Lab ID B18-10022 56582 Sediment 07/18/18 2 B18-10076 56583 Sediment 07/18/18 3 B18-10077 56584 Sediment 07/18/18 4 B18-10112 56585 Sediment 07/18/18 B18-10113 56586 Sediment 07/18/18 6 B18-10024 56587 Sediment 07/19/18 7 B18-10029 56588 Sediment 07/19/18 B18-10114 56589 Sediment 07/19/18 9 B18-10115 56590 07/19/18 Sediment 10 B18-10116 56591 Sediment 07/19/18 11 B18-20116 56592 Sediment 07/19/18 07/20/18 B18-10031 56593 Sediment B18-10032 56594 07/20/18 Sediment

SDG Labo	#:45128D2e	el II		Date: 5 Page: 2 of 2 Page: 2 of
	Client ID	Matrix	Date	
14	B18-10119	56595	Sediment	07/20/18
15	B18-10121	56596	Sediment	07/20/18
16	B18-10123	56597	Sediment	07/20/18
17	B18-10178	56598	Sediment	07/20/18
18	B18-10076MS	56583MS	Sediment	07/18/18
19	B18-10076MSD	56583MSD	Sediment	07/18/18
20	B18-10076DUP	56583DUP	Sediment	07/18/18
21				
22				
23				
Moto	•			

VALIDATION FINDINGS WORKSHEET

METHOD: Pyrethroids

WETHOD: Pyreunolas		
A. Allethrin		
B. Bifenthrin		
C. Cyfluthrin		
D. Cyhalothrin, Total Lambda		
E. Cypermethrin		
F. Danitol (Fenpropathrin)		
G. Deltamethrin/Tralomethrin		
H. Esfenvalerate		
I. Fluvalinate		
J. Permethrin, cis-		
K. Permethrin, trans-		
L. Prallethrin		
		-

LDC #: 451-8)2e

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	_{of/_
Reviewer:	7
2nd Reviewer:	No

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

# Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	12/19	→ -	169 (50-150)		()	2(ND)	IlotsA(HM)
		4	37 (1)	44 (1)	()		JWA (ZM)
		7	38 (/)	38 (V)	()		1/1/
			()	()	()		
			()	()	()		
	20	F	()	()	26 (575)	2 (dets)	State (HD)
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 30, 2019

Parameters:

Chlorinated Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-008

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10022	56582	Sediment	07/18/18
B18-10076	56583	Sediment	07/18/18
B18-10077	56584	Sediment	07/18/18
B18-10112	56585	Sediment	07/18/18
B18-10113	56586	Sediment	07/18/18
B18-10024	56587	Sediment	07/19/18
B18-10029	56588	Sediment	07/19/18
B18-10114	56589	Sediment	07/19/18
B18-10115	56590	Sediment	07/19/18
B18-10116	56591	Sediment	07/19/18
B18-20116	56592	Sediment	07/19/18
B18-10031	56593	Sediment	07/20/18
B18-10032	56594	Sediment	07/20/18
B18-10119	56595	Sediment	07/20/18
B18-10121	56596	Sediment	07/20/18
B18-10123	56597	Sediment	07/20/18
B18-10178	56598	Sediment	07/20/18
B18-10076MS	56583MS	Sediment	07/18/18
B18-10076MSD	56583MSD	Sediment	07/18/18
B18-10076DUP	56583DUP	Sediment	07/18/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D/8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	Endosulfan I Endosulfan II Endrin aldehyde	19 (50-150) 23 (50-150) 11 (50-150)	16 (50-150) 20 (50-150) 8 (50-150)	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A
B18-10076MS/MSD (B18-10076)	Methoxychlor Perthane	157 (50-150) 154 (50-150)	160 (50-150) 152 (50-150)	NA	-

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	Endrin aldehyde	32 (≤25)	NA	-

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
20904-BS1/BS2 (B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116 B18-10031 B18-10032)	Endosulfan I	3 (70-130)	3 (70-130)	R (all non-detects)	Р
20904-BS1/BS2 (B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116 B18-10031 B18-10032)	Endosulfan II Endrin aldehyde	21 (70-130) 10 (70-130)	22 (70-130) 29 (70-130)	UJ (all non-detects) UJ (all non-detects)	Р

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
20904-BS1/BS2 (B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-20116 B18-20116 B18-10031 B18-10032)	Methoxychlor Perthane	142 (70-130) 131 (70-130)	144 (70-130) 135 (70-130)	NA	-
56578-BS1 (B18-10119 B18-10121 B18-10123 B18-10178)	Endosulfan I	2 (70-130)	2 (70-130)	R (all non-detects)	Р
56578-BS1 (B18-10119 B18-10121 B18-10123 B18-10178)	Endosulfan II Endrin aldehyde alpha-Chlordane cis-Nonachlor	15 (70-130) 10 (70-130) - -	15 (70-130) 30 (70-130) 68 (70-130) 68 (70-130)	J (all detects) UJ (all non-detects)	Р
56578-BS1 (B18-10119 B18-10121 B18-10123 B18-10178)	Methoxychlor Perthane	153 (70-130) 136 (70-130)	159 (70-130) 135 (70-130)	NA	-

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

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
56578-BS1 (B18-10119 B18-10121 B18-10123 B18-10178)	Endrin aldehyde	100 (≤30)	NA	-

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Replicates

Samples B18-10116 and B18-20116 were identified as field replicates. No results were detected in any of the samples.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-008	Compound reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to LCS/LCSD %R, data were rejected in seventeen samples.

Due to MS/MSD %R, LCS/LCSD %R, and results reported below the RL and above the MDL, data were qualified as estimated in seventeen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Data Qualification Summary - SDG 1807003-008

Sample	Compound	Flag	A or P	Reason (Code)
B18-10076	Endosulfan II Endrin aldehyde	UJ (all non-detects) UJ (all non-detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10115 B18-10116 B18-20116 B18-20116 B18-10032 B18-10119 B18-10121 B18-10123 B18-10123 B18-10178	Endosulfan I	R (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-20116 B18-20116 B18-10031 B18-10032	Endosulfan II Endrin aldehyde	UJ (all non-detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10119 B18-10121 B18-10123 B18-10178	Endosulfan II Endrin aldehyde alpha-Chlordane cis-Nonachlor	J (all detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116 B18-20116 B18-10032 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

LDC #: 45128D3a

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-008

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: GC/MS Chlorinated Pesticides (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V	Laboratory Blanks	A	
VI.	Field blanks	\sim	
VII.	Surrogate spikes	ASSET	
VIII.	Matrix spike/Matrix spike duplicates / DUF	WA	
IX.	Laboratory control samples	WA	LCS D. AM
Χ.	Field duplicates	NO	D=10+11
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank

OTHER:

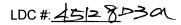
	Client ID	Lab ID	Matrix	Date
11	B18-10022	56582	Sediment	07/18/18
2	B18-10076	56583	Sediment	07/18/18
3	B18-10077	56584	Sediment	07/18/18
41	B18-10112	56585	Sediment	07/18/18
5	B18-10113	56586	Sediment	07/18/18
6	B18-10024	56587	Sediment	07/19/18
7 1	B18-10029	56588	Sediment	07/19/18
8	B18-10114	56589	Sediment	07/19/18
9	B18-10115	56590	Sediment	07/19/18
10	B18-10116	56591	Sediment	07/19/18
11	B18-20116	56592	Sediment	07/19/18
12	B18-10031	56593	Sediment	07/20/18
13	B18-10032	56594	Sediment	07/20/18

LDC #: 45128D3a VALIDATION COMPLETENESS WORKSHEET							Date: <u>37-9</u> 9 Page: <u>2</u> 0f 2 Reviewer:		
	SDG #: 1807003-008 Level II							Page: 20f2	
	aboratory: Physis Environmental Laboratories, Inc. IETHOD: GC/MS Chlorinated Pesticides (EPA SW 846 Method 8270D)							eviewer:] eviewer:	
IVICI	nob. GC/MS Chlorinate	u re	Sticides (EFA 3VV 646 IVIETIO	u o.					
142	B18-10119				56595	5	Sediment	07/20/18	
15	B18-10121				56596	s	Sediment	07/20/18	
16	B18-10123				56597	8	Sediment	07/20/18	
17	B18-10178				56598	56598 Sedim		07/20/18	
18	B18-10076MS				56583MS	s	Sediment	07/18/18	
19	B18-10076MSD		***************************************		56583MSD	s	Sediment	07/18/18	
20	B18-10076DUP				56583DUP	s	Sediment	07/18/18	
21									
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23		·							
Note:	3:			 -			 		
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VALIDATION FINDINGS WORKSHEET

METHOD: Pesticides

A. alpha-HCH	K. Endrin	U. Toxaphene	EE. 2,4'-DDT	OO. oxy-Chlordane
B. beta-HCH	L. Endosulfan II	V. Aroclor-1016	FF. Hexachlorobenzene	PP. cis-Nonachlor
C. delta-HCH	M. 4,4'-DDD	W. Arodor-1221	GG. Chlordane	QQ. trans-Nonachlor
D. gamma-HCH	N. Endosulfan sulfate	X. Aroclor-1232	HH. Chlordane (Technical)	RR. cis-Chlordane
E. Heptachlor	O. 4,4'-DDT	Y. Aroclor-1242	II. p,p'-DDE	SS. trans-Chlordane
F. Aldrin	P. Methoxychlor	Z. Aroclor-1248	JJ. p,p'-DDD	TT. alpha-Endosulphan
G. Heptachlor epoxide	Q. Endrin ketone	AA. Aroclor-1254	KK. p,p'-DDT	UU. beta-Endosulphan
H. Endosulfan I	R. Endrin aldehyde	BB. Aroclor-1260	LL. o,p'-DDT	VV. Endosulphan Sulphate
I. Dieldrin	S. alpha-Chlordane	CC. 2,4'-DDD	MM. o,p'-DDE	WW. Mirex
J. 4,4'-DDE	T. gamma-Chlordane	DD. 2,4'-DDE	NN. o,p'-DDD	



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	of
Reviewer:_	D
2nd Reviewer:_	ďл

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

	<u> </u>		I	MS	MSD			
#	Date	MS/MSD ID	Compound	%R (Limits)	%R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		18/19	+	19 50-150	16 (50-150)	()	2 (ND)	JMA(M)
			7	≥3 ()	20(1)	()		
			R	1 ()	8 ()	()		V
			Þ	157 (/)	160 ()	()		Llets/A(HM)
		<u>P</u>	erthane	154(V)	152(1)	_()		V/
			P	()	()	32 (≤>≤)		Vots/A(HO)
\vdash				()	()	()		/
\Vdash				()	()	()		
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

		Were the LC3/LC3D p	T	renes (7011) and	uic i	native perce	nt dinere	ices (IVI D)	WILLIIII LIIC	QU IIIIIIG:		
#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)		LCSD %R (Limits)		RPD (Limits)		Associated Samples	Qualifications	
		20904-BSV	++	3 70-1	3	3 7	0-130	()	1-13. MB (NO)	JA/7 (24)	
		-852	7	2/ ())	22 ()	()		1/WA	
			R	10 ()	29 ()	()		/ / /	
			P	H2 ()	144 ()	()		Votes A (HL)	
			terthan	e 131 (V)	135 (- √)	()			
-				()	()	()			
		565T8-BSI	H	2 70-1	<i>30</i>		0-130	()	14-17. MB(NO)	1/7/P (24)	
			レスト	15)	15)	()	(dets+ND)	VINT /	
				10		30 (()		V	
			Þ	153 ()	159)	()	(ND)	Lets (H2)	
		Pe	rthane	136)	135)	()	<u> </u>		
				()	<i>b8</i> ()	()		Jun P (LL)	
L		×		()	68 ()	()		1	
		,	<u> </u>	()	()	100 (<u> </u>	(NO)	Jacks & (HD)	
				()	()	()		/ ` `	
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: May 30, 2019

Parameters: Polychlorinated Biphenyls as Congeners

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-008

	Laboratory Sample		Collection	
Sample Identification	Identification	Matrix	Date	
B18-10022	56582	Sediment	07/18/18	
B18-10076	56583	Sediment	07/18/18	
B18-10077	56584	Sediment	07/18/18	
B18-10112	56585	Sediment	07/18/18	
B18-10113	56586	Sediment	07/18/18	
B18-10024	56587	Sediment	07/19/18	
B18-10029	56588	Sediment	07/19/18	
B18-10114	56589	Sediment	07/19/18	
B18-10115	56590	Sediment	07/19/18	
B18-10116	56591	Sediment	07/19/18	
B18-20116	56592	Sediment	07/19/18	
B18-10031	56593	Sediment	07/20/18	
B18-10032	56594	Sediment	07/20/18	
B18-10119	56595	Sediment	07/20/18	
B18-10121	56596	Sediment	07/20/18	
B18-10123	56597	Sediment	07/20/18	
B18-10178	56598	Sediment	07/20/18	
B18-10076MS	56583MS	Sediment	07/18/18	
B18-10076MSD	56583MSD	Sediment	07/18/18	
B18-10076DUP	56583DUP	Sediment	07/18/18	

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) as Congeners by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	PCB-049	28 (≤25)	J (all detects)	А

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076DUP (B18-10076)	PCB-031	26 (≤25)	J (all detects)	A

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56578-BS1/BS2 (B18-10119 B18-10121 B18-10123 B18-10178)	PCB-169 PCB-189 PCB-194 PCB-195	142 (70-130) 136 (70-130) 144 (70-130) -	169 (70-130) 151 (70-130) 149 (70-130) 132 (70-130)	NA	-
56578-BS1/BS2 (B18-10119 B18-10123)	PCB-206 PCB-209	144 (70-130) -	144 (70-130) 133 (70-130)	J (all detects) J (all detects)	А
56578-BS1/BS2 (B18-10121 B18-10178)	PCB-206 PCB-209	144 (70-130) -	144 (70-130) 133 (70-130)	NA	-

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
20905-CRM1	PCB-105 PCB-118 PCB-128 PCB-156	40 (60-140) 53 (60-140) 40 (60-140) 40 (60-140)	B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116 B18-10031 B18-10032	J (all detects) UJ (all non-detects)	А
56580-CRM1	PCB-128 PCB-156	36 (60-140) 39 (60-140)	B18-10119 B18-10121 B18-10123 B18-10178	J (all detects) UJ (all non-detects)	А

X. Field Replicates

Samples B18-10116 and B18-20116 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentr			
Compound	B18-10116	B18-20116	RPD	
PCB-101	0.126	0.127	1	
PCB-153	0.135	0.204	41	
PCB-138	0.2U	0.224	Not calculable	
PCB-149	0.2U	0.0987	Not calculable	
PCB-206	0.25U	0.329	Not calculable	
PCB-209	0.25U	1.05	Not calculable	

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-008	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD and DUP RPD, LCS/LCSD and CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in seventeen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG 1807003-008

Sample	Compound	Flag	A or P	Reason (Code)
B18-10076	PCB-049	J (all detects)	А	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10076	PCB-031	J (all detects)	Α	Duplicate sample analysis (RPD) (HD)
B18-10119 B18-10123	PCB-206 PCB-209	J (all detects) J (all detects)	A	Laboratory control samples (%R) (HL)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116 B18-20116 B18-10031 B18-10032	PCB-105 PCB-118 PCB-128 PCB-156	J (all detects) UJ (all non-detects)	A	Certified reference material (%R) (LP)
B18-10119 B18-10121 B18-10123 B18-10178	PCB-128 PCB-156	J (all detects) UJ (all non-detects)	А	Certified reference material (%R) (LP)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116 B18-20116 B18-10032 B18-10119 B18-10121 B18-10123 B18-10123 B18-10178	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification
Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Field Blank Data Qualification
Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45128D3b

SDG #: 1807003-008

Level II

Laboratory: Physis Environmental Laboratories, Inc.



METHOD: GC/MS PCB as Congeners (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	\Rightarrow	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	WW	
iX.	Laboratory control samples	wkow	105 D. ERM
X.	Field duplicates	N	
XI.	Internal standards	N	D=10+11
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

A = Acceptable Note:

N = Not provided/applicable SW = See worksheet

ND = No compounds detected R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10022	56582	Sediment	07/18/18
2	B18-10076	56583	Sediment	07/18/18
3	B18-10077	56584	Sediment	07/18/18
4	B18-10112	56585	Sediment	07/18/18
5	B18-10113	56586	Sediment	07/18/18
6	B18-10024	56587	Sediment	07/19/18
7	B18-10029	56588	Sediment	07/19/18
8	B18-10114	56589	Sediment	07/19/18
9	B18-10115	56590	Sediment	07/19/18
10	B18-10116	56591	Sediment	07/19/18
11	B18-20116	56592	Sediment	07/19/18
12	B18-10031	56593	Sediment	07/20/18
13	B18-10032	56594	Sediment	07/20/18

SDG Labo	#:45128D3bVALIDATION COMPLETEN #:1807003-008Level II pratory: Physis Environmental Laboratories, Inc. THOD: GC/MS PCB as Congeners (EPA SW 846 Method 827)	F	Date: 69 49 Page: 1012 Reviewer: 1002	
	D49 40440	50505	Sediment	07/20/18
15	B18-10119 B18-10121	56595 56596	Sediment	07/20/18
16	B18-10123	56597	Sediment	07/20/18
17	B18-10178	56598	Sediment	07/20/18
18	B18-10076MS	56583MS	Sediment	07/18/18
19	B18-10076MSD	56583MSD	Sediment	07/18/18
20	B18-10076DUP	56583DUP	Sediment	07/18/18
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22				
22 23				
Note	S:		,	



VALIDATION FINDINGS WORKSHEET <u>Matrix Spike/Matrix Spike Duplicates</u>

Page:_	of
Reviewer:	<u> </u>
2nd Reviewer:	W6

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

☑ N N/A

Was a MS/MSD analyzed every 20 samples of each matrix?

Y/N)N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

# Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	13/9	\$CB049	()	()	28 (=25)	2 (dets)	Ilots/A (HD)
	/ `		()	()	()		
			()	(()		
			()	(()		
	20	FCB03)	()	(26 (525)	2 (dets)	Llots/A (HD)
			()	()	()		
			()	(()	<u> </u>	
			()	(()		
			()	(()		
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			()	(()	<u> </u>	<u> </u>
			()	(()		
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _____of_/_ Reviewer: ______ 2nd Reviewer: ______

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Y/N)N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		2090A-BSI/		()	()	()		
		2532		()	()	()		
				()	()	()		
		20905-CAM	1 PCB 105	40 (60-140)	()	()	1-13. MB	1/H/A(ZP)
		20905-CAN (SRM 1944)	1 118	53 ()	()	()	1-13. MP (dots+NS)	
			128	40()	()	()		,
			156	40(1)	()	()		V
				()	()	()		
		565T8-BS1/	+CB169	142 (10-130)	169 (70-130)		14-17. MB	J235(HZ)
			1 189	136 ()	15/(1)	()	(ND)	
			194	144 ()	H9()	()		
			V 206	144 (V)	144 ()	()	(Alek=14,16)	
			195	()	132()	()	(det (ND)	
			V 209	()	133 ()	()	1dots=14,16)	V
				()	()	()	<u>'</u>	
		56580-07M1 (SRM 1944)	7031-8	36 60-140)	()	()	14-17. MB (dot3+ND)	1/W/A(2)
		(SRM 1944)	156	39 (1)	()	()	(dot3+ND)	
				/ ()	()	()		
				()	()	()		
	·			()	()	()		
				()	()	()		
				()	()	()		
				()	()	()		
				()	()	()		
				()	()	()		

LDC #: 45128D3b

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page: 1 of 1
Reviewer: 1
2nd reviewer: 1

METHOD: GC/MS PCB (EPA SW 846 Method 8270D)

Commonad	Concentra	200	
Compound	10	11	₹ RPD
PCB101	0.126	0.127	1
PCB153	0.135	0.204	41
PCB138	0.2U	0.224	NC
PCB149	0.2U	0.0987	NC
PCB206	0.25U	0.329	NC
PCB209	.025U	1.05	NC

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: June 4, 2019

Parameters: Metals

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-008

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10022	56582	Sediment	07/18/18
B18-10076	56583	Sediment	07/18/18
B18-10077	56584	Sediment	07/18/18
B18-10112	56585	Sediment	07/18/18
B18-10113	56586	Sediment	07/18/18
B18-10024	56587	Sediment	07/19/18
B18-10029	56588	Sediment	07/19/18
B18-10114	56589	Sediment	07/19/18
B18-10115	56590	Sediment	07/19/18
B18-10116	56591	Sediment	07/19/18
B18-20116	56592	Sediment	07/19/18
B18-10031	56593	Sediment	07/20/18
B18-10032	56594	Sediment	07/20/18
B18-10119	56595	Sediment	07/20/18
B18-10121	56596	Sediment	07/20/18
B18-10123	56597	Sediment	07/20/18
B18-10178	56598	Sediment	07/20/18
B18-10022(SEM)	56582(SEM)	Sediment	07/18/18
B18-10076(SEM)	56583(SEM)	Sediment	07/18/18
B18-10077(SEM)	56584(SEM)	Sediment	07/18/18
B18-10112(SEM)	56585(SEM)	Sediment	07/18/18
B18-10113(SEM)	56586(SEM)	Sediment	07/18/18
B18-10024(SEM)	56587(SEM)	Sediment	07/19/18
B18-10029(SEM)	56588(SEM)	Sediment	07/19/18
B18-10114(SEM)	56589(SEM)	Sediment	07/19/18
B18-10115(SEM)	56590(SEM)	Sediment	07/19/18
B18-10116(SEM)	56591(SEM)	Sediment	07/19/18

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-20116(SEM)	56592(SEM)	Sediment	07/19/18
B18-10031(SEM)	56593(SEM)	Sediment	07/20/18
B18-10032(SEM)	56594(SEM)	Sediment	07/20/18
B18-10119(SEM)	56595(SEM)	Sediment	07/20/18
B18-10121(SEM)	56596(SEM)	Sediment	07/20/18
B18-10123(SEM)	56597(SEM)	Sediment	07/20/18
B18-10178(SEM)	56598(SEM)	Sediment	07/20/18
B18-10076MS	56583MS	Sediment	07/18/18
B18-10076MSD	56583MSD	Sediment	07/18/18
B18-10076DUP	56583DUP	Sediment	07/18/18
B18-20116MS	56592MS	Sediment	07/19/18
B18-20116MSD	56592MSD	Sediment	07/19/18
B18-20116DUP	56592DUP	Sediment	07/19/18
B18-10076MS(SEM)	56583MS(SEM)	Sediment	07/18/18
B18-10076MSD(SEM)	56583MSD(SEM)	Sediment	07/18/18
B18-10076DUP(SEM)	56583DUP(SEM)	Sediment	07/18/18
B18-20116MS(SEM)	56592MS(SEM)	Sediment	07/19/18
B18-20116MSD(SEM)	56592MSD(SEM)	Sediment	07/19/18
B18-20116DUP(SEM)	56592DUP(SEM)	Sediment	07/19/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Iron, Lead, Nickel, Phosphorus, Selenium, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113	Mercury	177	28	J (all detects)	Р
B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116	Mercury	176	28	J (all detects)	Р
B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178	Mercury	175	28	J (all detects)	Р

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10115	Mercury	-	138 (75-125)	J (all detects)	A

For B18-10076MS/MSD and B18-20116MS/MSD, no data were qualified for aluminum and iron percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

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

Spike ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116)	Aluminum Iron	29 (≤25) 67 (≤25)	J (all detects) J (all detects)	Α

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits with the following exceptions:

CRM ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
56579-CRM1	Aluminum	151 (42-124)	B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116	J (all detects)	А
60150-CRM1	Aluminum	127 (42-124)	B18-20116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178	J (all detects)	А

XI. Field Duplicates

Samples B18-10116 and B18-20116 and samples B18-10116(SEM) and B18-20116(SEM) were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concentr		
Analyte	B18-10116	B18-20116	RPD
Aluminum	4330	5990	32
Antimony	0.132	0.16	19
Arsenic	4.16	5	18
Barium	9.67	16.7	53
Beryllium	0.0925	0.137	39
Cadmium	0.0295	0.0352	18

	Concentr		
Analyte	B18-10116	B18-20116	RPD
Chromium	8.67	9.66	11
Copper	10.2	14.6	35
Iron	8500	8790	3
Lead	6.82	8.4	21
Mercury	0.0236	0.0425	57
Nickel	1.94	2.58	28
Phosphorus	176	234	28
Selenium	0.097	0.108	11
Silver	0.0938	0.0808	15
Zinc	33.9	45.8	30

	Concentra		
Analyte	B18-10116(SEM)	B18-20116(SEM)	RPD
Copper	0.0894	0.0989	10
Lead	0.0148	0.0219	39
Nickel	0.00363	0.00526	37
Zinc	0.238	0.371	44

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-008	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, MS/MSD %R and RPD, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in thirty-four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-008

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10116 B18-20116 B18-20116 B18-10032 B18-10119 B18-10123 B18-10123 B18-10123 B18-10123	Mercury	J (all detects)	Р	Technical holding times (H)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116	Mercury	J (all detects)	Α	Matrix spike/Matrix spike duplicate (%R) (HM)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116	Aluminum Iron	J (all detects) J (all detects)	Α	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116 B18-20116 B18-20116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10123 B18-10178	Aluminum	J (all detects)	Α	Certified reference material (%R) (HP)

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116 B18-10031 B18-10032 B18-10121 B18-10123 B18-10123 B18-10178 B18-10022(SEM) B18-1013(SEM) B18-10113(SEM) B18-10113(SEM) B18-10116(SEM) B18-10116(SEM) B18-10116(SEM) B18-10115(SEM) B18-10116(SEM) B18-10115(SEM) B18-10116(SEM) B18-10116(SEM) B18-10032(SEM) B18-10031(SEM) B18-10031(SEM) B18-10119(SEM) B18-10119(SEM) B18-10119(SEM) B18-10119(SEM) B18-10123(SEM) B18-10123(SEM) B18-10123(SEM) B18-10123(SEM) B18-10123(SEM) B18-10123(SEM) B18-10178(SEM)	Analyte reported below the RL and above the MDL	J (all detects)	A	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET

LDC #: 45128D4a SDG #: 1807003-008

Level II

Laboratory: Physis Environmental Laboratories, Inc.

2nd Reviewer

METHOD: Metals (EPA SW 846 Method 6020/EPA Method 200.8/EPA Method 245.7)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	ASW	
II.	ICP/MS Tune	N	
III.	Instrument Calibration	N	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Laboratory Blanks	A	
VI.	Field Blanks	N	
VII.	Matrix Spike/Matrix Spike Duplicates	SW	25/26:A1, FC
VIII.	Duplicate sample analysis	A	
IX.	Serial Dilution	\mathcal{N}	
X.	Laboratory control samples		LSID, 9RM
XI.	Field Duplicates	$\mathbb{R}_{\mathcal{M}}$	$(10,11)^{3}(27.7.8)$
XII.	Internal Standard (ICP-MS)	N Z	J , 100 ,
XIII.	Sample Result Verification	۸N	
XIV	Overall Assessment of Data	A	

Note:

A = Acceptable N = Not provided/applicable ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

SW = See worksheet Samples appended with "SEM" were analyzed as Simultaneously Extracted Metals

	Client ID	Lab ID	Matrix	Date
1	B18-10022	56582	Sediment	07/18/18
2	B18-10076	56583	Sediment	07/18/18
3	B18-10077	56584	Sediment	07/18/18
4	B18-10112	56585	Sediment	07/18/18
5	B18-10113	56586	Sediment	07/18/18
6	B18-10024	56587	Sediment	07/19/18
7	B18-10029	56588	Sediment	07/19/18
8	B18-10114	56589	Sediment	07/19/18
9	B18-10115	56590	Sediment	07/19/18
10	B18-10116	56591	Sediment	07/19/18
11	B18-20116	56592	Sediment	07/19/18
12	B18-10031	56593	Sediment	07/20/18
13	B18-10032	56594	Sediment	07/20/18
14	B18-10119	56595	Sediment	07/20/18
15	B18-10121	56596	Sediment	07/20/18

LDC #: 45128D4a

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-008

Level II

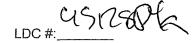
Laboratory: Physis Environmental Laboratories, Inc.

Page: Page:

METHOD: Metals (EPA SW 846 Method 6020/EPA Method 200.8/EPA Method 245.7)

16	B18-10123	56597	Sediment	07/20/18
17	B18-10178	56598	Sediment	07/20/18
18	B18-10022(SEM)	56582(SEM)	Sediment	07/18/18
19	B18-10076(SEM)	56583(SEM)	Sediment	07/18/18
20	B18-10077(SEM)	56584(SEM)	Sediment	07/18/18
21	B18-10112(SEM)	56585(SEM)	Sediment	07/18/18
22	B18-10113(SEM)	56586(SEM)	Sediment	07/18/18
23	B18-10024(SEM)	56587(SEM)	Sediment	07/19/18
24	B18-10029(SEM)	56588(SEM)	Sediment	07/19/18
25	B18-10114(SEM)	56589(SEM)	Sediment	07/19/18
26	B18-10115(SEM)	56590(SEM)	Sediment	07/19/18
27	B18-10116(SEM)	56591(SEM)	Sediment	07/19/18
28	B18-20116(SEM)	56592(SEM)	Sediment	07/19/18
29	B18-10031(SEM)	56593(SEM)	Sediment	07/20/18
30	B18-10032(SEM)	56594(SEM)	Sediment	07/20/18
31	B18-10119(SEM)	56595(SEM)	Sediment	07/20/18
32	B18-10121(SEM)	56596(SEM)	Sediment	07/20/18
33	B18-10123(SEM)	56597(SEM)	Sediment	07/20/18
34	B18-10178(SEM)	56598(SEM)	Sediment	07/20/18
35	B18-10076MS	56583MS	Sediment	07/18/18
36	B18-10076MSD	56583MSD	Sediment	07/18/18
37	B18-10076DUP	56583DUP	Sediment	07/18/18
38	B18-20116MS	56592MS	Sediment	07/19/18
39	B18-20116MSD	56592MSD	Sediment	07/19/18
40	B18-20116DUP	56592DUP	Sediment	07/19/18
41	B18-10076MS(SEM)	56583MS(SEM)	Sediment	07/18/18
42	B18-10076MSD(SEM)	56583MSD(SEM)	Sediment	07/18/18
43	B18-10076DUP(SEM)	56583DUP(SEM)	Sediment	07/18/18
44	B18-20116MS(SEM)	56592MS(SEM)	Sediment	07/19/18
45	B18-20116MSD(SEM)	56592MSD(SEM)	Sediment	07/19/18
46	B18-20116DUP(SEM)	56592DUP(SEM)	Sediment	07/19/18
47				
48				

Notes:		



VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: 1	ot	1_
Reviewer:	CR	/
2nd reviewer:	4	

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-17		AI, Sb, As, Ba, Be, Cd, Ca, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V(Zn) Mo, B, Sn, (i, P)
	-	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
18-34		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe (Pb) Mg, Mn, Hg (Ni, K, Se (Ag) Na, Tl, V (Zn) Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
CX:35-7	57	(Al, Sb, As, Ba, Be, Cd) Ca, (Cr) Co, (Cu, Fe, Pb) Mg, Mn, (Hg, Ni, K, Se, Ag) Na, Tl, V, Zn, Mo, B, Sn, Ti,
36	39	(Al, Sb, As, Ba, Be, Cd, Ca, Cr) Co (Cu, Fe, Pb.)Mg, Mn, Hg, N), K, (Se, Ag, Na, Tl, V, (Zn, Mo, B, Sn, Ti, (P)
9-4	6	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu)Fe, Pb) Mg, Mn, Hg, (li)K, Se, Ag) Na, Tl, V(Zn) Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	-	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA		Al, Sh, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Ph, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti

Comments:	Mercury by CVAA if performed		

LDC #: 45128D4a

VALIDATION FINDINGS WORKSHEET Technical Holding Times

2nd reviewer:

Were samples preserved? $\underline{Y} \underline{N} \underline{N/A}$ All circled dates have exceeded the technical holding time.

METHOD:		Mercury Holding time = 28 days				
Sample ID:	Sampling Date	Analysis Date	Total Time until Analysis (days)	Qualifier Code: 1	Det/ND	
1-5	7/18/18	1/11/19	177	J/R/P	Det	
6-11	7/19/18	1/11/19	176	J/R/P	Det	
12-17	7/20/18	1/11/19	175	J/R/P	Det	
				Multi-		
					 	
						 •

Technical Holding Time Criteria

Mercury: 28 days All other metals: 180 days - 1 year if frozen

LDC#: 4512801a

N N/A

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

of 4 or more, no action was taken.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were all duplicate sample relative percent differences (RPD) ≤ 20% for samples? Y:

Was a matrix spike analyzed for each matrix in this SDG?

	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualific	cations
<u> </u>	35/36		AL			DA(625)	1-10	JUSTA	(Det) (H!
+-			re Ha		138	67 1		70/04/0	J. (Hm
-			175		1.28			Justiff	Q (111.
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omm	ents: 35/3	SAJF	e74x	38/	9: A1,5	Fe 74x			

LDC #: 451904

VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: of Reviewer: 2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

YNN/A Were all aqueous LCS percent recoveries (%R) within the control limits of 80-120% and all soil LCS %R within laboratory established control limits.

LEVEL IV ONLY:

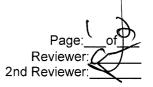
Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	LCS ID	Matrix	Analyte	%R (limits)	Associated Samples	Qualifications
	56579-CR	WJ	Al	151 (42-124)	1-10	Jdet (A (Det) (HP)
\parallel	60150-CRY	<u>m</u> 1	Al	107 1	11-17	
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Comments:	·	

LDC#: 45128D4a

VALIDATION FINDINGS WORKSHEET Field Duplicates

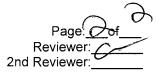


METHOD: Metals (EPA Method 6010B/7000)

	Concentra		
Analyte	10	11	RPD
Aluminum	4330	5990	32
Antimony	0.132	0.16	19
Arsenic	4.16	5	18
Barium	9.67	16.7	53
Beryllium	0.0925	0.137	39
Cadmium	0.0295	0.0352	18
Chromium	8.67	9.66	11
Copper	10.2	14.6	35
Iron	8500	8790	3
Lead	6.82	8.4	21
Mercury	0.0236	0.0425	57
Nickel	1.94	2.58	28
Phosphorus	176	234	28
Selenium	0.097	0.108	11
Silver	0.0938	0.0808	15
Zinc	33.9	45.8	30

LDC#: 45128D4a

VALIDATION FINDINGS WORKSHEET Field Duplicates



METHOD: Metals (EPA Method 6010B/7000)

	Concentrat		
Analyte	27	28	RPD
Copper	0.0894	0.0989	10
Lead	0.0148	0.0219	39
Nickel	0.00363	0.00526	37
Zinc	0.238	0.371	44

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2019\45128D4a.wpd

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: June 4, 2019

Parameters: Wet Chemistry

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-008

Laboratory Sample Collection				
Sample Identification	Identification	Matrix	Date	
B18-10022	56582	Sediment	07/18/18	
B18-10076	56583	Sediment	07/18/18	
B18-10077	56584	Sediment	07/18/18	
B18-10112	56585	Sediment	07/18/18	
B18-10113	56586	Sediment	07/18/18	
B18-10024	56587	Sediment	07/19/18	
B18-10029	56588	Sediment	07/19/18	
B18-10114	56589	Sediment	07/19/18	
B18-10115	56590	Sediment	07/19/18	
B18-10116	56591	Sediment	07/19/18	
B18-20116	56592	Sediment	07/19/18	
B18-10031	56593	Sediment	07/20/18	
B18-10032	56594	Sediment	07/20/18	
B18-10119	56595	Sediment	07/20/18	
B18-10121	56596	Sediment	07/20/18	
B18-10123	56597	Sediment	07/20/18	
B18-10178	56598	Sediment	07/20/18	
B18-10022DUP	56582DUP	Sediment	07/18/18	
B18-10076MS	56583MS	Sediment	07/18/18	
B18-10076MSD	56583MSD	Sediment	07/18/18	
B18-10076DUP	56583DUP	Sediment	07/18/18	
B18-10114MS	56589MS	Sediment	07/19/18	
B18-10114MSD	56589MSD	Sediment	07/19/18	
B18-10114DUP	56589DUP	Sediment	07/19/18	

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Acid Volatile Sulfide by Plumb 1981 Ammonia as Nitrogen by Standard Method 4500-NH3-D Particle Size by Standard Method 2560D Percent Solids by Standard Method 2540B Total Nitrogen and Total Organic Carbon by Environmental Protection Agency (EPA) SW 846 Method 9060

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

		Total Time From Sample Collection	Required Holding Time From Sample Collection		
Sample	Analyte	Until Analysis	Until Analysis	Flag	A or P
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113	Acid volatile sulfide	170 days	14 days	J (all detects)	А
B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116	Acid volatile sulfide	169 days	14 days	J (all detects)	А
B18-10031 B18-10032	Acid volatile sulfide	168 days	14 days	J (all detects)	Α
B18-10119 B18-10121 B18-10123 B18-10178	Acid volatile sulfide	173 days	14 days	J (all detects)	А
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113	Ammonia as N	169 days	28 days	J (all detects)	А
B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116	Ammonia as N	168 days	28 days	J (all detects)	А
B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178	Ammonia as N	167 days	28 days	J (all detects)	А
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113	Total nitrogen	177 days	28 days	J (all detects)	А
B18-10116 B18-20116	Total nitrogen	176 days	28 days	R (all non-detects)	А

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
B18-10024 B18-10029 B18-10114 B18-10115	Total nitrogen	176 days	28 days	J (all detects)	Α
B18-10031 B18-10032	Total nitrogen	175 days	28 days	J (all detects)	А
B18-10119 B18-10121 B18-10123 B18-10178	Total nitrogen	178 days	28 days	J (all detects)	А

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10114MS/MSD (B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-20116 B18-20116 B18-10031 B18-10032)	Acid volatile sulfide	-14 (80-120)	-5 (80-120)	J (all detects)	A

Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
B18-10022DUP (All samples in SDG 1807003-008)	Grain size-Phi 2.0	26 (≤20)		J (all detects) UJ (all non-detects)	A

VIII. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits.

IX. Field Duplicates

Samples B18-10116 and B18-20116 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Conce		
Analyte	B18-10116	B18-20116	RPD
Acid volatile sulfide	0.965 mg/Kg	1.69 mg/Kg	55

	Conce		
Analyte	B18-10116 B18-20116		RPD
Ammonia as N	3.65 mg/Kg 6.28 mg/Kg		53
Percent solids	79.1 %	75.7 %	4
Total organic carbon	0.12 % 0.14 %		15
Gravel	4.5 %	1.3 %	110

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-008	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods.

Due to technical holding time, data were rejected in two samples.

Due to technical holding time, MS/MSD %R, DUP RPD, and results reported below the RL and above the MDL, data were qualified as estimated in seventeen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-008

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10116 B18-20116 B18-20116 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10123 B18-10178	Acid volatile sulfide Ammonia as N	J (all detects) J (all detects)	А	Technical holding times (H)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10031 B18-10032 B18-10119 B18-10121 B18-10123 B18-10178	Total nitrogen	J (all detects)	A	Technical holding times (H)
B18-10116 B18-20116	Total nitrogen	R (all non-detects)	Α	Technical holding times (H)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-20116 B18-20116 B18-10031 B18-10032	Acid volatile sulfide	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (LM)

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116 B18-20116 B18-10031 B18-10032 B18-10119 B18-10123 B18-10123 B18-10178	Grain size-Phi 2.0	J (all detects) UJ (all non-detects)	A	Duplicate sample analysis (RPD) (HD)
B18-10022 B18-10076 B18-10077 B18-10112 B18-10113 B18-10024 B18-10029 B18-10114 B18-10115 B18-10116 B18-20116 B18-10031 B18-10032 B18-10119 B18-10123 B18-10123 B18-10178	Analyte reported below the RL and above the MDL	J (all detects)	Α	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

LDC #: 45128D6

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-008

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer 2nd Reviewer

METHOD: (Analyte) AVS (Plumb 1981), Ammonia as N (SM4500D), Particle Size (SM 2560D), % Solids (SM2540B), Total Nitrogen (EPA SW846 9060), TOC (EPA SW 846 Method 9060)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	ABY	/
Ш	Initial calibration	N	
III.	Calibration verification	N	
IV	Laboratory Blanks	A	
V	Field blanks	\mathcal{N}_{\perp}	
VI.	Matrix Spike/Matrix Spike Duplicates	SW	
VII.	Duplicate sample analysis	As)
VIII.	Laboratory control samples	'A'	LCS/D, CRM
IX.	Field duplicates	SW	(10,11)
X.	Sample result verification	N	
XI	Overall assessment of data	1	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank EB = Equipment blank

SB=Source blank OTHER:

	T	Ī		
_	Client ID	Lab ID	Matrix	Date
1	B18-10022	56582	Sediment	07/18/18
2	B18-10076	56583	Sediment	07/18/18
3	B18-10077	56584	Sediment	07/18/18
4	B18-10112	56585	Sediment	07/18/18
5	B18-10113	56586	Sediment	07/18/18
6	B18-10024	56587	Sediment	07/19/18
7	B18-10029	56588	Sediment	07/19/18
8	B18-10114	56589	Sediment	07/19/18
9	B18-10115	56590	Sediment	07/19/18
10	B18-10116	56591	Sediment	07/19/18
11	B18-20116	56592	Sediment	07/19/18
12	B18-10031	56593	Sediment	07/20/18
13	B18-10032	56594	Sediment	07/20/18
14	B18-10119	56595	Sediment	07/20/18
15	B18-10121	56596	Sediment	07/20/18
16	B18-10123	56597	Sediment	07/20/18
17	B18-10178	56598	Sediment	07/20/18

SDG Labo	#:45128D6 VALIDATION COMPLETENESS #:1807003-008 Level II pratory: Physis Environmental Laboratories, Inc. HOD: (Analyte) AVS (Plumb 1981), Ammonia as N (SM4500D), Pagen (EPA SW846 9060), TOC (EPA SW 846 Method 9060)		F Revi 2nd Revi	
18	B18-10022DUP	56582DUP	Sediment	07/18/18
19	B18-10076MS	56583MS	Sediment	07/18/18
20	B18-10076MSD	56583MSD	Sediment	07/18/18
21	B18-10076DUP	56583DUP	Sediment	07/18/18
22	B18-10114MS	56589MS	Sediment	07/19/18
23	B18-10114MS	56589MSD	Sediment	07/19/18
24	B18-10114DUP	56589DUP	Sediment	07/19/18
25				
ı		1	I	1

Notes:_

LDC #: 45/2506

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:	<u>_1</u> of	1
Reviewer:	<u></u> EF	?_/
2nd review	er: 🖳	_

All circled methods are applicable to each sample.

Sample ID	Parameter
1-17	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH) TKN (TOC) Cr6+ CIO4 (AVS) (BSO1, XN) (PS)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
QC:186	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4 (2)
19,20	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
21	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN(NH3)TKN(TOO)Cr6+ CIO4
222	PPH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4 (AVS)
24	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4 AVS)
·	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	ph TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	ph TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₂ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₂ TKN TOC Cr6+ ClO ₄

Comments:		

VALIDATION FINDINGS WORKSHEET Technical Holding Times

All circled dates have exceeded the technical holding time.

Y N N/A Were all samples preserved as applicable to each method?

Y N N/A Were all cooler temperatures within validation criteria?

Method:		Plumb SM 4500 NH3D			D		
Parameters	Parameters:		AVS			Ammonia as	N
Technical h	olding time:		14 days			28 days	
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier
1-5	7/18/18	1/4/19	170	J/R/A (Det)	1/3/19	169	J/R/A (Det)
6-11	7/19/18	1/4/19	169	J/R/A (Det)	1/3/19	168	J/R/A (Det)
12-13	7/20/18	1/4/19	168	J/R/A (Det)	1/3/19	167	J/R/A (Det)
14-17	7/20/18	1/9/19	173	J/R/A (Det)	1/3/19	167	J/R/A (Det)

Method:		SM2540B EPA 9060					
Parameters			Percent solids	S		Total nitroge	n
<u>Technical h</u>	olding time:		180 days			28 days	
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier
1-5	7/18/18				1/11/19	177	J/R/A (Det)
6-11	7/19/18				1/11/19	176	J/R/A (10, 11=ND)
12-13	7/20/18				1/11/19	175	J/R/A (Det)
14-17	7/20/18				1/14/19	178	J/R/A (Det)
			1				

LDC #: 45128D6

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

	Page: <u>\</u>	of_	_
	Reviewer:_		
2nd	Reviewer:_	9	
		U	

ME	THOD: Inorganics, I	EPA Method	See cover						Zha Reviewer.
TE,	N/A Were r no acti N N/A Were a	matrix spike matrix spike p on was taker all duplicate s	e analyzed for ea percent recoveri n. sample relative	ach matrix in this es (%R) within the percent difference	SDG?	f the sample cor	ncentration exceede	d the spike cond	centration by a factor of 4 or more,
#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples		Qualifications
	22/23		AVS	-14 (80-120)	-5		1-13	J/R/A (Det)	(LM)
-									
-									
- IL				_1		L			

Comments:	104.00-2000-		

LDC #: 45/2806

VALIDATION FINDINGS WORKSHEET <u>Duplicate Analysis</u>

Page:of	
Reviewer:	
2nd Reviewer:	_

METHOD: Inorganics, Method See Call

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y N N/A Were all duplicate sample relative percent differences (RPD) \leq 20% for water and \leq 35% for soil samples (\leq 10% for Method 300.0)? If no, see qualification below. A control limit of ±CRDL (±2X CRDL for soil) was used for samples that were \leq 5X the CRDL, including when only one of the duplicate sample values

were ≤5X the CRDL. If field blanks were used for laboratory duplicates, see overall assessment.

LEVEL IV ONLY:

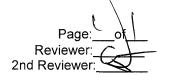
Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications
		188		662in Size-	RPD (Limits)		AIL	Qualifications J/J/A (Det/M)
				Gainsize- Phia,U				J. S. C.
				1111010				
<u> </u>								
				1				
								-
<u> </u>								
								,

Comments:				
-				

LDC#: 45128D6

VALIDATION FINDINGS WORKSHEET Field Duplicates



Inorganics, Method See Cover

	Concentration		
Analyte	10	11	RPD
Acid volatile sulfides	0.965	1.69	55
Ammonia as N	3.65	6.28	53
Percent solids (%)	79.1	75.7	4
TOC (%)	0.12	0.14	15
Gravel (%)	4.5	1.3	110

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2019\45128D6.wpd

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polynuclear Aromatic Hydrocarbons

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 187003-010

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10124	56685	Sediment	07/26/18
B18-10126	56686	Sediment	07/26/18
B18-10127	56687	Sediment	07/26/18
B18-10132	56688	Sediment	07/26/18
B18-10133	56689	Sediment	07/26/18
B18-20133	56690	Sediment	07/26/18
B18-10136	56691	Sediment	07/27/18
B18-10137	56692	Sediment	07/27/18
B18-10139	56693	Sediment	07/27/18
B18-10140	56694	Sediment	07/27/18
B18-10141	56695	Sediment	07/27/18
B18-10142	56696	Sediment	07/27/18
B18-10133MS	56689MS	Sediment	07/26/18
B18-10133MSD	56689MSD	Sediment	07/26/18
B18-10133DUP	56689DUP	Sediment	07/26/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10133MS/MSD (B18-10133)	Benzo(a)anthracene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Indeno(1,2,3-cd)pyrene Fluoranthene	208 (50-150) 162 (50-150) 173 (50-150) 188 (50-150)	234 (50-150) 170 (50-150) 178 (50-150) 208 (50-150) 159 (50-150)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A
B18-10133MS/MSD (B18-10133)	Naphthalene 1-Methylnaphthalene	45 (50-150) -	37 (50-150) 49 (50-150)	J (all detects) J (all detects)	А

Relative percent differences (RPD) were within QC limits.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10133DUP (B18-10133)	Anthracene Chrysene Dibenzo(a,h)anthracene Dibenzothiophene Fluoranthene Phenanthrene Pyrene	45 (≤25) 30 (≤25) 30 (≤25) 44 (≤25) 44 (≤25) 35 (≤25) 31 (≤25)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56681-BS1/BS2 (All samples in SDG 1807003-010)	1-Methylnaphthalene 2-Methylnaphthalene Acenaphthene Biphenyl Naphthalene 2,6-Dimethylnaphthalene	59 (70-130) 63 (70-130) 67 (70-130) 64 (70-130) 51 (70-130)	57 (70-130) 60 (70-130) 66 (70-130) 62 (70-130) 49 (70-130) 68 (70-130)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	P
56681-BS1/BS2 (All samples in SDG 1807003-010)	Benzo(a)anthracene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Fluoranthene Indeno(1,2,3-cd)pyrene	196 (70-130) 147 (70-130) 142 (70-130) 131 (70-130) 156 (70-130)	200 (70-130) 148 (70-130) 147 (70-130) - 163 (70-130)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	P

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
56683-CRM1 (SRM 1944)	Benzo(k)fluoranthene	41 (60-140)	All samples in SDG 1807003-010	J (all detects)	А

X. Field Replicates

Samples B18-10127 and B18-20133 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concen		
Compound	B18-10127	B18-20133	RPD
1,6,7-Trimethylnaphthalene	3.69	5.7	43
1-Methylnaphthalene	2.11	3.02	35
1-Methylphenanthrene	8.14	9.75	18
2,6-Dimethylnaphthalene	2.91	4.06	33
2-Methylnaphthalene	4.51	7.13	45
Acenaphthene	1.72	1.37	23
Acenaphthylene	10.4	15.5	39
Anthracene	23.3	25.9	11
Benzo(a)anthracene	169	172	2
Benzo(a)pyrene	267	230	15
Benzo(b)fluoranthene	378	342	10
Benzo(e)pyrene	250	220	13
Benzo(g,h,i)perylene	179	175	2
Benzo(k)fluoranthene	279	261	7
Biphenyl	1.13	1.29	13
Chrysene	127	131	3
Dibenzo(a,h)anthracene	114	106	7
Dibenzothiophene	2.56	2.85	11
Fluoranthene	137	140	2
Fluorene	3.39	4.8	34
Indeno(1,2,3-cd)pyrene	360	364	1
Naphthalene	5.77	6.24	8

	Concentr		
Compound	B18-10127	B18-20133	RPD
Perylene	38.9	34	13
Phenanthrene	28	34.1	20
Pyrene	176	220	22

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-010	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R, DUP RPD, LCS/LCSD %R, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in twelve samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 187003-010

	T		Ī	
Sample	Compound	Flag	A or P	Reason (Code)
B18-10133	Benzo(a)anthracene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Indeno(1,2,3-cd)pyrene Fluoranthene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (HM)
B18-10133	Naphthalene 1-Methylnaphthalene	J (all detects) J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10133	Anthracene Chrysene Dibenzo(a,h)anthracene Dibenzothiophene Fluoranthene Phenanthrene Pyrene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10140 B18-10140 B18-10141	1-Methylnaphthalene 2-Methylnaphthalene Acenaphthene Biphenyl Naphthalene 2,6-Dimethylnaphthalene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р	Laboratory control samples (%R) (LL)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10140 B18-10140 B18-10141	Benzo(a)anthracene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Fluoranthene Indeno(1,2,3-cd)pyrene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р	Laboratory control samples (%R) (HL)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10139 B18-10140 B18-10141	Benzo(k)fluoranthene	J (all detects)	A	Certified reference material (%R) (LP)

Sample	Compound	Flag	A or P	Reason (Code)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10139 B18-10140 B18-10141	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 187003-010

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 187003-010

No Sample Data Qualified in this SDG

LDC #: 45128E2b

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-010

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer 2nd Reviewer:

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
J.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N/	
VII.	Surrogate spikes	ALAT	
VIII.	Matrix spike/Matrix spike duplicates	w	
IX.	Laboratory control samples	A	Les b. CRW
X.	Field duplicates	M	15=5+6-R=3+6
XI.	Internal standards	N	·
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

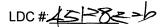
	Client ID	Lab ID	Matrix	Date
1	B18-10124	56685	Sediment	07/26/18
2	B18-10126	56686	Sediment	07/26/18
3	B18-10127	56687	Sediment	07/26/18
4	B18-10132	56688	Sediment	07/26/18
5	B18-10133	56689	Sediment	07/26/18
3	B18-20133	56690	Sediment	07/26/18
,	B18-10136	56691	Sediment	07/27/18
}	B18-10137	56692	Sediment	07/27/18
)	B18-10139	56693	Sediment	07/27/18
0	B18-10140	56694	Sediment	07/27/18
1	B18-10141	56695	Sediment	07/27/18
2	B18-10142	56696	Sediment	07/27/18
13	B18-10133MS	56689MS	Sediment	07/26/18

LDC	#: 45128E2b	VALIDATION COMPLET	WORKSHEET		Date: 630/	
SDG	6#: 1807003-010	Level II			F	⊃age: <u>⊿</u> of <u></u> €
	oratory: <u>Physis Environme</u> THOD: GC/MS Polynuclea	ental Laboratories, Inc. ar Aromatic Hydrocarbons (EPA	SW 846 N	Method 8270D)	Rev 2nd Rev	iewer: T iewer: W6
14	B18-10133MSD			56689MSD	Sediment	07/26/18
15	B18-10133DUP		·····	56689DUP	Sediment	07/26/18
16						
17						
18						
Notes	S:					

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

WETTIOD: CONVICTOR				
A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 23,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	l2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	of
Reviewer:	9
2nd Reviewer:	Ne

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

i Ui	Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?						
#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	13/14	CCC	208 50-150	234 90-150	()	5 (lots)	ULBA(HM)
	/ '	444	162 ()	170 (1)	()		
		FACE	173 ()	178 ()	()		/
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	of
Reviewer:	9
2nd Reviewer:	N

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

| N/A | Was a LCS required?
| Y(N)N/A | Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	L %R (_CS (Limits)		LCSD R (Limits)		RPD (Limits)		Associated Samples	Qualifications
		56681-251/	177	59	(70-130)	ST	70-	130	()	All (dets)	MHA (LL)
		352	<u> Ι</u> λ/	63	()	60	()	()	/	
			44	64	(-)	66	()	()		
			ZEEE	64	()	62	()	()		
			5	5/	()	49	()	()		/
			XXX	1	()	68	()	()		V
			ca	196	()	200	()	()		Jets/7 (#1)
			444	HI	()	148	()	()		/
			tkK_	12		147))	 	
			$\lambda\lambda$	13/	()	ļ <u>.</u>	(/)	()		
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VALIDATION FINDINGS WORKSHEET _Field Duplicates

Page: <u>l</u> of /
Reviewer: _ C
2nd Reviewer:

METHOD: GCMS PAH 8270D

	Concentrat	Concentration (ng/g)			
Compound	3	6	RPD		
YYY	3.69	5.7	43		
ттт	2.11	3.02	35		
нннн	8.14	9.75	18		
xxx	2.91	4.06	33		
w	4.51	7.13	45		
GG	1.72	1.37	23		
DD	10.4	15.5	39		
w	23.3	25.9	11		
ccc	169	172	2		
III	267	230	15		
GGG	378	342	10		
www	250	220	13		
LLL	179	175	2		
ННН	279	261	7		
EEEE	1.13	1.29	13		
DDD	127	131	3		
ккк	114	106	7		
AAAA	2.56	2.85	11		
YY	137	140	2		
NN	3.39	4.8	34		
JJJ	360	364	1		
S	5.77	6.24	8		
ZZZ	38.9	34	13		
υυ	28	34.1	20		
zz	176	220	22		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polybrominated Diphenyl Ethers

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-010

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10124	56685	Sediment	07/26/18
B18-10126	56686	Sediment	07/26/18
B18-10127	56687	Sediment	07/26/18
B18-10132	56688	Sediment	07/26/18
B18-10133	56689	Sediment	07/26/18
B18-20133	56690	Sediment	07/26/18
B18-10136	56691	Sediment	07/27/18
B18-10137	56692	Sediment	07/27/18
B18-10139	56693	Sediment	07/27/18
B18-10140	56694	Sediment	07/27/18
B18-10141	56695	Sediment	07/27/18
B18-10142	56696	Sediment	07/27/18
B18-10133MS	56689MS	Sediment	07/26/18
B18-10133MSD	56689MSD	Sediment	07/26/18
B18-10133DUP	56689DUP	Sediment	07/26/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polybrominated Diphenyl Ethers (PBDE) by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk
 (*) will indicate the section in the validation report where a description of
 the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10133MS/MSD (B18-10133)	PBDE 183 PBDE 190 PBDE 209	40 (50-150) 23 (50-150) 5 (50-150)	34 (50-150) 15 (50-150)	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Α

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10133MS/MSD (B18-10133)	PBDE 190 PBDE 209	39 (≤25) 100 (≤25)	NA	-

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
PBDE 190 PBDE 209	67 (70-130) 22 (70-130)	61 (70-130) 17 (70-130)	J (all detects) UJ (all non-detects) J (all detects)	Р
	PBDE 190	Compound %R (Limits) PBDE 190 67 (70-130)	Compound %R (Limits) %R (Limits) PBDE 190 67 (70-130) 61 (70-130)	Compound %R (Limits) %R (Limits) Flag PBDE 190 67 (70-130) 61 (70-130) J (all detects) UJ (all non-detects)

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Replicates

Samples B18-10127 and B18-20133 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentr		
Compound	B18-10127	B18-20133	RPD
PBDE209	5.11	24.2	130

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-010	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R, LCS/LCSD %R, and results reported below the RL and above the MDL, data were qualified as estimated in twelve samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polybrominated Diphenyl Ethers - Data Qualification Summary - SDG 1807003-010

Sample	Compound	Flag	A or P	Reason (Code)
B18-10133	PBDE 183 PBDE 190 PBDE 209	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Α	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10140 B18-10141 B18-10142	PBDE 190 PBDE 209	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10140 B18-10140 B18-10141	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Laboratory Blank Data Qualification Summary SDG 1807003-010

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Field Blank Data Qualification Summary - SDG
1807003-010

No Sample Data Qualified in this SDG

LDC #: 45128E2c

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-010

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: GC/MS Polybrominated Diphenyl Ethers (EPA SW 846 Method 8270D-NCI)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	. N	
VII.	Surrogate spikes	Aff	
VIII.	Matrix spike/Matrix spike duplicates	MA	
IX.	Laboratory control samples	W/A	Les/O. CRM
X.	Field duplicates	1	D-5+6 R-3+6
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	·
XV.	Overall assessment of data	A	

Note:

A = Acceptable N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank

OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10124	56685	Sediment	07/26/18
2	B18-10126	56686	Sediment	07/26/18
3	B18-10127	56687	Sediment	07/26/18
4	B18-10132	56688	Sediment	07/26/18
5 ,	B18-10133	56689	Sediment	07/26/18
6	B18-20133	56690	Sediment	07/26/18
7	B18-10136	56691	Sediment	07/27/18
8	B18-10137	56692	Sediment	07/27/18
9	B18-10139	56693	Sediment	07/27/18
10	B18-10140	56694	Sediment	07/27/18
11	B18-10141	56695	Sediment	07/27/18
12	B18-10142	56696	Sediment	07/27/18
13	B18-10133MS	56689MS	Sediment	07/26/18

LDC #: 45128E2c VALIDATION COMPLETENESS WORKSHEET SDG #: 1807003-010 Level II Laboratory: Physis Environmental Laboratories, Inc. METHOD: GC/MS Polybrominated Diphenyl Ethers (EPA SW 846 Method 8270D-NCI)						Date: <u>58/</u> Page: <u>2</u> ot 2 eviewer: eviewer:
14	B18-10133MSD			56689MSD	Sediment	07/26/18
15	B18-10133DUP			56689DUP	Sediment	07/26/18
16						
17						
18						
Notes:						



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:	<i></i> _of/
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2nd Reviewer	: W6

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

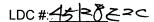
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

<u>Y/N_N/A</u> Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	13/14	PBDE 183	40 (50-150)	()	()	5 (ND)	WWA(KM)
	. /	+BD € 183 190 209	27)	34 90-190	()		
		209	5 ()	15 (1)	()		
		Ian	()	()	39 (=25)		- Slots A (HD)
		190	()	()	(DD(V)		
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VALIDATION FINDINGS WORKSHEET <u>Laboratory Control Samples (LCS)</u>

Page: _	<u></u> of
Reviewer:	9
2nd Reviewer:	

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		5681-BSI/	ABDE 190	6T 170-130	61 (70-130	()	All (dots+NB)	JAND (K)
		-252	V 209		17 (1)	()		77
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LDC#: 461862C

VALIDATION FINDINGS WORKSHEET Field Replicates

Page:/_c	of /
Reviewer:	+
2nd Reviewer:	

METHOD: GC/MS PBDE

	Concentration (ng/g)				
Compound	3	6	RPD		
PBDE209	5.11	24.2	130		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Fipronil & Degradates

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-010

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10124	56685	Sediment	07/26/18
B18-10126	56686	Sediment	07/26/18
B18-10127	56687	Sediment	07/26/18
B18-10132	56688	Sediment	07/26/18
B18-10133	56689	Sediment	07/26/18
B18-20133	56690	Sediment	07/26/18
B18-10136	56691	Sediment	07/27/18
B18-10137	56692	Sediment	07/27/18
B18-10139	56693	Sediment	07/27/18
B18-10140	56694	Sediment	07/27/18
B18-10141	56695	Sediment	07/27/18
B18-10142	56696	Sediment	07/27/18
B18-10133MS	56689MS	Sediment	07/26/18
B18-10133MSD	56689MSD	Sediment	07/26/18
B18-10133DUP	56689DUP	Sediment	07/26/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Fipronil and Degradates by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Replicates

Samples B18-10127 and B18-20133 were identified as field replicates. No results were detected in any of the samples.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-010	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in twelve samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Fipronil & Degradates - Data Qualification Summary - SDG 1807003-010

Sample	Compound	Flag	A or P	Reason (Code)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10149 B18-10140 B18-10141	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Fipronil & Degradates - Laboratory Blank Data Qualification Summary - SDG 1807003-010

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Fipronil & Degradates - Field Blank Data Qualification Summary - SDG 1807003010

No Sample Data Qualified in this SDG

LDC #: 45128E2d VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-010

Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: GC/MS Fipronil & Degradates (EPA SW 846 Method 8270D-NCI)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	N.	
VIII.	Matrix spike/Matrix spike duplicates	A/A	
IX.	Laboratory control samples	*	LC5/B
X.	Field duplicates	ND	b=516 R3+6
XI.	Internal standards	N.	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10124	56685	Sediment	07/26/18
2	B18-10126	56686	Sediment	07/26/18
3	B18-10127	56687	Sediment	07/26/18
4	B18-10132	56688	Sediment	07/26/18
5	B18-10133	56689	Sediment	07/26/18
6	B18-20133	56690	Sediment	07/26/18
7	B18-10136	56691	Sediment	07/27/18
8	B18-10137	56692	Sediment	07/27/18
9	B18-10139	56693	Sediment	07/27/18
10	B18-10140	56694	Sediment	07/27/18
11	B18-10141	56695	Sediment	07/27/18
12	B18-10142	56696	Sediment	07/27/18
13	B18-10133MS	56689MS	Sediment	07/26/18

SDG # Labora	#:45128E2dVALIDATION COMPLETENESS #:1807003-010 Level II atory: Physis Environmental Laboratories, Inc. #OD: GC/MS Fipronil & Degradates (EPA SW 846 Method 8270D)	Rev	Date: SA/Page: Set 2 viewer: S	
	Client ID	Lab ID	Matrix	Date
	B18-10133MSD	56689MSD	Sediment	07/26/18
15	B18-10133DUP	56689DUP	Sediment	07/26/18
16				
17				
18				
Notes:				
16 17		56689DUP	Sediment	07/26/18

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Synthetic Pyrethroid Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-010

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10124	56685	Sediment	07/26/18
B18-10126	56686	Sediment	07/26/18
B18-10127	56687	Sediment	07/26/18
B18-10132	56688	Sediment	07/26/18
B18-10133	56689	Sediment	07/26/18
B18-20133	56690	Sediment	07/26/18
B18-10136	56691	Sediment	07/27/18
B18-10137	56692	Sediment	07/27/18
B18-10139	56693	Sediment	07/27/18
B18-10140	56694	Sediment	07/27/18
B18-10141	56695	Sediment	07/27/18
B18-10142	56696	Sediment	07/27/18
B18-10133MS	56689MS	Sediment	07/26/18
B18-10133MSD	56689MSD	Sediment	07/26/18
B18-10133DUP	56689DUP	Sediment	07/26/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Synthetic Pyrethroid Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D-MRM

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to nonconformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10133MS/MSD (B18-10133)	Prallethrin	3 (50-150)	4 (50-150)	UJ (all non-detects)	А

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10133MS/MSD (B18-10133)	Prallethrin	29 (≤25)	NA	-

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Replicates

Samples B18-10127 and B18-20133 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concenti		
Compound	B18-10127	B18-20133	RPD
Danitol (Fenpropathrin)	0.5U	1.89	Not calculable

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-010	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R and results reported below the RL and above the MDL, data were qualified as estimated in twelve samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Synthetic Pyrethroid Pesticides - Data Qualification Summary - SDG 1807003-010

Sample	Compound	Flag	A or P	Reason (Code)
B18-10133	Prallethrin	UJ (all non-detects)	Α	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10140 B18-10141 B18-10142	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Laboratory Blank Data Qualification Summary SDG 1807003-010

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Field Blank Data Qualification Summary - SDG 1807003-010

No Sample Data Qualified in this SDG

LDC #: 45128E2e

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-010

Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: GC/MS Synthetic Pyrethroid Pesticides (EPA SW 846 Method 8270D-MRM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
<u>.</u>	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N_	
<u>V.</u>	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	│	
VIII.	Matrix spike/Matrix spike duplicates	A A	
IX.	Laboratory control samples	A_{i}	LCS D
Χ.	Field duplicates	54	D=5+6
XI.	Internal standards		
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data		

Note: A

A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10124	56685	Sediment	07/26/18
2	B18-10126	56686	Sediment	07/26/18
3	B18-10127	56687	Sediment	07/26/18
4	B18-10132	56688	Sediment	07/26/18
5	B18-10133	56689	Sediment	07/26/18
6	B18-20133	56690	Sediment	07/26/18
7	B18-10136	56691	Sediment	07/27/18
8	B18-10137	56692	Sediment	07/27/18
9	B18-10139	56693	Sediment	07/27/18
10	B18-10140	56694	Sediment	07/27/18
11	B18-10141	56695	Sediment	07/27/18
12	B18-10142	56696	Sediment	07/27/18
13	B18-10133MS	56689MS	Sediment	07/26/18

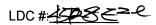
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ΙEΤ	THOD: GC/MS Synthetic	Pyret	hroid Pesticides (EPA SW	846 I	Metho	od 8270D-MRM)		2nd R	leviewer:
	Client ID					Lab ID		Matrix	Date
14	B18-10133MSD					56689MSD		Sediment	07/26/18
15	B18-10133DUP				56689DUP		Sediment	07/26/18	
16									
17									
18									
Notes:									

LDC #: 45128E2e VALIDATION COMPLETENESS WORKSHEET

VALIDATION FINDINGS WORKSHEET

METHOD: Pyrethroids

WILTHOD. Tyreunolds			
A. Allethrin			
B. Bifenthrin			
C. Cyfluthrin			
D. Cyhalothrin, Total Lambda			
E. Cypermethrin			
F. Danitol (Fenpropathrin)			
G. Deltamethrin/Tralomethrin			
H. Esfenvalerate			
I. Fluvalinate			
J. Permethrin, cis-			
K. Permethrin, trans-			
L. Prallethrin			
	:		



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	of
Reviewer:_	` Y
2nd Reviewer:	No

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	13/4		3 50-150	4 (40-19)	()	I I	JUNA (LU)
		4	()	()	29 (35)		Letza (HD)
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VALIDATION FINDINGS WORKSHEET <u>Field Replicates</u>

Page: Lof_	
Reviewer: 🗸	
2nd Reviewer:	

METHOD: GC/MS Pyrethroids

	Concen		
Compound	3	6	RPD
F	0.5U	1.89	NC

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 30, 2019

Parameters:

Chlorinated Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-010

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10124	56685	Sediment	07/26/18
B18-10126	56686	Sediment	07/26/18
B18-10127	56687	Sediment	07/26/18
B18-10132	56688	Sediment	07/26/18
B18-10133	56689	Sediment	07/26/18
B18-20133	56690	Sediment	07/26/18
B18-10136	56691	Sediment	07/27/18
B18-10137	56692	Sediment	07/27/18
B18-10139	56693	Sediment	07/27/18
B18-10140	56694	Sediment	07/27/18
B18-10141	56695	Sediment	07/27/18
B18-10142	56696	Sediment	07/27/18
B18-10133MS	56689MS	Sediment	07/26/18
B18-10133MSD	56689MSD	Sediment	07/26/18
B18-10133DUP	56689DUP	Sediment	07/26/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D/8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10133MS/MSD (B18-10133)	Endosulfan I	0 (50-150)	0 (50-150)	R (all non-detects)	А
B18-10133MS/MSD (B18-10133)	Endosulfan II Endrin aldehyde	13 (50-150) 18 (50-150)	13 (50-150) 29 (50-150)	UJ (all non-detects) UJ (all non-detects)	Α

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10133MS/MSD (B18-10133)	Methoxychlor Perthane	169 (50-150) 152 (50-150)	182 (50-150) 158 (50-150)	NA	-

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10133MS/MSD (B18-10133)	Endrin aldehyde	47 (≤25)	NA	-

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56681-BS1/BS2 (All samples in SDG 1807003-010)	Endosulfan I	2 (70-130)	2 (70-130)	R (all non-detects)	Р
56681-BS1/BS2 (All samples in SDG 1807003-010)	Endosulfan II Endrin aldehyde alpha-Chlordane cis-Nonachlor	15 (70-130) 10 (70-130) - -	15 (70-130) 30 (70-130) 68 (70-130) 68 (70-130)	J (all detects) UJ (all non-detects)	Р
56681-BS1/BS2 (All samples in SDG 1807003-010)	Methoxychior Perthane	153 (70-130) 136 (70-130)	159 (70-130) 135 (70-130)	NA	-

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

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
56681-BS1/BS2 (All samples in SDG 1807003-010)	Endrin aldehyde	100 (≤30)	NA	-

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Replicates

Samples B18-10127 and B18-20133 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentr		
Compound	B18-10127	B18-20133	RPD
4,4'-DDD	0.5U	2.57	Not calculable
4,4'-DDE	2.17	2.15	1
gamma-Chlordane	0.377	0.347	8

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-010	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to MS/MSD %R and LCS/LCSD %R, data were rejected in twelve samples.

Due to MS/MSD %R, LCS/LCSD %R, and results reported below the RL and above the MDL, data were qualified as estimated in twelve samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Data Qualification Summary - SDG 1807003-010

Sample	Compound	Flag	A or P	Reason (Code)
B18-10133	Endosulfan I	R (all non-detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10133	Endosulfan II Endrin aldehyde	UJ (all non-detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10139 B18-10140 B18-10141 B18-10142	Endosulfan I	R (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10139 B18-10140 B18-10141 B18-10142	Endosulfan II Endrin aldehyde alpha-Chlordane cis-Nonachlor	J (all detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10140 B18-10141 B18-10141	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 1807003-010

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 1807003-010

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45128E3a

SDG #: 1807003-010

Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: GC/MS Chlorinated Pesticides (EPA SW 846 Method 8270D)

Reviewer: 2nd Reviewer:

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	stat 1	+
VIII.	Matrix spike/Matrix spike duplicates /DUÞ	WA	
IX.	Laboratory control samples	WA	LCS D. CAN
X.	Field duplicates	541	5-5+6 R=3+6
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	*	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate TB = Trip blank

SB=Source blank OTHER: EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	B18-10124	56685	Sediment	07/26/18
2	B18-10126	56686	Sediment	07/26/18
3	B18-10127	56687	Sediment	07/26/18
4	B18-10132	56688	Sediment	07/26/18
5	B18-10133	56689	Sediment	07/26/18
6	B18-20133	56690	Sediment	07/26/18
7	B18-10136	56691	Sediment	07/27/18
8	B18-10137	56692	Sediment	07/27/18
9	B18-10139	56693	Sediment	07/27/18
10	B18-10140	56694	Sediment	07/27/18
11	B18-10141	56695	Sediment	07/27/18
12	B18-10142	56696	Sediment	07/27/18
13	B18-10133MS	56689MS	Sediment	07/26/18

SDG #: 1807003-010 Level II Page: 2 Reviewer:						Page: 2612 eviewer: 1773 eviewer: 1773
14	B18-10133MSD			56689MSD	Sediment	07/26/18
15	B18-10133DUP			56689DUP	Sediment	07/26/18
16						
17						
18						
Note	s:					

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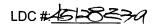
VALIDATION COMPLETENESS WORKSHEET

LDC #: 45128E3a

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticides

A. alpha-HCH	K. Endrin	U. Toxaphene	EE. 2,4'-DDT	OO. oxy-Chlordane
B. beta-HCH	L. Endosulfan II	V. Aroclor-1016	FF. Hexachlorobenzene	PP. cis-Nonachlor
C. delta-HCH	M. 4,4'-DDD	W. Aroclor-1221	GG. Chlordane	QQ. trans-Nonachlor
D. gamma-HCH	N. Endosulfan sulfate	X. Aroclor-1232	HH. Chlordane (Technical)	RR. cis-Chlordane
E. Heptachlor	O. 4,4'-DDT	Y. Aroclor-1242	II. p,p'-DDE	SS. trans-Chlordane
F. Aldrin	P. Methoxychlor	Z. Aroclor-1248	JJ. p,p'-DDD	TT. alpha-Endosulphan
G. Heptachlor epoxide	Q. Endrin ketone	AA. Aroclor-1254	KK. p,p'-DDT	UU. beta-Endosulphan
H. Endosulfan I	R. Endrin aldehyde	BB. Aroclor-1260	LL. o,p'-DDT	VV. Endosulphan Sulphate
I. Dieldrin	S. alpha-Chlordane	CC. 2,4'-DDD	MM. o,p'-DDE	WW. Mirex
J. 4,4'-DDE	T. gamma-Chlordane	DD. 2,4'-DDE	NN. o,p'-DDD	



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	_/_of
Reviewer:	9
2nd Reviewer:	M.

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

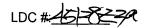
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

(Y)N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y/N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

FÜ	N/A vvere the M	S/MSD percent recover					l b) within the Qo	IIIIII I	
#	MS/MSD ID	Compound	%R (L	IS .imits)	%R (/ISD (Limits)	RPD (Limits)	Associated Samples	Qualifications
	D/4	+	0	50-150	0	(50-150)	()	5(ND)	JR/A(LU)
			13/20	()	7	()	()		1/1/A
		R	18	()	182	()	()		
		P	139	()	182	()	()		Idets/A (HM)
		Forthane	152	()	158	()	()		1//
		\ R		()		()	47 (< 25)		(HD)
				()		()	()		/
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	
Reviewer:	9
2nd Reviewer:	JVG

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Was a LCS required?

Were the LCS/LCSD required?

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Lim			LCSD R (Limits		RPD (Limit		Associated Samples	Qualifications
		5668 - BSI	++	2 17	-130	2	70-	P_0	()	All colotal D	J/R/P(22)
		_BS2	JUN.		, ,	15	()	()	Idets+NO	JM/2 (42)
				15 ()	30	()	()		V.
			Ρ	153)	159	()	()	(ND)	JUST (HZ)
		Pe	rthane	136 (V)	135	()	()	↓	V′
			5	()	68	()	()		JMA (4)
			70	()	68	()	()		
			R	()		()	100 (30	(ND)	Volumes (HD)
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LDC#:4512823a

VALIDATION FINDINGS WORKSHEET Field Replicates

Page:l_of(
Reviewer:
2nd Reviewer:

METHOD: GC/MS Pesticides

	Concentr			
Compound	3	6	RPD	
М	0.5U	2.57	NC	
J	2.17	2.15	1	
Т	0.377	0.347	8	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polychlorinated Biphenyls as Congeners

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-010

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10124	56685	Sediment	07/26/18
B18-10126	56686	Sediment	07/26/18
B18-10127	56687	Sediment	07/26/18
B18-10132	56688	Sediment	07/26/18
B18-10133	56689	Sediment	07/26/18
B18-20133	56690	Sediment	07/26/18
B18-10136	56691	Sediment	07/27/18
B18-10137	56692	Sediment	07/27/18
B18-10139	56693	Sediment	07/27/18
B18-10140	56694	Sediment	07/27/18
B18-10141	56695	Sediment	07/27/18
B18-10142	56696	Sediment	07/27/18
B18-10133MS	56689MS	Sediment	07/26/18
B18-10133MSD	56689MSD	Sediment	07/26/18
B18-10133DUP	56689DUP	Sediment	07/26/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) as Congeners by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk
 (*) will indicate the section in the validation report where a description of
 the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10133MS/MSD (B18-10133)	PCB-189 PCB-194 PCB-195 PCB-206	- - - -	164 (50-150) 169 (50-150) 151 (50-150) 152 (50-150)	NA	-

Relative percent differences (RPD) were within QC limits.

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10133DUP (B18-10133)	PCB-099 PCB-180 PCB-209	37 (≤25) 35 (≤25) 27 (≤25)	J (all detects) J (all detects) J (all detects)	А

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56681-BS1/BS2 (All samples in SDG 1807003-010)	PCB-169 PCB-189 PCB-195	142 (70-130) 136 (70-130) -	152 (70-130) 151 (70-130) 132 (70-130)	NA	-
56681-BS1/BS2 (B18-10127 B18-20133)	PCB-194	144 (70-130)	149 (70-130)	J (all detects)	Р
56681-BS1/BS2 (B18-10124 B18-10126 B18-10132 B18-10133 B18-10136 B18-10137 B18-10139 B18-10140 B18-10141 B18-10141	PCB-194	144 (70-130)	149 (70-130)	NA	-
56681-BS1/BS2 (B18-10124 B18-10126 B18-10127 B18-20133 B18-10139 B18-10141)	PCB-206	144 (70-130)	144 (70-130)	J (all detects)	Р
56681-BS1/BS2 (B18-10132 B18-10133 B18-10136 B18-10137 B18-10140 B18-10142)	PCB-206	144 (70-130)	144 (70-130)	NA	-

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56681-BS1/BS2 (B18-10124 B18-10126 B18-10127 B18-10133 B18-20133 B18-10137 B18-10141)	PCB-209	-	133 (70-130)	J (all detects)	Р
56681-BS1/BS2 (B18-10132 B18-10136 B18-10140 B18-10142)	PCB-209	-	133 (70-130)	NA	-

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
56683-CRM1	PCB-105 PCB-128 PCB-156	36 (60-140) 36 (60-140) 39 (60-140)	All samples in SDG 1807003-010	J (all detects) UJ (all non-detects)	A

X. Field Replicates

Samples B18-10127 and B18-20133 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentr		
Compound	B18-10127	B18-20133	RPD
PCB-044	0.2U	0.998	Not calculable
PCB-049	1.23	1.32	7
PCB-052	1.76	2.86	48
PCB-066	1.7	2.6	42
PCB-070	1.25	2.51	67
PCB-074	0.2U	0.773	Not calculable

	Concentration (ng/g)		
Compound	B18-10127	B18-20133	RPD
PCB-087	0.2U	1.7	Not calculable
PCB-095	3.55	6.09	53
PCB-099	2.53	4.56	57
PCB-101	5.39	9.35	54
PCB-105	0.649	0.572	13
PCB-110	3.98	7.81	65
PCB-118	3.04	5.95	65
PCB-128	1.88	3.44	59
PCB-138	7.3	12	49
PCB-141	0.7	1.38	65
PCB-149	5.9	9.1	43
PCB-151	2.25	3.14	33
PCB-153	7.55	12.1	46
PCB-156	0.2U	2.38	Not calculable
PCB-158	0.73	1.06	37
PCB-167	0.573	1.21	71
PCB-168+132	1.12	1.8	47
PCB-170	2.03	2.36	15
PCB-174	2.24	3.39	41
PCB-177	1.65	3.03	59
PCB-180	6.66	12	57
PCB-183	1.86	2.6	33

	Concentr	Concentration (ng/g)	
Compound	B18-10127	B18-20133	RPD
PCB-187	3.91	6.67	52
PCB-194	2.18	5.73	90
PCB-199(200)	0.25U	3.26	Not calculable
PCB-201	0.25U	0.379	Not calculable
PCB-203	0.25U	3.54	Not calculable
PCB-206	1.37	2.72	66
PCB-209	1.07	1.89	55

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-010	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to DUP RPD, LCS/LCSD and CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in twelve samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG 1807003-010

Sample	Compound	Flag	A or P	Reason (Code)
B18-10133	PCB-099 PCB-180 PCB-209	J (all detects) J (all detects) J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10127 B18-20133	PCB-194	J (all detects)	Р	Laboratory control samples (%R) (HL)
B18-10124 B18-10126 B18-10127 B18-20133 B18-10139 B18-10141	PCB-206	J (all detects)	Р	Laboratory control samples (%R) (HL)
B18-10124 B18-10126 B18-10127 B18-10133 B18-20133 B18-10137 B18-10139 B18-10141	PCB-209	J (all detects)	Р	Laboratory control samples (%R) (HL)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10140 B18-10140 B18-10141	PCB-105 PCB-128 PCB-156	J (all detects) UJ (all non-detects)	Α	Certified reference material (%R) (LP)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10140 B18-10140 B18-10141	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification
Summary - SDG 1807003-010

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Field Blank Data Qualification
Summary - SDG 1807003-010

No Sample Data Qualified in this SDG

LDC #: 45128E3b

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-010

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: GC/MS PCB as Congeners (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
il.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	\forall	
VI.	Field blanks	N.	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	w/_	
IX.	Laboratory control samples	Whi	LOSD. AN
X.	Field duplicates	SN	D=516 P316
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank

OTHER:

_		<u> </u>		
	Client ID	Lab ID	Matrix	Date
1	B18-10124	56685	Sediment	07/26/18
2	B18-10126	56686	Sediment	07/26/18
3	B18-10127	56687	Sediment	07/26/18
4	B18-10132	56688	Sediment	07/26/18
5	B18-10133	56689	Sediment	07/26/18
6	B18-20133	56690	Sediment	07/26/18
7	B18-10136	56691	Sediment	07/27/18
8	B18-10137	56692	Sediment	07/27/18
9	B18-10139	56693	Sediment	07/27/18
10	B18-10140	56694	Sediment	07/27/18
11	B18-10141	56695	Sediment	07/27/18
12	B18-10142	56696	Sediment	07/27/18
13	B18-10133MS	56689MS	Sediment	07/26/18

SDG Labo	DC #: 45128E3b VALIDATION COMPLETENESS WORKSHEET BDG #: 1807003-010 Level II aboratory: Physis Environmental Laboratories, Inc. METHOD: GC/MS PCB as Congeners (EPA SW 846 Method 8270D)							Date: \$\frac{\partial P}{2} \rightarrow{1}{2} \r
14	B18-10133MSD				56689MSD	S	Sediment	07/26/18
15	B18-10133DUP				56689DUP	s	Sediment	07/26/18
15 16 17								
17								
18_						$\underline{\mathbb{L}}$		
Note	s:							
				\neg				



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	<u>_</u> _of(
Reviewer:_	4	
2nd Reviewer:	***	

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Was a MS/MSD analyzed every 20 samples of each matrix?

Y N/N/A

Were the MS/MSD percent recoveries (%R) and the relative

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

	Y N/N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?										
#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications				
	13/4	DCB189	()	164 50-150	()	5(NO)	JUBA (HM)				
		1 194	()	169 (1)	()		7				
		195	()	15 ()	()						
		206	()	152 ()	()	(Acts) V					
			()	()	()						
			()	()	()		A				
	15	PCB099	(')	()	3T (575)	5 (dets)	Wet3/A(HD)				
		180	()	()	35 ()) 27 (V)	V					
		V 209	()		RT (V)	(A)					
			()	()	()						
			()	()	()						
			()	()	()						
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	of
Reviewer:	4
2nd Reviewer:	

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

YNN/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		5668 - 351	#CB169	H= 170-130	15= (70-131)	()	\$11 (ND)	Idotz = (HL)
		- B32	189	136(,)	(5)	()	V	
				14 ()	149 ()	()	(det=3.6)	
			195	()	132 ()	()	1 (W 70)	
			206	2/14 (V)	14 ()	()	(dob=1-3/6,9,11)	
			1209	()	i33 (√)	()	(dds=1-3,5,9,11) (dds=1-3,56,8-9,11)	
				()	()	()		V
				()	()	()		
		5683-CRM	PCB10S	36 60-140	()	()	All (dust +ND)	JUJA (ZP)
		(SRM1944)	128	36(1)	()	()		
 			V156	39 ()	()	()		
-				' ()	()	()		
ļ				()	()	()		
				()	()	()		
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				()	()	()		

LDC #: 45128E3b

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page:_	1_Qf_1
Reviewer:_	4
2nd reviewer:_	

METHOD: GC/MS PCB (EPA SW 846 Method 8270D)

	Concentra	ation (ng/g)	
Compound	3	6	RPD
PCB044	0.2U	0.998	NC
PCB049	1.23	1.32	7
PCB052	1.76	2.86	48
PCB066	1.7	2.6	42
PCB070	1.25	2.51	67
PCB074	0.2U	0.773	NC
PCB087	0.2U	1.7	NC
PCB095	3.55	6.09	53
PCB099	2.53	4.56	57
PCB101	5.39	9.35	54
PCB105	0.649	0.572	13
PCB110	3.98	7.81	65
PCB118	3.04	5.95	65
PCB128	1.88	3.44	59
PCB138	7.3	12	49
PCB141	0.7	1.38	65
PCB149	5.9	9.1	43
PCB151	2.25	3.14	33
PCB153	7.55	12.1	46
PCB156	0.2U	2.38	NC
PCB158	0.73	1.06	37
PCB167	0.573	1.21	71
PCB168+132	1.12	1.8	47
PCB170	2.03	2.36	15
PCB174	2.24	3.39	41
PCB177	1.65	3.03	59
PCB180	6.66	12	57
PCB183	1.86	2.6	33
PCB187	3.91	6.67	52
PCB194	2.18	5.73	90
PCB199(200)	0.25U	3.26	NC
PCB201	0.25U	0.379	NC

PCB203	0.25U	3.54	NC
PCB206	1.37	2.72	66
PCB209	1.07	1.89	55

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: June 4, 2019

Parameters: Metals

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-010

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10124	56685	Sediment	07/26/18
B18-10126	56686	Sediment	07/26/18
B18-10127	56687	Sediment	07/26/18
B18-10132	56688	Sediment	07/26/18
B18-10133	56689	Sediment	07/26/18
B18-20133	56690	Sediment	07/26/18
B18-10136	56691	Sediment	07/27/18
B18-10137	56692	Sediment	07/27/18
B18-10139	56693	Sediment	07/27/18
B18-10140	56694	Sediment	07/27/18
B18-10141	56695	Sediment	07/27/18
B18-10142	56696	Sediment	07/27/18
B18-10124(SEM)	56685(SEM)	Sediment	07/26/18
B18-10126(SEM)	56686(SEM)	Sediment	07/26/18
B18-10127(SEM)	56687(SEM)	Sediment	07/26/18
B18-10132(SEM)	56688(SEM)	Sediment	07/26/18
B18-10133(SEM)	56689(SEM)	Sediment	07/26/18
B18-20133(SEM)	56690(SEM)	Sediment	07/26/18
B18-10136(SEM)	56691(SEM)	Sediment	07/27/18
B18-10137(SEM)	56692(SEM)	Sediment	07/27/18
B18-10139(SEM)	56693(SEM)	Sediment	07/27/18
B18-10140(SEM)	56694(SEM)	Sediment	07/27/18
B18-10141(SEM)	56695(SEM)	Sediment	07/27/18
B18-10142(SEM)	56696(SEM)	Sediment	07/27/18
B18-10133MS	56689MS	Sediment	07/26/18
B18-10133MSD	56689MSD	Sediment	07/26/18
B18-10133DUP	56689DUP	Sediment	07/26/18

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10133MS(SEM)	56689MS(SEM)	Sediment	07/26/18
B18-10133MSD(SEM)	56689MSD(SEM)	Sediment	07/26/18
B18-10133DUP(SEM)	56689DUP(SEM)	Sediment	07/26/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Iron, Lead, Nickel, Phosphorus, Selenium, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133	Mercury	169	28	J (all detects)	Р
B18-10136 B18-10137 B18-10139 B18-10140 B18-10141 B18-10142	Mercury	168	28	J (all detects)	Р

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10133MS/MSD (B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10139 B18-10140 B18-10141 B18-10141	Barium Mercury	187 (75-125) -	183 (75-125) 126 (75-125)	J (all detects) J (all detects)	Α

For B18-10133MS/MSD, no data were qualified for aluminum and iron percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

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

Spike ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10133MS/MSD (B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10139 B18-10140 B18-10141 B18-10141	Iron	35 (≤25)	J (all detects)	Α

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
B18-10133DUP (B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10139 B18-10140 B18-10141 B18-10142)	Barium	55 (≤25)	-	J (all detects)	A

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits with the following exceptions:

CRM ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
60151-CRM1	Aluminum	127 (42-124)	B18-10124 B18-10126 B18-10127	J (all detects)	Α

XI. Field Replicates

Samples B18-10127 and B18-20133 and samples B18-10127(SEM) and B18-20133(SEM) were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentr	Concentration (ug/g)		
Analyte	B18-10127	B18-20133	RPD	
Aluminum	35400	36700	4	
Antimony	0.693	0.52	29	
Arsenic	9.9	10.8	9	
Barium	94	99.1	5	
Beryllium	0.624	0.727	15	
Cadmium	0.52	0.52	0	
Chromium	69	71.6	4	
Copper	196	202	3	
Iron	33000	34700	5	
Lead	367	57.1	146	
Mercury	0.661	2.84	124	

	Concentr		
Analyte	B18-10127	B18-20133	RPD
Nickel	28.5	18.3	44
Phosphorus	587	582	1
Selenium	0.501	0.546	9
Silver	1.56	1.34	15
Zinc	255	264	3

	Concentrat		
Analyte	B18-10127(SEM) B18-20133(SEM)		RPD
Copper	0.0591	0.0547	8
Lead	0.124	0.124	0
Nickel	0.0191	0.0185	3
Zinc	2.03	2.24	10

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-010	Analyte reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, MS/MSD %R and RPD, DUP RPD, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in twenty-four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-010

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10139 B18-10140 B18-10141	Mercury	J (all detects)	Р	Technical holding times (H)
B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10139 B18-10140 B18-10141	Barium Mercury	J (all detects) J (all detects)	Α	Matrix spike/Matrix spike duplicate (%R) (HM)
B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10139 B18-10140 B18-10141	Iron	J (all detects)	Α	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10132 B18-10133 B18-20133 B18-10136 B18-10139 B18-10140 B18-10141 B18-10142	Barium	J (all detects)	A	Duplicate sample analysis (RPD) (HD)
B18-10124 B18-10126 B18-10127	Aluminum	J (all detects)	А	Certified reference material (%R) (HP)

	Analyte	Flan	A D	Donner (Ondo)
Sample	Analyte	Flag	A or P	Reason (Code)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-20133 B18-10136 B18-10137 B18-10140 B18-10141 B18-10142 B18-10124(SEM) B18-10126(SEM) B18-10133(SEM) B18-10133(SEM) B18-10136(SEM) B18-10137(SEM) B18-10136(SEM) B18-10139(SEM) B18-10139(SEM) B18-10139(SEM) B18-10139(SEM) B18-10140(SEM) B18-10140(SEM) B18-10141(SEM) B18-10141(SEM) B18-10141(SEM)	Analyte reported below the RL and above the MDL	J (all detects)	A	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-010

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-010

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET

LDC #: 45128E4a SDG #: 1807003-010

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6020/EPA Method 200.8/EPA Method 245.7)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A SW	
II.	ICP/MS Tune	N	
III.	Instrument Calibration	N	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Laboratory Blanks	A	
VI.	Field Blanks	\mathcal{N}	
VII.	Matrix Spike/Matrix Spike Duplicates	SW	
VIII.	Duplicate sample analysis	SW	
IX.	Serial Dilution	\mathcal{N}_{\perp}	•
X.	Laboratory control samples	SW.	LOSID CRM,
XI.	Field Duplicates	SW	(\$,6) (A,18)
XII.	Internal Standard (ICP-MS)	N	3 15
XIII.	Sample Result Verification	N	
_XIV	Overall Assessment of Data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected R = Rinsate

FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10124	56685	Sediment	07/26/18
2	B18-10126	56686	Sediment	07/26/18
3	B18-10127	56687	Sediment	07/26/18
ļ	B18-10132	56688	Sediment	07/26/18
5	B18-10133	56689	Sediment	07/26/18
<u> </u>	B18-20133	56690	Sediment	07/26/18
,	B18-10136	56691	Sediment	07/27/18
3	B18-10137	56692	Sediment	07/27/18
	B18-10139	56693	Sediment	07/27/18
0	B18-10140	56694	Sediment	07/27/18
1	B18-10141	56695	Sediment	07/27/18
2	B18-10142	56696	Sediment	07/27/18
3	B18-10124(SEM)	56685(SEM)	Sediment	07/26/18
4	B18-10126(SEM)	56686(SEM)	Sediment	07/26/18
5_	B18-10127(SEM)	56687(SEM)	Sediment	07/26/18

LDC #: 45128E4a VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-010

Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: Metals (EPA SW 846 Method 6020/EPA Method 200.8/EPA Method 245.7)

Reviewer: 2nd Reviewer:

16	B18-10132(SEM)	56688(SEM)	Sediment	07/26/18
17	B18-10133(SEM)	56689(SEM)	Sediment	07/26/18
18	B18-20133(SEM)	56690(SEM)	Sediment	07/26/18
19	B18-10136(SEM)	56691(SEM)	Sediment	07/27/18
20	B18-10137(SEM)	56692(SEM)	Sediment	07/27/18
21	B18-10139(SEM)	56693(SEM)	Sediment	07/27/18
22	B18-10140(SEM)	56694(SEM)	Sediment	07/27/18
23	B18-10141(SEM)	56695(SEM)	Sediment	07/27/18
24	B18-10142(SEM)	56696(SEM)	Sediment	07/27/18
25	B18-10133MS	56689MS	Sediment	07/26/18
26	B18-10133MSD	56689MSD	Sediment	07/26/18
27	B18-10133DUP	56689DUP	Sediment	07/26/18
28	B18-10133MS(SEM)	56689MS(SEM)	Sediment	07/26/18
29	B18-10133MSD(SEM)	56689MSD(SEM)	Sediment	07/26/18
30_	B18-10133DUP(SEM)	56689DUP(SEM)	Sediment	07/26/18
31				
32				
33				

LDC #: 45/28E-6

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: <u>_1</u>	of_	1_
Reviewer:	C.F	
2nd reviewer:	<u> </u>	

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-12		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, (Hg, Ni, K, Se, Ag,)Na, Tl, V(Zn,)Mo, B, Sn, Ti, (P)
1324		Al, Sb, As, Ba, Be(Cd), Ca, Cr, Co, Cu), Fe, (Pb, Mg, Mn, Hg, Ni, K, Se, Ag), Na, Tl, V(Zn) Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
QC:25-1	27	(Al, Sb, As, Ba, Be, Co, Ca, Cr)Co, Cu, Fe, Pb) Mg, Mn, (Hg, Ni, K, Se, Ag) Na, Tl, V, (Zr), Mo, B, Sn, Ti,
28-	3()	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cd, Fe, Pb, Mg, Mn, Hg, Ni K, Se, Ag) Na, Tl, V, Zn Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	— п	Analysis Method
ICP		AI, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr. Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA		Al Sh. As Ba Be, Cd, Ca, Cr. Co, Cu, Fe, Ph. Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti

Comments:	Mercury by CVAA if performed	 	

LDC #: 45128E4a

VALIDATION FINDINGS WORKSHEET Technical Holding Times

Were samples preserved? $\underline{Y} \underline{N} \underline{N/A}$ All circled dates have exceeded the technical holding time.

	Mercury Holding time = 28 days					
Sampling Date	Analysis Date	Total Time until Analysis (days)	Qualifier Code: 1	Det/ND		
7/26/18	1/11/19	169	J/R/P	Det		
7/27/18	1/11/19	168	J/R/P	Det		
			1			
		1.15.474114				
			·			

	7/26/18	Sampling Analysis Date 7/26/18 1/11/19	Sampling Date Analysis Date Total Time until Analysis (days) 7/26/18 1/11/19 169 7/27/18 1/11/19 168	Sampling Date Analysis Date Total Time until Analysis (days) Qualifier Code: 1 7/26/18 1/11/19 169 J/R/P 7/27/18 1/11/19 168 J/R/P	Sampling Date Analysis Date Total Time until Analysis (days) Qualifier Code: 1 Det/ND 7/26/18 1/11/19 169 J/R/P Det 7/27/18 1/11/19 168 J/R/P Det	Sampling Date Analysis Date Total Time until Analysis (days) Qualifier Code: 1 Det/ND 7/26/18 1/11/19 169 J/R/P Det 7/27/18 1/11/19 168 J/R/P Det

Technical Holding Time Criteria

Mercury: 28 days All other metals: 180 days - 1 year if frozen

LDC #: US128EVA

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page: of Reviewer: 2nd Reviewer:

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qual	ifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Y N N/A	Was a matrix spike analyzed for each matrix in this SDG?
<u>Y N N/A</u>	Were matrix spike percent recoveries (%R) within the control limits ϕ f 75-125? If the sample concentration exceeded the spike concentration by a facto
	of 4 or more, no action was taken.
Y N N/A	Were all duplicate sample relative percent differences (RPD) ≤ 20% for samples?
LEVEL IV ONL'	<i>t</i> : 25
V N N/Δ	Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations

#	Magnon In			MS %Recovery	MSD	PPD (1: :(a)		
Ħ	25/26	Matrix	Analyte	187	%Recovery	RPD (Limits)	Associated Samples	Jdet A (Det) (HM)
H	100		Fe	1.0	_	35(425)		JUSTA CHA
			Ha		126			JdetA (HM)
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Comments:	25/26: HI	te 74x			
	7				
			_		

LDC#: 45128EYA

VALIDATION FINDINGS WORKSHEET <u>Duplicate Analysis</u>

Page:_	of\	_
Reviewer:	9	_
2nd Reviewer:	4	_

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A

Was a duplicate sample analyzed for each matrix in this SDG?

Y N N/A

Were all duplicate sample relative percent differences (RPD) \leq 20% samples? If no, see qualifications below. A control limit of \pm R.L. (\pm 2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used

for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

⊭	N IN/A	vvere recalculated res	uits acceptat	de! See Leve	TV Necalculation VV	orksneet for recalcula	uons.	CDD)
#	Date	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications
		27		B	55(425)		4-12	JUJA (Del
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Comments:		 		
-				

LDC #: US12864

VALIDATION FINDINGS WORKSHEET <u>Laboratory Control Samples (LCS)</u>

	Page:_	of_	<u> </u>
	Reviewer:	9	
2nd	Reviewer:	9	

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

YNN/A Were all aqueous LCS percent recoveries (%R) within the control limits of 80-120% and all soil LCS %R within laboratory established control limits.

LEVEL IV ONLY:

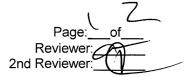
Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	LCS.ID	Matrix	Analyte	%R (limits)_ \	Associated Samples	Qualifications\
	COISI-CRM	1	Analyte F)	12 (G-12)	1-3	Joet (A COEL) (HP)
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Comments:			

LDC#: 45128E4a

VALIDATION FINDINGS WORKSHEET Field Duplicates



METHOD: Metals (EPA Method 6010B/7000)

	Concentra	200		
Analyte	3	6	RPD	
Aluminum	35400	36700	4	
Antimony	0.693	0.52	29	
Arsenic	9.9	10.8	9	
Barium	94	99.1	5	
Beryllium	0.624	0.727	15	
Cadmium	0.52	0.52	0	
Chromium	69	71.6	4	
Copper	196	202	3	
Iron	33000	34700	5	
Lead	367	57.1	146	
Mercury	0.661	2.84	124	
Nickel	28.5	18.3	44	
Phosphorus	587	582	1	
Selenium	0.501	0.546	9	
Silver	1.56	1.34	15	
Zinc	255	264	3	

LDC#: 45128E4a VALIDATION FINDINGS WORKSHEET Field Duplicates

2nd Reviewer:

METHOD: Metals (EPA Method 6010B/7000)

	Concentration (umol/g)		
Analyte	15 18		RPD
Copper	0.0591	0.0547	8
Lead	0.124	0.124	0
Nickel	0.0191	0.0185	3
Zinc	2.03	2.24	10

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2019\45128E4a.wpd

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: June 4, 2019

Parameters: Wet Chemistry

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-010

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10124	56685	Sediment	07/26/18
B18-10126	56686	Sediment	07/26/18
B18-10127	56687	Sediment	07/26/18
B18-10132	56688	Sediment	07/26/18
B18-10133	56689	Sediment	07/26/18
B18-20133	56690	Sediment	07/26/18
B18-10136	56691	Sediment	07/27/18
B18-10137	56692	Sediment	07/27/18
B18-10139	56693	Sediment	07/27/18
B18-10140	56694	Sediment	07/27/18
B18-10141	56695	Sediment	07/27/18
B18-10142	56696	Sediment	07/27/18
B18-10124DUP	56685DUP	Sediment	07/26/18
B18-10133MS	56689MS	Sediment	07/26/18
B18-10133MSD	56689MSD	Sediment	07/26/18
B18-10133DUP	56689DUP	Sediment	07/26/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Acid Volatile Sulfide by Plumb 1981
Ammonia as Nitrogen by Standard Method 4500-NH3-D
Particle Size by Standard Method 2560D
Percent Solids by Standard Method 2540B
Total Nitrogen and Total Organic Carbon by Environmental Protection Agency (EPA) SW 846 Method 9060

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133	Acid volatile sulfide	167 days	14 days	J (all detects)	A
B18-10136 B18-10137 B18-10139 B18-10140 B18-10141 B18-10142	Acid volatile sulfide	166 days	14 days	J (all detects)	А
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133	Ammonia as N	165 days	28 days	J (all detects)	Α
B18-10136 B18-10137 B18-10139 B18-10140 B18-10141 B18-10142	Ammonia as N	164 days	28 days	J (all detects)	А
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133	Total nitrogen	172 days	28 days	J (all detects)	А
B18-10136 B18-10137 B18-10139 B18-10140 B18-10141 B18-10142	Total nitrogen	171 days	28 days	J (all detects)	А

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10133MS/MSD (All samples in SDG 1807003-010)	Acid volatile sulfide	42 (80-120)	41 (80-120)	J (all detects)	Α

Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Replicates

Samples B18-10127 and B18-20133 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentration		
Analyte	B18-10127	B18-20133	RPD
Acid volatile sulfide	70.2 mg/Kg	154 mg/Kg	75

	Concentration		
Analyte	B18-10127	B18-20133	RPD
Ammonia as N	5.05 mg/Kg	5.33 mg/Kg	. 5
Percent solids	53.9 %	51.1 %	5
Total nitrogen	0.11 %	0.1 %	10
Total organic carbon	1.45 %	1.43 %	1

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-010	Analyte reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, MS/MSD %R, and results reported below the RL and above the MDL, data were qualified as estimated in twelve samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-010

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10149 B18-10140	Acid volatile sulfide Ammonia as N Total nitrogen	J (all detects) J (all detects) J (all detects)	А	Technical holding times (H)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10149 B18-10140 B18-10141	Acid volatile sulfide	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10124 B18-10126 B18-10127 B18-10132 B18-10133 B18-20133 B18-10136 B18-10137 B18-10140 B18-10140 B18-10141	Analyte reported below the RL and above the MDL	J (all detects)	А	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-010

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-010

No Sample Data Qualified in this SDG

LDC	#:	45128E6	

SDG #: 1807003-010

VALIDATION COMPLETENESS WORKSHEET

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer:

METHOD: (Analyte) AVS (Plumb 1981), Ammonia as N (SM4500D), Particle Size (SM 2560D), % Solids (SM2540B), Total Nitrogen (EPA SW846 9060), TOC (EPA SW 846 Method 9060)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	ASW	
11	Initial calibration	N	
111.	Calibration verification	N	
IV	Laboratory Blanks	I A	
V	Field blanks	\mathcal{N}_{\downarrow}	
VI.	Matrix Spike/Matrix Spike Duplicates	SW	
VII.	Duplicate sample analysis	A	100
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	Sh/	(\$6) 3(3.6)
X.	Sample result verification	N	3
XI	Overall assessment of data	R	

Note: A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank

OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10124	56685	Sediment	07/26/18
2	B18-10126	56686	Sediment	07/26/18
3	B18-10127	56687	Sediment	07/26/18
4	B18-10132	56688	Sediment	07/26/18
5	B18-10133	56689	Sediment	07/26/18
6	B18-20133	56690	Sediment	07/26/18
7	B18-10136	56691	Sediment	07/27/18
8	B18-10137	56692	Sediment	07/27/18
9	B18-10139	56693	Sediment	07/27/18
10	B18-10140	56694	Sediment	07/27/18
11	B18-10141	56695	Sediment	07/27/18
12	B18-10142	56696	Sediment	07/27/18
13	B18-10124DUP	56685DUP	Sediment	07/26/18
14	B18-10133MS	56689MS	Sediment	07/26/18
15	B18-10133MSD	56689MSD	Sediment	07/26/18
16	B18-10133DUP	56689DUP	Sediment	07/26/18
17				

LDC #: 4512866

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: 1 of 1

Reviewer: CR
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter
1-12	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN(NH) TKN FOO C16+ CIO(AVS) (65) (65)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
QC13	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4 VS CO R
14,15	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN(NH) TKN TOC Cr6+ CIO4 (AV)
16	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN/NH3 TKN TOC C16+ CIO4 (NY NY TOC)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	ph TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CI F NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ AIk CN NH $_3$ TKN TOC Cr6+ CIO $_4$
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH_TDS_CL_F_NONOSOO-POAIk_CN_NH_TKN_TOC_Cr6+ ClO

Comments:	

LDC #: 45128E6

VALIDATION FINDINGS WORKSHEET Technical Holding Times

Reviewer:_ 2nd reviewer:_

All circled dates have exceeded the technical holding time.

Y N N/A

Were all samples preserved as applicable to each method?

Y N N/A

Were all cooler temperatures within validation criteria?

Method:		Plumb AVS			SM 4500 NH3D Ammonia as N		
	olding time:		14 days			28 days	
Sampling Sample ID date		Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier
1-6	7/26/18	1/9/19	167	J/R/A (Det)	1/7/19	165	J/R/A (Det)
7-12	7/27/18	1/9/19	166	J/R/A (Det)	1/7/19	164	J/R/A (Det)

Method:		SM2540B		EPA 9060			
Parameters			Percent solids	5	Total nitrogen		
Technical h	olding time:		180 days			28 days	
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier
1-6	7/26/18				1/14/19	172	J/R/A (Det)
7-12	7/27/18				1/14/19	171	J/R/A (Det)

LDC #: 45128E6

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:of	
Reviewer:	
2nd Reviewer:	

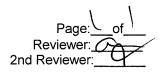
METHOD: Inor	ganics, EPA Method See cover
Please see qua	alifications below for all questions answered "N". Not applicable questions are identified as "N/A". Was a matrix spike analyzed for each matrix in this SDG? Were matrix spike percent recoveries (%R) within the QAPP limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more
W N/A	Was a matrix spike analyzed for each matrix in this SDG?
Y (DV N/A	Were matrix spike percent recoveries (%R) within the QAPP limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more
	no action was taken.
WN N/A	Were all duplicate sample relative percent differences (RPD) within QAPP limits?
LEVEL IV ONL	.Y:
Y N/(N/A /	Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
	14/15				41			J/UJ/A (Det)
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Comments:						

LDC#: 45128E6

VALIDATION FINDINGS WORKSHEET Field Duplicates



Inorganics, Method See Cover

	Concentration		
Analyte	3	6	RPD
Acid volatile sulfides	70.2	154	75
Ammonia as N	5.05	5.33	5
Percent solids (%)	53.9	51.1	5
Total nitrogen (%)	0.11	0.1	10
TOC (%)	1.45	1.43	1

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2019\45128E6.wpd

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polynuclear Aromatic Hydrocarbons

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 187003-012

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10034	56746	Sediment	07/30/18
B18-10035	56747	Sediment	07/30/18
B18-10036	56748	Sediment	07/30/18
B18-10143	56749	Sediment	07/30/18
B18-10144	56750	Sediment	07/30/18
B18-10039	56751	Sediment	07/30/18
B18-10144MS	56750MS	Sediment	07/30/18
B18-10144MSD	56750MSD	Sediment	07/30/18
B18-10144DUP	56750DUP	Sediment	07/30/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10144MS/MSD (B18-10144)	2-Methylnaphthalene	27 (≤25)	J (all detects)	А

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10144DUP (B18-10144)	2,6-Dimethylnaphthalene 1-Methylnaphthalene 2-Methylnaphthalene Acenaphthene Dibenzo(a,h)anthracene Fluorene Naphthalene	30 (≤25) 60 (≤25) 34 (≤25) 26 (≤25) 29 (≤25) 43 (≤25) 47 (≤25)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	А

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
20907-BS1/BS2 (B18-10034 B18-10035 B18-10036)	1-Methylnaphthalene 2-Methylnaphthalene Acenaphthene Biphenyl Naphthalene 2,6-Dimethylnaphthalene	59 (70-130) 63 (70-130) 67 (70-130) 64 (70-130) 51 (70-130)	57 (70-130) 60 (70-130) 66 (70-130) 62 (70-130) 49 (70-130) 68 (70-130)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р
20907-BS1/BS2 (B18-10034 B18-10035 B18-10036)	Benzo(a)anthracene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Fluoranthene Indeno(1,2,3-cd)pyrene	196 (70-130) 147 (70-130) 142 (70-130) 131 (70-130) 156 (70-130)	200 (70-130) 148 (70-130) 147 (70-130) - 163 (70-130)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р
56742-BS1/BS2 (B18-10143 B18-10144 B18-10039)	Anthracene	67 (70-130)	-	J (all detects)	Р

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
20910-CRM1 (SRM 1944)	Benzo(k)fluoranthene	41 (60-140)	B18-10034 B18-10035 B18-10036	J (all detects)	А
56744-CRM1 (SRM 1944)	Benzo(k)fluoranthene	41 (60-140)	B18-10143 B18-10144 B18-10039	J (all detects)	A

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-012	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD RPD, DUP RPD, LCS/LCSD %R, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 187003012

Sample	Compound	Flag	A or P	Reason (Code)
B18-10144	2-Methylnaphthalene	J (all detects)	А	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10144	2,6-Dimethylnaphthalene 1-Methylnaphthalene 2-Methylnaphthalene Acenaphthene Dibenzo(a,h)anthracene Fluorene Naphthalene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10034 B18-10035 B18-10036	1-Methylnaphthalene 2-Methylnaphthalene Acenaphthene Biphenyl Naphthalene 2,6-Dimethylnaphthalene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р	Laboratory control samples (%R) (LL)
B18-10034 B18-10035 B18-10036	Benzo(a)anthracene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Fluoranthene Indeno(1,2,3-cd)pyrene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р	Laboratory control samples (%R) (HL)
B18-10143 B18-10144 B18-10039	Anthracene	J (all detects)	Р	Laboratory control samples (%R) (LL)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Benzo(k)fluoranthene	J (all detects)	А	Certified reference material (%R) (LP)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 187003-012

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 187003-012

No Sample Data Qualified in this SDG

LDC #: 45128F2b	_ VALIDATION COMPLETENESS WORKSHEET	Date: <u>s</u>
SDG #: 1807003-012	Level II	Page:_
Laboratory: Physis Environm	iental Laboratories, Inc.	Reviewer:
,		2nd Reviewer:

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	1	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	/
VIII.	Matrix spike/Matrix spike duplicates	X Law	
IX.	Laboratory control samples	tw	Les D. * CPM
X.	Field duplicates	N	`
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	4	

Note: A = Acceptable ND = No compounds detected N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	B18-10034	56746	Sediment	07/30/18
2	B18-10035	56747	Sediment	07/30/18
3	B18-10036	56748	Sediment	07/30/18
4	B18-10143	56749	Sediment	07/30/18
5	B18-10144	56750	Sediment	07/30/18
6	B18-10039	56751	Sediment	07/30/18
7	B18-10144MS	56750MS	Sediment	07/30/18
8	B18-10144MSD	56750MSD	Sediment	07/30/18
9	B18-10144DUP	56750DUP	Sediment	07/30/18
10				

Notes:

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:	of
Reviewer:	9
2nd Reviewer:_	SVE

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

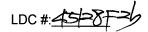
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

	THE VECTOR OF	I	les (%R) and the relative	MSD	I within the QO	T	
#	MS/MSD ID	Compound	MS %R (Limits)	%R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	7/8	W	()	()	27 (525)	5 (det3)	Jet3A(HD)
			()	()	()		
			()	()	()		
	9	XXX	()	()	30 (575)	5 (dets)	Sots A (HD)
		TTT	()	()	60 ()	<u> </u>	1
<u> </u>		W	()	()	34 ()		
		59	()	()	26()		
		kkk	()	()	29()		<u> </u>
┡		NN				<u> </u>	
├		.5	()	()	47 (1)		
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					()		1



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

NN/A Was a LCS required?

YIN N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		= 2090T-105/	TIT	59 (TO-131)	ST (70-131)	()	1-3.MB	JMA (44)
		-BS	W	63 ()	60 ()	()		
			44	67 ()	66()	()		
			EEE	64 ()	62()	()		
			5	5 ()	49()	()		
			XXX	()	68 ()	()		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
			ccc	196 ()	200 ()	()		105x(HL)
			444 Lock	H7()	H8()	()		/ /
			HKK_	M\$()	HT ()	()		
			$\lambda\lambda$	13/()	(,)	()		
			111	156 (V)	163 (1)	()		V
				()	()	()		
		20910-ERM (SRM 1944)	H+1H	41 60-40	()	()	1-3.WB	1/A/A(2P)
		SRM (944)		()	()	()		
-		c 4-1		()	()	()	1. 2.1 4	
 		56742-BSV	V V	GT T0-130	()	()	4-6.MD	1/1/2 (4)
		\$50		()	()	()		/
				()	()	()		
		1-1-11	1111	$\frac{1}{\sqrt{2}}$	()	()	4/1/12	1611 (1 (24)
<u> </u>		55744-CRM1 (SRM 1944)	ПНН	41 (60-140)	()	()	4-6.NB	MH/A LAD)
		(SRM (944)		()	()	()		
				()	()	()		
				()	()	()		
				()	()	()		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polybrominated Diphenyl Ethers

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-012

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10034	56746	Sediment	07/30/18
B18-10035	56747	Sediment	07/30/18
B18-10036	56748	Sediment	07/30/18
B18-10143	56749	Sediment	07/30/18
B18-10144	56750	Sediment	07/30/18
B18-10039	56751	Sediment	07/30/18
B18-10144MS	56750MS	Sediment	07/30/18
B18-10144MSD	56750MSD	Sediment	07/30/18
B18-10144DUP	56750DUP	Sediment	07/30/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polybrominated Diphenyl Ethers (PBDE) by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to nonconformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10144MS/MSD (B18-10144)	PBDE 209	28 (50-150)	31 (50-150)	UJ (all non-detects)	А

Relative percent differences (RPD) were within QC limits.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
20907-BS1/BS2 (B18-10034 B18-10035 B18-10036)	PBDE 190 PBDE 209	67 (70-130) 22 (70-130)	61 (70-130) 17 (70-130)	UJ (all non-detects) UJ (all non-detects)	Р

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-012	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R, LCS/LCSD %R, and results reported below the RL and above the MDL, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polybrominated Diphenyl Ethers - Data Qualification Summary - SDG 1807003-012

Sample	Compound	Flag	A or P	Reason (Code)
B18-10144	PBDE 209	UJ (all non-detects)	Α	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10034 B18-10035 B18-10036	PBDE 190 PBDE 209	UJ (all non-detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Laboratory Blank Data Qualification Summary SDG 1807003-012

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Field Blank Data Qualification Summary - SDG
1807003-012

No Sample Data Qualified in this SDG

LDC #: 45128F2c VALIDATION COMPLETENESS WORKSHEET SDG #: 1807003-012 Level II Laboratory: Physis Environmental Laboratories, Inc. METHOD: GC/MS Polybrominated Diphenyl Ethers (EPA SW 846 Method 8270D-NCI)	Date: S/3/19 Page:
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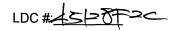
The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	1	
11	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	4	
VI.	Field blanks	I N	
VII.	Surrogate spikes	Ant	
VIII.	Matrix spike/Matrix spike duplicates	WA	-
IX.	Laboratory control samples	WA	1050. CRM
Χ.	Field duplicates		
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	B18-10034	56746	Sediment	07/30/18
2	B18-10035	56747	Sediment	07/30/18
3	B18-10036	56748	Sediment	07/30/18
4	B18-10143	56749	Sediment	07/30/18
5	B18-10144	56750	Sediment	07/30/18
6	B18-10039	56751	Sediment	07/30/18
7	B18-10144MS	56750MS	Sediment	07/30/18
8	B18-10144MSD	56750MSD	Sediment	07/30/18
9	B18-10144DUP	56750DUP	Sediment	07/30/18
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Not	Notes:								
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VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	
Reviewer:	9
2nd Reviewer:_	N

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y/N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	7/8	P.BDE 209	28 150/50	31 (50-150)	()	5(ND)	VAVA (ZM)
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: ___(of | Reviewer: ______ 2nd Reviewer: ______

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Plagse see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

YIN)N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		2090T-BSV	# DE 190	6T TO-130	61 70-130	()	1-3.MB(NO	VULA (22)
		BS2	1 209	, ,	17 (V)	()		1
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Fipronil & Degradates

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-012

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10034	56746	Sediment	07/30/18
B18-10035	56747	Sediment	07/30/18
B18-10036	56748	Sediment	07/30/18
B18-10143	56749	Sediment	07/30/18
B18-10144	56750	Sediment	07/30/18
B18-10039	56751	Sediment	07/30/18
B18-10144MS	56750MS	Sediment	07/30/18
B18-10144MSD	56750MSD	Sediment	07/30/18
B18-10144DUP	56750DUP	Sediment	07/30/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Fipronil and Degradates by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-012	Compound reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Fipronil & Degradates - Data Qualification Summary - SDG 1807003-012

Sample	Compound	Flag	A or P	Reason (Code)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program Fipronil & Degradates - Laboratory Blank Data Qualification Summary - SDG 1807003-012

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Fipronil & Degradates - Field Blank Data Qualification Summary - SDG 1807003012

No Sample Data Qualified in this SDG

LDC #: 45128F2d	VALIDATION COMPLETENESS W
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SDG #: 1807003-012 Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: GC/MS Fipronil & Degradates (EPA SW 846 Method 8270D-NCI)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	X	
II.	GC/MS Instrument performance check	N N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	\triangle	
VI.	Field blanks	\sim	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	\forall	
IX.	Laboratory control samples	A	LC5/D
X.	Field duplicates	N	/
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	1	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank

OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10034	56746	Sediment	07/30/18
2	B18-10035	56747	Sediment	07/30/18
3	B18-10036	56748	Sediment	07/30/18
4	B18-10143	56749	Sediment	07/30/18
5	B18-10144	56750	Sediment	07/30/18
6	B18-10039	56751	Sediment	07/30/18
7	B18-10144MS	56750MS	Sediment	07/30/18
8	B18-10144MSD	56750MSD	Sediment	07/30/18
9	B18-10144DUP	56750DUP	Sediment	07/30/18
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Not	es:		 	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Synthetic Pyrethroid Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-012

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10034	56746	Sediment	07/30/18
B18-10035	56747	Sediment	07/30/18
B18-10036	56748	Sediment	07/30/18
B18-10143	56749	Sediment	07/30/18
B18-10144	56750	Sediment	07/30/18
B18-10039	56751	Sediment	07/30/18
B18-10144MS	56750MS	Sediment	07/30/18
B18-10144MSD	56750MSD	Sediment	07/30/18
B18-10144DUP	56750DUP	Sediment	07/30/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Synthetic Pyrethroid Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D-MRM

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10144MS/MSD (B18-10144)	Cyhalothrin, total lambda Permethrin, cis-	157 (50-150) 154 (50-150)	<u>-</u> -	NA	•
B18-10144MS/MSD (B18-10144)	Prallethrin	28 (50-150)	-	UJ (all non-detects)	Α

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10144MS/MSD (B18-10144)	Deltamethrin/Tralomethrin Prallethrin	36 (≤25) 124 (≤25)	NA	-

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-012	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R and results reported below the RL and above the MDL, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Synthetic Pyrethroid Pesticides - Data Qualification Summary - SDG 1807003-012

Sample	Compound	Flag	A or P	Reason (Code)
B18-10144	Prallethrin	UJ (all non-detects)	. А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Laboratory Blank Data Qualification Summary SDG 1807003-012

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Field Blank Data Qualification Summary - SDG
1807003-012

No Sample Data Qualified in this SDG

SDG #: 1807003-012 Laboratory: Physis Environmental Laboratories, Inc.

SHEET Level II

Reviewer 2nd Reviewer:

METHOD: GC/MS Synthetic Pyrethroid Pesticides (EPA SW 846 Method 8270D-MRM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	4	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	WA	_
IX.	Laboratory control samples	A	2CSD
X.	Field duplicates	$\mathcal{T}_{\mathcal{L}}$	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	·
XV.	Overall assessment of data	\forall	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank

OTHER:

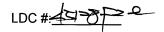
	Client ID	Lab ID	Matrix	Date
1	B18-10034	56746	Sediment	07/30/18
2	B18-10035	56747	Sediment	07/30/18
3	B18-10036	56748	Sediment	07/30/18
4	B18-10143	56749	Sediment	07/30/18
5	B18-10144	56750	Sediment	07/30/18
6	B18-10039	56751	Sediment	07/30/18
7	B18-10144MS	56750MS	Sediment	07/30/18
8	B18-10144MSD	56750MSD	Sediment	07/30/18
9	B18-10144DUP	56750DUP	Sediment	07/30/18
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VALIDATION FINDINGS WORKSHEET

METHOD: Pyrethroids

ETHOD: Pyrethiolas						
A. Allethrin						
B. Bifenthrin						
C. Cyfluthrin						
D. Cyhalothrin, Total Lambda						
E. Cypermethrin						
F. Danitol (Fenpropathrin)						
G. Deltamethrin/Tralomethrin						
H. Esfenvalerate						
I. Fluvalinate						
J. Permethrin, cis-						
K. Permethrin, trans-						
L. Prallethrin						
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VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	_/_of/_	
Reviewer:	0	
2nd Reviewer:	W	

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

YIN	TVOIC TIC IV	Onviol percent recover	ries (%R) and the relative		T Within the QC	1111103:	
#	MS/MSD JD	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	7/8	→	15T 50-15T	()	~()	5(ND)	Slote & (HM)
	/	4	154 ()	()	()		
			>8 ()	()	()		JULY (=M)
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 30, 2019

Parameters:

Chlorinated Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-012

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10034	56746	Sediment	07/30/18
B18-10035	56747	Sediment	07/30/18
B18-10036	56748	Sediment	07/30/18
B18-10143	56749	Sediment	07/30/18
B18-10144	56750	Sediment	07/30/18
B18-10039	56751	Sediment	07/30/18
B18-10144MS	56750MS	Sediment	07/30/18
B18-10144MSD	56750MSD	Sediment	07/30/18
B18-10144DUP	56750DUP	Sediment	07/30/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D/8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10144MS/MSD (B18-10144)	Endosulfan I Endosulfan II Endrin aldehyde	2 (50-150) 16 (50-150) 7 (50-150)	2 (50-150) 17 (50-150) 35 (50-150)	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	А
B18-10144MS/MSD (B18-10144)	Methoxychlor	159 (50-150)	160 (50-150)	NA	-

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10144MS/MSD (B18-10144)	Endrin aldehyde	133 (≤25)	NA	-

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
20907-BS1/BS2 (B18-10034 B18-10035 B18-10036)	Endosulfan I	2 (70-130)	2 (70-130)	R (all non-detects)	Р
20907-BS1/BS2 (B18-10034 B18-10035 B18-10036)	Endosulfan II Endrin aldehyde alpha-Chlordane cis-Nonachlor	15 (70-130) 10 (70-130) - -	15 (70-130) 30 (70-130) 68 (70-130) 68 (70-130)	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Р
20907-BS1/BS2 (B18-10034 B18-10035 B18-10036)	Methoxychlor Perthane	150 (70-130) 136 (70-130)	159 (70-130) 135 (70-130)	NA	,
56742-BS1/BS2 (B18-10143 B18-10144 B18-10039)	Endosulfan I	3 (70-130)	2 (70-130)	R (all non-detects)	Р
56742-BS1/BS2 (B18-10143 B18-10144 B18-10039)	Endosulfan II Endrin aldehyde alpha-BHC Hexachlorobenzene	15 (70-130) 12 (70-130) 67 (70-130) 67 (70-130)	15 (70-130) 21 (70-130) - -	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Р
56742-BS1/BS2 (B18-10143 B18-10144 B18-10039)	Methoxychlor Perthane	143 (70-130) -	146 (70-130) 134 (70-130)	NA	-

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

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
56742-BS1/BS2 (B18-10143 B18-10144 B18-10039)	Endosulfan I Endrin aldehyde	40 (≤30) 55 (≤30)	NA	-

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
56744-CRM1	gamma-Chlordane	159 (60-140)	B18-10143 B18-10144 B18-10039	NA	-

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-012	Compound reported below the RL and above the MDL	J (all detects)	A

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to LCS/LCSD %R, data were rejected in six samples.

Due to MS/MSD %R, LCS/LCSD %R, and results reported below the RL and above the MDL, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Data Qualification Summary - SDG 1807003-012

Sample	Compound	Flag	A or P	Reason (Code)
B18-10144	Endosulfan II Endrin aldehyde	UJ (all non-detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Endosulfan I	R (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10034 B18-10035 B18-10036	Endosulfan II Endrin aldehyde alpha-Chlordane cis-Nonachlor	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10143 B18-10144 B18-10039	Endosulfan II Endrin aldehyde alpha-BHC Hexachlorobenzene	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 1807003-012

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 1807003-012

No Sample Data Qualified in this SDG

LDC #:	45128F3a	VAL

IDATION COMPLETENESS WORKSHEET

SDG #: 1807003-012

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: GC/MS Chlorinated Pesticides (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	4	
VI.	Field blanks	$ N_i $	
VII.	Surrogate spikes	AWF.	
VIII.	Matrix spike/Matrix spike duplicates	W/A	
IX.	Laboratory control samples / EM	KW/	105/0. CRM
X.	Field duplicates	N	
XI.	Internal standards		
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

Client ID Lab ID Matrix Date B18-10034 56746 Sediment 07/30/18 B18-10035 56747 Sediment 07/30/18 3 B18-10036 56748 Sediment 07/30/18 B18-10143 56749 Sediment 07/30/18 B18-10144 56750 Sediment 07/30/18 6 B18-10039 56751 Sediment 07/30/18 B18-10144MS 56750MS Sediment 07/30/18 8 B18-10144MSD 56750MSD Sediment 07/30/18 9 B18-10144DUP 56750DUP Sediment 07/30/18 Notes:

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticides

A. alpha-HCH	K. Endrin	U. Toxaphene	EE. 2,4'-DDT	OO. oxy-Chlordane
B. beta-HCH	L. Endosulfan II	V. Aroclor-1016	FF. Hexachlorobenzene	PP. cis-Nonachlor
C. delta-HCH	M. 4,4'-DDD	W. Aroclor-1221	GG. Chlordane	QQ. trans-Nonachlor
D. gamma-HCH	N. Endosulfan sulfate	X. Aroclor-1232	HH. Chlordane (Technical)	RR. cis-Chlordane
E. Heptachlor	O. 4,4'-DDT	Y. Aroclor-1242	II. p,p'-DDE	SS. trans-Chlordane
F. Aldrin	P. Methoxychlor	Z. Aroclor-1248	JJ. p,p'-DDD	TT. alpha-Endosulphan
G. Heptachlor epoxide	Q. Endrin ketone	AA. Aroclor-1254	KK. p,p'-DDT	UU. beta-Endosulphan
H. Endosulfan I	R. Endrin aldehyde	BB. Aroclor-1260	LL. o,p'-DDT	VV. Endosulphan Sulphate
I. Dieldrin	S. alpha-Chlordane	CC. 2,4'-DDD	MM. o,p'-DDE	WW. Mirex
J. 4,4'-DDE	T. gamma-Chlordane	DD. 2,4'-DDE	NN. o,p'-DDD	



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:	<u>/</u> of_/_
Reviewer:	B
2nd Reviewer:	14

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

<u> </u>	<u>N/A</u> Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?										
#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications				
	7/3	1	2 50-150	2 (50-150)	. ()	5 (ND)	MA(-M)				
		4	16 (1)	17 (1)	()						
		R	7 ()	35 ()	()						
		7	159 (V)	160 (V)	()		Ilots/A(HU)				
		Perthane	120 ()	()	()						
		, R	' ()	()	133 (<>5)		I dot A (HD)				
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: ___of__ Reviewer: ____ and Reviewer: ____

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Y(N)N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound		LCS (Limits)	LC %R (L	SD	RPD (Limits)	Associated Samples	Qualifications
		2090T-BSV	H	2	(70-130)	2 (TO-130	()	1-3. MB(ND)	JRA (4)
		\$C2		15	()	15 (,)	()		5/4/5
			N	10	()	30 ()	()		7.17
			>	150	()	159)	()		Jolets A (HZ)
		Re	rthane	136	()	135)	()		
			<u>`</u>		()	68)	()		1/4/7 (24)
			PP		()	68)	()		
					()	()	()		
					()	()	(
		56742-BSV	H	3	(70-130)	2 7	10-130	()	4-6. MB(NO)	18A (24)
		A352	4	15	()	15)	()		JUYP
			N	12	()	21 ()	()		///
	_		A	67	(/)	()	()		V
			P	H3	(V)	134 ()	()		1 + (HZ)
		P4	rthane		()	134	<u> </u>	()		
ļ			<u> </u>		()	()	40 430		Jdet= 5 (40)
			R		()	()	55 (V)		1 (1)
			FF	67	(70-130))			MOPCH
					()	()	()	1 (1/13 (4)	
-		56744-CRM1	LT_	159	(60-140)	()	()	4-6. MB(ND)	Lets A (HP)
		(SRM 1944)			()	()	()	<u> </u>	
 					()	()	()		
-					()	()	()		
-					()	()	()		
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 30, 2019

Parameters:

Polychlorinated Biphenyls as Congeners

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-012

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10034	56746	Sediment	07/30/18
B18-10035	56747	Sediment	07/30/18
B18-10036	56748	Sediment	07/30/18
B18-10143	56749	Sediment	07/30/18
B18-10144	56750	Sediment	07/30/18
B18-10039	56751	Sediment	07/30/18
B18-10144MS	56750MS	Sediment	07/30/18
B18-10144MSD	56750MSD	Sediment	07/30/18
B18-10144DUP	56750DUP	Sediment	07/30/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) as Congeners by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10144DUP (B18-10144)	PCB-099 PCB-118 PCB-138 PCB-158 PCB-177 PCB-206	28 (≤25) 35 (≤25) 30 (≤25) 29 (≤25) 29 (≤25) 28 (≤25)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
20907-BS1/BS2 (B18-10034 B18-10035 B18-10036)	PCB-169 PCB-189 PCB-194 PCB-206 PCB-195 PCB-209	142 (70-130) 136 (70-130) 144 (70-130) 144 (70-130) - -	152 (70-130) 151 (70-130) 149 (70-130) 144 (70-130) 132 (70-130) 133 (70-130)	NA	-
56742-BS1/BS2 (B18-10143 B18-10144 B18-10039)	PCB-156 PCB-169 PCB-189 PCB-194 PCB-195	131 (70-130) 153 (70-130) 146 (70-130) 165 (70-130) 133 (70-130)	- 148 (70-130) 144 (70-130) 161 (70-130) 134 (70-130)	NA	-
56742-BS1/BS2 (B18-10143 B18-10144 B18-10039)	PCB-180 PCB-206 PCB-209	135 (70-130) 158 (70-130) 135 (70-130)	131 (70-130) 147 (70-130) -	J (all detects) J (all detects) J (all detects)	А
56742-BS1/BS2 (B18-10143 B18-10144 B18-10039)	PCB-003 PCB-005	60 (70-130) 67 (70-130)	<u>-</u> -	UJ (all non-detects) UJ (all non-detects)	А

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
20910-CRM1	PCB-105 PCB-128 PCB-156	36 (60-140) 36 (60-140) 39 (60-140)	B18-10034 B18-10035 B18-10036	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	А
56744-CRM1	PCB-105 PCB-118 PCB-128 PCB-156	41 (60-140) 53 (60-140) 55 (60-140) 41 (60-140)	B18-10143 B18-10144 B18-10039	J (all detects) UJ (all non-detects)	А

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-012	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to DUP RPD, LCS/LCSD and CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG 1807003-012

Sample	Compound	Flag	A or P	Reason (Code)
B18-10144	PCB-099 PCB-118 PCB-138 PCB-158 PCB-177 PCB-206	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10143 B18-10144 B18-10039	PCB-180 PCB-206 PCB-209	J (all detects) J (all detects) J (all detects)	А	Laboratory control samples (%R) (HL)
B18-10143 B18-10144 B18-10039	PCB-003 PCB-005	UJ (all non-detects) UJ (all non-detects)	А	Laboratory control samples (%R) (LL)
B18-10034 B18-10035 B18-10036	PCB-105 PCB-128 PCB-156	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	А	Certified reference material (%R) (LP)
B18-10143 B18-10144 B18-10039	PCB-105 PCB-118 PCB-128 PCB-156	J (all detects) UJ (all non-detects)	Α	Certified reference material (%R) (LP)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification
Summary - SDG 1807003-012

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Field Blank Data Qualification
Summary - SDG 1807003-012

No Sample Data Qualified in this SDG

		/ /
LDC #: 45128F3b	VALIDATION COMPLETENESS WORKSHEET	Date: <u>5/34/</u> 9
SDG #: 1807003-012	Level II	Page:_/of
Laboratory: Physis Environme	ntal Laboratories, Inc.	Reviewer:
METHOD: GC/MS PCB as Co	ngeners (EPA SW 846 Method 8270D)	2nd Reviewer:
The samples listed below were validation findings worksheets.	reviewed for each of the following validation areas. Validation fin	ndings are noted in attached

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	2
<u>II.</u>	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	4
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks		
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	AFW	
IX.	Laboratory control samples	LW.	Les D. CRM
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	1	

Note:

ND = No compounds detected R = Rinsate FB = Field blank

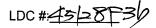
SB=Source blank OTHER:

A = Acceptable N = Not provided/applicable SW = See worksheet

D = Duplicate TB = Trip blank EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	B18-10034	56746	Sediment	07/30/18
2	B18-10035	56747	Sediment	07/30/18
3	B18-10036	56748	Sediment	07/30/18
4	B18-10143	56749	Sediment	07/30/18
5	B18-10144	56750	Sediment	07/30/18
6	B18-10039	56751	Sediment	07/30/18
7	B18-10144MS	56750MS	Sediment	07/30/18
8	B18-10144MSD	56750MSD	Sediment	07/30/18
9	B18-10144DUP	56750DUP	Sediment	07/30/18
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VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	_/_of/_	
Reviewer:	Q1	
2nd Reviewer:	M	

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

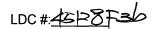
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

★ N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Şamples	Qualifications
	9	P3B099	()	()	28 (275)	5 (det3)	JAEX (HD)
		1118	()	()	35(1)		1
		118	()	()	30()		
		158	()	()	29()		
		I / iTT	()	()	29()		
		1 206	()	()	28()		
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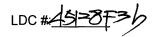
VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

2nd Reviewer: _____

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		20901-351	FCB169	142 (70-130)	152 (TO-130)	()	1-3, MB (NO)	HOTES (HZ)
		BSZ	1 189	136()	15 (1)	()		
			194		149 ()	()		
	· · · .		206	144 (V)	144 ()	()		
			1195	()	132()	()		, , , , , , , , , , , , , , , , , , , ,
			1 209	()	133 (√)	()		₩
			<u> </u>	()	()	()		
		20910-CPM (BPM 1944)	peB105	36 (60-40)	()	()	1-3.MB(ND)	JUJA (XP)
		(BRM 1944)	11/128	36 ()	()		/	
			V156	39 (/)	()	()		
				()	()	()		
		56742-BSV	PCB156		()	()	4-6.MB(ND)	JOBA (HZ)
		-352	1 169	(53)	148 (70-130)	()	V	
<u> </u>			180		131 ()	()	(dots=4-6)	
<u> </u>				146()	144 ()	()	(ND)	
<u> </u>				165 ()	(6) (()		
<u> </u>			195	133 ()	134 ()	()	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
<u> </u>				158 ()	147 (V)	()	(dos=d-6)	
			V 209	135 ()	()	()	(dots=4-6)	↓
				()	()	()		
ļ		56744-CMI (DM 1944)	105	41 (60-140)	()	()	4-6.MB	JUJA(27)
		(AM 1944)	11/18	53 ()	()	()	(dots+ND)	/ /
ļ				55 ()	()	()		
-			1 156	4) (1)	()	()		
L			<u> </u>			()		<u> </u>



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	
Reviewer:	à_
2nd Reviewer:	· JR

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

YIN N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		5672-351	FCB003	60 70-80	()	()	4-6. MB(NO)	1/4/4(22)
		-BSD			()	()		
				()	()	()		
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

June 4, 2019

Parameters:

Metals

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-012

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10034	56746	Sediment	07/30/18
		 	
B18-10035	56747	Sediment	07/30/18
B18-10036	56748	Sediment	07/30/18
B18-10143	56749	Sediment	07/30/18
B18-10144	56750	Sediment	07/30/18
B18-10039	56751	Sediment	07/30/18
B18-10034(SEM)	56746(SEM)	Sediment	07/30/18
B18-10035(SEM)	56747(SEM)	Sediment	07/30/18
B18-10036(SEM)	56748(SEM)	Sediment	07/30/18
B18-10143(SEM)	56749(SEM)	Sediment	07/30/18
B18-10144(SEM)	56750(SEM)	Sediment	07/30/18
B18-10039(SEM)	56751(SEM)	Sediment	07/30/18
B18-10144MS	56750MS	Sediment	07/30/18
B18-10144MSD	56750MSD	Sediment	07/30/18
B18-10144DUP	56750DUP	Sediment	07/30/18
B18-10144MS(SEM)	56750MS(SEM)	Sediment	07/30/18
B18-10144MSD(SEM)	56750MSD(SEM)	Sediment	07/30/18
B18-10144DUP(SEM)	56750DUP(SEM)	Sediment	07/30/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Iron, Lead, Nickel, Phosphorus, Selenium, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Mercury	165	28	J (all detects)	Р

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. For B18-10144MS/MSD(SEM), no data were qualified for aluminum and iron percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

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

Spike ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10144MS/MSD(SEM) (B18-10035 B18-10036 B18-10143 B18-10144 B18-10039)	Iron	200 (≤25)	J (all detects)	A

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits with the following exceptions:

CRM ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
56743-CRM1	Aluminum	139 (42-124)	B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	J (all detects)	А

XI. Field Duplicates

No field duplicates were identified in this SDG.

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-012	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, MS/MSD RPD, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in twelve samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-012

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Mercury	J (all detects)	Р	Technical holding times (H)
B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Iron	J (all detects)	А	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Aluminum	J (all detects)	А	Certified reference material (%R) (HP)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039 B18-10035(SEM) B18-10036(SEM) B18-10143(SEM) B18-10143(SEM) B18-10144(SEM) B18-10144(SEM)	Analyte reported below the RL and above the MDL	J (all detects)	Α	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-012

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-012

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET

LDC #: 45128F4a SDG #: 1807003-012

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6020/EPA Method 200.8/EPA Method 245.7)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	ASW	
II.	ICP/MS Tune	N_	
111.	Instrument Calibration	N	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Laboratory Blanks	A	
VI.	Field Blanks	\mathcal{N}_{\perp}	
VII.	Matrix Spike/Matrix Spike Duplicates	RW_	
VIII.	Duplicate sample analysis	A	
IX.	Serial Dilution	Ň_	
X.	Laboratory control samples	\mathcal{W}_{\perp}	LOSID, CRM
XI.	Field Duplicates	M	,
XII.	Internal Standard (ICP-MS)	N	
XIII.	Sample Result Verification	N	
_XIV	Overall Assessment of Data	A	

Note: A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected R = Rinsate

FB = Field blank

EB = Equipment blank

D = Duplicate SB=Source blank TB = Trip blank OTHER:

Samples appended with "SEM" were analyzed as Simultaneously Extracted Metals

	Client ID	Lab ID	Matrix	Date
1	B18-10034	56746	Sediment	07/30/18
2	B18-10035	56747	Sediment	07/30/18
3	B18-10036	56748	Sediment	07/30/18
4	B18-10143	56749	Sediment	07/30/18
5	B18-10144	56750	Sediment	07/30/18
6	B18-10039	56751	Sediment	07/30/18
7	B18-10034(SEM)	56746(SEM)	Sediment	07/30/18
3	B18-10035(SEM)	56747(SEM)	Sediment	07/30/18
9	B18-10036(SEM)	56748(SEM)	Sediment	07/30/18
10	B18-10143(SEM)	56749(SEM)	Sediment	07/30/18
11	B18-10144(SEM)	56750(SEM)	Sediment	07/30/18
12	B18-10039(SEM)	56751(SEM)	Sediment	07/30/18
13	B18-10144MS	56750MS	Sediment	07/30/18
14	B18-10144MSD	56750MSD	Sediment	07/30/18
15	B18-10144DUP	56750DUP	Sediment	07/30/18

LDC #: 45128F4a VALIDATION COMPLETENESS WORKSHEET					Date: <u>6(3(F)</u>			
SDG	#: 1807003-012			Page: Oof				
Labo	oratory: Physis Environm	R	Page: <u>Ə</u> əf <u>ə</u> Reviewer:					
		2nd R	Reviewer:					
MET	HOD: Metals (EPA SW							
16	B18-10144MS(SEM)		56750MS(SEM)	Sediment	07/30/18			
17	B18-10144MSD(SEM)		56750MSD(SEM)	Sediment	07/30/18			
18	B18-10144DUP(SEM)		56750DUP(SEM)	Sediment	07/30/18			
19								
20								
21								
Note	Notes:							



VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page:_	1	_of_	1	
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			V	

All circled elements are applicable to each sample.

OI- ID Matrix	To seed Associate Line (TALL)
Sample ID Matrix	Target Analyte List (TAL)
	Al, Sb, As, Ba, Be, Cd, Ca(C), Co(Cu, Fe, Pb) Mg, Mr, Hg, Ni, K, Se, Ag, Na, Tl, V(Zn) Mo, B, Sn, Tl
7-1'd	Al, Sb, As, Ba, Be, Cd) Ca, Cr, Co, Cd, Fe Pb Mg, Mn, Hg (Ni) K, Se Ag, Na, Tl, (, Zn) Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
Q(:13-1)	Al, Sb, As, Ba, Be, Cd Ca, Cr Co, Cu, Fe, Pb Mg, Mn, Hg, Ni) K, Se, Ag, Na, Tl, V, Zr, Mo, B, Sn, Ti,
1678	Al, Sb, As, Ba, Be, Cd) Ca, Cr, Co, Cu) Fe, Pb, Mg, Mn, Hg, Ni K, Se, Ag, Na, Tl, V (Zn) Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Analysis Method
ICP	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA	Al Sh As Ra Be Cd Ca Cr Co Cu Fe Ph Mg Mn Hg Ni K Se Ag Na Tl V Zn Mo B Sn Ti

Comments:	Mercury by CVAA if performed		

LDC #: 45128F4a

VALIDATION FINDINGS WORKSHEET Technical Holding Times

2nd reviewer:

Were samples preserved? $\underline{Y} \underline{N} \underline{N/A}$ All circled dates have exceeded the technical holding time.

METHOD:		Mercury Holding time = 28 days				
Sample ID:	Sampling Date	Analysis Date	Total Time until Analysis (days)	Qualifier Code: 1	Det/ND	
All	7/30/18	1/11/19	165	J/R/P	Det	

Technical Holding Time Criteria

Mercury: 28 days All other metals: 180 days - 1 year if frozen

LDC #: 45128PL

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	of
Reviewer:	
2nd Reviewer:_	9

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

YNN/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor

of 4 or more, no action was taken.

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
	16/17		FC			200(425)	26	TUSTA (Bet) (HD)
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\mathbb{H}								
$\ \cdot\ $								
					:			
П								
\Vdash								
\mathbb{H}								

Comments:	16/17:17) Fe	74%		

LDC#: 45128 PK

VALIDATION FINDINGS WORKSHEET <u>Laboratory Control Samples (LCS)</u>

Page:_	of
Reviewer:	
2nd Reviewer:_	

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

Y N N/A Were all aqueous LCS percent recoveries (%R) within the control limits of 80-120% and all soil LCS %R within laboratory established control limits.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

Comments:

П				0.10	8: 0	
#	LCS ID	Matrix	Analyte	Analytl	139 (42-124)	Ouglifications
П	56743C	2~1		Al	139(42-124)	Qualifications (HQ)
$\vdash\vdash$	<u> </u>	71,17		1 1/	13((10101)	Sdet/A (Det) (HP)
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: June 4, 2019

Parameters: Wet Chemistry

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-012

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10034	56746	Sediment	07/30/18
B18-10035	56747	Sediment	07/30/18
B18-10036	56748	Sediment	07/30/18
B18-10143	56749	Sediment	07/30/18
B18-10144	56750	Sediment	07/30/18
B18-10039	56751	Sediment	07/30/18
B18-10144MS	56750MS	Sediment	07/30/18
B18-10144MSD	56750MSD	Sediment	07/30/18
B18-10144DUP	56750DUP	Sediment	07/30/18
B18-10039DUP	56751DUP	Sediment	07/30/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Acid Volatile Sulfide by Plumb 1981
Ammonia as Nitrogen by Standard Method 4500-NH3-D
Particle Size by Standard Method 2560D
Percent Solids by Standard Method 2540B
Total Nitrogen and Total Organic Carbon by Environmental Protection Agency (EPA) SW 846 Method 9060

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to nonconformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
All samples in SDG 1807003-012	Acid volatile sulfide	163 days	14 days	J (all detects)	Α
All samples in SDG 1807003-012	Ammonia as N	157 days	28 days	J (all detects)	Α
All samples in SDG 1807003-012	Total nitrogen	168 days	28 days	J (all detects)	Α

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10144MS/MSD (All samples in SDG 1807703-012)	Acid volatile sulfide	46 (80-120)	49 (80-120)	J (all detects)	A

Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-012	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, MS/MSD %R, and results reported below the RL and above the MDL, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-012

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Acid volatile sulfide Ammonia as N Total nitrogen	J (all detects) J (all detects) J (all detects)	А	Technical holding times (H)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Acid volatile sulfide	J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10034 B18-10035 B18-10036 B18-10143 B18-10144 B18-10039	Analyte reported below the RL and above the MDL	J (all detects)	А	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-012

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-012

No Sample Data Qualified in this SDG

LDC	#:	45128F6	

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-012

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: (Analyte) AVS (Plumb 1981), Ammonia as N (SM4500D), Particle Size (SM 2560D), % Solids (SM2540B), Total Nitrogen (EPA SW846 9060), TOC (EPA SW 846 Method 9060)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	ASW	
- 11	Initial calibration	N	
III.	Calibration verification	N	
IV	Laboratory Blanks	A.	
V	Field blanks	\mathcal{N}	
VI.	Matrix Spike/Matrix Spike Duplicates	SW	
VII.	Duplicate sample analysis	A	
VIII.	Laboratory control samples	A	US/D RM
IX.	Field duplicates	\mathcal{N}	. 5 /2(0
X.	Sample result verification	N	
xı	Overall assessment of data	A	

Note:

Notes:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10034	56746	Sediment	07/30/18
2	B18-10035	56747	Sediment	07/30/18
3	B18-10036	56748	Sediment	07/30/18
4	B18-10143	56749	Sediment	07/30/18
5	B18-10144	56750	Sediment	07/30/18
6	B18-10039	56751	Sediment	07/30/18
7	B18-10144MS	56750MS	Sediment	07/30/18
8	B18-10144MSD	56750MSD	Sediment	07/30/18
9	B18-10144DUP	56750DUP	Sediment	07/30/18
10	B18-10039DUP	56751DUP	Sediment	07/30/18
11				
12				
13				
14				

1

LDC # 45128F6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:_	<u> 1 of</u>	1
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All circled methods are applicable to each sample.

Sample ID	Parameter
16	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN (NH) TKN (TOC) Cr6+ CIO4 (AV S) GOOD (N) (PS)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
Q(:7-8	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CNNH, TKN TOC Cr6+ CIO ₄
9'	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH) TKN TOC Cr6+ CIO4 AVS (N)
10	PH TDS CLE NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	ph tds ci f no ₃ no ₂ so ₄ o-po ₄ aik cn nh ₃ tkn toc cr6+ cio ₄
	ph tds ci f no ₃ no ₂ so ₄ o-po ₄ aik cn nh ₃ tkn toc cr6+ cio ₄
	pH TDS CLF NO, NO, SO, O-PO, Alk CN NH, TKN TOC Cr6+ ClO,

Comments:	
	·

LDC #: 45128F6

VALIDATION FINDINGS WORKSHEET Technical Holding Times

2nd reviewer:

All circled dates have exceeded the technical holding time.

Y N N/A

Were all samples preserved as applicable to each method?

Y N N/A

Were all cooler temperatures within validation criteria?

Method:		Plumb			SM 4500 NH3D		
<u>Parameters</u>	-		AVS			Ammonia as	N
Technical h	olding time:		14 days			28 days	
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier
All	7/30/18	1/9/19	163	J/R/A (Det)	1/3/19	157	J/R/A (Det)

Method:		SM2540B			EPA 9060		
Parameters	:	<u> </u>	Percent solids	S		Total nitroge	n
Technical h	olding time:		180 days			28 days	
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier
All	7/30/18		· · · · · · · · · · · · · · · · · · ·		1/14/19	168	J/R/A (Det)

LDC #: 45128F6

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:of/	
Reviewer:	
2nd Reviewer:	

METHOD: Inorg	ganics, EPA Method <u>See cover</u>
Please see qua	lifications below for all questions answered "N". Not applicable questions are identified as "N/A".
W N N/A	Was a matrix spike analyzed for each matrix in this SDG?
Y M N/A	lifications below for all questions answered "N". Not applicable questions are identified as "N/A". Was a matrix spike analyzed for each matrix in this SDG? Were matrix spike percent recoveries (%R) within the QAPP limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more no action was taken. Were all duplicate sample relative percent differences (RPD) within QAPP limits?
(V/N N/A	Were all duplicate sample relative percent differences (RPD) within QAPP limits?
LEVEL IV-ONL	Y:
<u>Y N (N/A</u>)	Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications \(\square\)
	7/8		AVS	46 (80-120)	49			J/UJ/A (Det)
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Comments:			

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: May 31, 2019

Parameters: Polynuclear Aromatic Hydrocarbons

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-014

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10037	56809	Sediment	07/31/18
B18-10038	56810	Sediment	07/31/18
B18-10041	56811	Sediment	07/31/18
B18-10179	56812	Sediment	07/31/18
B18-10180	56813	Sediment	07/31/18
B18-10181	56814	Sediment	07/31/18
B18-10042	56815	Sediment	08/01/18
B18-10085	56816	Sediment	08/01/18
B18-10086	56817	Sediment	08/01/18
B18-10087	56818	Sediment	08/01/18
B18-10088	56819	Sediment	08/01/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	%R (Limits)	Flag	A or P
56805-BS1 (All samples in SDG 1807003-014)	Anthracene	67 (70-130)	J (all detects)	Р

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	AorP
56807-CRM1 (SRM 1944)	Benzo(k)fluoranthene	41 (60-140)	All samples in SDG 1807003-014)	J (all detects)	А

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-014	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS %R, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in eleven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-014

Sample	Compound	Flag	A or P	Reason (Code)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Anthracene	J (all detects)	Р	Laboratory control samples (%R) (LL)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Benzo(k)fluoranthene	J (all detects)	А	Certified reference material (%R) (LP)
B18-10037 Compound reported below the RL and above the MDL B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088		J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-014

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary SDG 1807003-014

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45128G2b

SDG #: 1807003-014

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	Ŋ	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates		CS
IX.	Laboratory control samples	an	105 B. AM
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

Client ID Matrix Lab ID Date B18-10037 56809 Sediment 07/31/18 B18-10038 56810 Sediment 07/31/18 3 B18-10041 56811 Sediment 07/31/18 B18-10179 56812 Sediment 07/31/18 B18-10180 56813 Sediment 07/31/18 6 B18-10181 56814 Sediment 07/31/18 B18-10042 56815 Sediment 08/01/18 8 B18-10085 56816 Sediment 08/01/18 9 B18-10086 56817 Sediment 08/01/18 B18-10087 10 56818 Sediment 08/01/18 11 B18-10088 56819 Sediment 08/01/18 12

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

YN N/A Was a LCS required?
YN N/A Were the LCS/LCSD r

(N)N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)		LCSD %R (Limits)		RPD (Limits)		Associated Samples	Qualifications
		56805-BS1	VV	GT TO-1.	30	()	()	A11 (dets)	VW \$ (44)
				()	()	()		
				()	()	()		
				()	()	()		
		SERU MAL)	HHH	41 60+	4 <i>D</i>)	()	()	All (dots)	JUYA (-4)
		(SRIU 1944)	,	()	()	()		/ / /
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polybrominated Diphenyl Ethers

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-014

Commis Identification	Laboratory Sample	80-4	Collection
Sample Identification	Identification	Matrix	Date
B18-10037	56809	Sediment	07/31/18
B18-10038	56810	Sediment	07/31/18
B18-10041	56811	Sediment	07/31/18
B18-10179	56812	Sediment	07/31/18
B18-10180	56813	Sediment	07/31/18
B18-10181	56814	Sediment	07/31/18
B18-10042	56815	Sediment	08/01/18
B18-10085	56816	Sediment	08/01/18
B18-10086	56817	Sediment	08/01/18
B18-10087	56818	Sediment	08/01/18
B18-10088	56819	Sediment	08/01/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polybrominated Diphenyl Ethers (PBDE) by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in eleven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polybrominated Diphenyl Ethers - Data Qualification Summary - SDG 1807003-014

Sample Compound		Flag	A or P	Reason (Code)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Laboratory Blank Data Qualification Summary SDG 1807003-014

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Field Blank Data Qualification Summary - SDG
1807003-014

No Sample Data Qualified in this SDG

LDC #: 45128G2c VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-014

Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: GC/MS Polybrominated Diphenyl Ethers (EPA SW 846 Method 8270D-NCI)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N_	es
IX.	Laboratory control samples	*	Lego. alm
X.	Field duplicates	N	/
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

O THEIR.

	Client ID	Lab ID	Matrix	Date
1	B18-10037	56809	Sediment	07/31/18
2	B18-10038	56810	Sediment	07/31/18
3	B18-10041	56811	Sediment	07/31/18
4	B18-10179	56812	Sediment	07/31/18
5	B18-10180	56813	Sediment	07/31/18
6	B18-10181	56814	Sediment	07/31/18
7	B18-10042	56815	Sediment	08/01/18
8	B18-10085	56816	Sediment	08/01/18
9	B18-10086	56817	Sediment	08/01/18
10	B18-10087	56818	Sediment	08/01/18
11	B18-10088	56819	Sediment	08/01/18
12				
13				

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Fipronil & Degradates

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-014

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10037	56809	Sediment	07/31/18
B18-10038	56810	Sediment	07/31/18
B18-10041	56811	Sediment	07/31/18
B18-10179	56812	Sediment	07/31/18
B18-10180	56813	Sediment	07/31/18
B18-10181	56814	Sediment	07/31/18
B18-10042	56815	Sediment	08/01/18
B18-10085	56816	Sediment	08/01/18
B18-10086	56817	Sediment	08/01/18
B18-10087	56818	Sediment	08/01/18
B18-10088	56819	Sediment	08/01/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Fipronil and Degradates by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-014	Compound reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in eleven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Fipronil & Degradates - Data Qualification Summary - SDG 1807003-014

Sample	Compound	Flag	A or P	Reason (Code)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program

Fipronil & Degradates - Laboratory Blank Data Qualification Summary - SDG 1807003-014

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program

Fipronil & Degradates - Field Blank Data Qualification Summary - SDG 1807003-014

No Sample Data Qualified in this SDG

LDC #: 45128G2d VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-014

Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: GC/MS Fipronil & Degradates (EPA SW 846 Method 8270D-NCI)

Date: 5/3/19
Page: 10f
Reviewer: 2nd Reviewer: 10f

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	$ \tilde{N} $	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	\mathcal{N}	25
IX.	Laboratory control samples	A	25 205/D
X.	Field duplicates	N	/
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data		

Note: A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10037	56809	Sediment	07/31/18
2	B18-10038	56810	Sediment	07/31/18
3	B18-10041	56811	Sediment	07/31/18
4	B18-10179	56812	Sediment	07/31/18
5	B18-10180	56813	Sediment	07/31/18
6	B18-10181	56814	Sediment	07/31/18
7	B18-10042	56815	Sediment	08/01/18
8	B18-10085	56816	Sediment	08/01/18
9	B18-10086	56817	Sediment	08/01/18
10	B18-10087	56818	Sediment	08/01/18
11	B18-10088	56819	Sediment	08/01/18
12				
13				

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Synthetic Pyrethroid Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-014

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10037	56809	Sediment	07/31/18
B18-10038	56810	Sediment	07/31/18
B18-10041	56811	Sediment	07/31/18
B18-10179	56812	Sediment	07/31/18
B18-10180	56813	Sediment	07/31/18
B18-10181	56814	Sediment	07/31/18
B18-10042	56815	Sediment	08/01/18
B18-10085	56816	Sediment	08/01/18
B18-10086	56817	Sediment	08/01/18
B18-10087	56818	Sediment	08/01/18
B18-10088	56819	Sediment	08/01/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Synthetic Pyrethroid Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D-MRM

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-014	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in eleven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Synthetic Pyrethroid Pesticides - Data Qualification Summary - SDG 1807003-014

Sample	Compound	Flag	A or P	Reason (Code)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Laboratory Blank Data Qualification Summary SDG 1807003-014

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Field Blank Data Qualification Summary - SDG 1807003-014

No Sample Data Qualified in this SDG

LDC #: 45128G2e

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-014

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Page:_ Reviewer:_ 2nd Reviewer:_

METHOD: GC/MS Synthetic Pyrethroid Pesticides (EPA SW 846 Method 8270D-MRM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	TA	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N/	,
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	L No.	c5
IX.	Laboratory control samples	\varnothing	100
Х.	Field duplicates	1	1
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	1	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank

OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10037	56809	Sediment	07/31/18
2	B18-10038	56810	Sediment	07/31/18
3	B18-10041	56811	Sediment	07/31/18
4	B18-10179	56812	Sediment	07/31/18
5	B18-10180	56813	Sediment	07/31/18
6	B18-10181	56814	Sediment	07/31/18
7	B18-10042	56815	Sediment	08/01/18
8	B18-10085	56816	Sediment	08/01/18
9	B18-10086	56817	Sediment	08/01/18
10	B18-10087	56818	Sediment	08/01/18
11	B18-10088	56819	Sediment	08/01/18
12				
13				

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Chlorinated Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-014

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10037	56809	Sediment	07/31/18
B18-10038	56810	Sediment	07/31/18
B18-10041	56811	Sediment	07/31/18
B18-10179	56812	Sediment	07/31/18
B18-10180	56813	Sediment	07/31/18
B18-10181	56814	Sediment	07/31/18
B18-10042	56815	Sediment	08/01/18
B18-10085	56816	Sediment	08/01/18
B18-10086	56817	Sediment	08/01/18
B18-10087	56818	Sediment	08/01/18
B18-10088	56819	Sediment	08/01/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D/8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56805-BS1/BS2 (All samples in SDG 1807003-014)	alpha-BHC Endosulfan II Endrin aldehyde Hexachlorobenzene	67 (70-130) 15 (70-130) 12 (70-130) 67 (70-130)	- 15 (70-130) 21 (70-130) -	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Р
56805-BS1/BS2 (All samples in SDG 1807003-014)	Endosulfan I	3 (70-130)	2 (70-130)	R (all non-detects)	Р
56805-BS1/BS2 (All samples in SDG 1807003-014)	Methoxychlor Perthane	143 (70-130) -	146 (70-130) 134 (70-130)	NA	-

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

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
56805-BS1/BS2 (All samples in SDG 1807003-014)	Endosulfan I Endrin aldehyde	40 (≤30) 55 (≤30)	NA	-

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
56807-CRM1	gamma-Chlordane	159 (60-140)	B18-10037 B18-10038 B18-10041 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	NA	-
56807-CRM1	gamma-Chlordane	159 (60-140)	B18-10179	J (all detects)	А

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-014	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to LCS/LCSD %R, data were rejected in eleven samples.

Due to LCS/LCSD %R, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in eleven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Data Qualification Summary - SDG 1807003-014

Sample	Compound	Flag	A or P	Reason (Code)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	alpha-BHC Endosulfan II Endrin aldehyde Hexachlorobenzene	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Endosulfan I	R (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10179	gamma-Chlordane	J (all detects)	Α	Certified reference material (%R) (HP)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 1807003-014

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 1807003-014

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45128G3a

SDG #: 1807003-014

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: GC/MS Chlorinated Pesticides (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
[].	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	\$	
VIII.	Matrix spike/Matrix spike duplicates	N	25
IX.	Laboratory control samples /	Tul	LOSD ORM
Χ.	Field duplicates		
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	Ø	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

<u> </u>	Client ID	Lab ID	Matrix	Date
1	B18-10037	56809	Sediment	07/31/18
2	B18-10038	56810	Sediment	07/31/18
3	B18-10041	56811	Sediment	07/31/18
4	B18-10179	56812	Sediment	07/31/18
5	B18-10180	56813	Sediment	07/31/18
6	B18-10181	56814	Sediment	07/31/18
7	B18-10042	56815	Sediment	08/01/18
8	B18-10085	56816	Sediment	08/01/18
9	B18-10086	56817	Sediment	08/01/18
10	B18-10087	56818	Sediment	08/01/18
11	B18-10088	56819	Sediment	08/01/18
12				
13				

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticides

A. alpha-HCH	K. Endrin	U. Toxaphene	EE. 2,4'-DDT	OO. oxy-Chlordane
B. beta-HCH	L. Endosulfan II	V. Aroclor-1016	FF. Hexachlorobenzene	PP. cis-Nonachlor
C. delta-HCH	M. 4,4'-DDD	W. Aroclor-1221	GG. Chlordane	QQ. trans-Nonachlor
D. gamma-HCH	N. Endosulfan sulfate	X. Aroclor-1232	HH. Chlordane (Technical)	RR. cis-Chlordane
E. Heptachlor	O. 4,4'-DDT	Y. Aroclor-1242	II. p,p'-DDE	SS. trans-Chlordane
F. Aldrin	P. Methoxychlor	Z. Aroclor-1248	JJ. p,p'-DDD	TT. alpha-Endosulphan
G. Heptachlor epoxide	Q. Endrin ketone	AA. Aroclor-1254	KK. p,p'-DDT	UU. beta-Endosulphan
H. Endosulfan I	R. Endrin aldehyde	BB. Aroclor-1260	LL. o,p'-DDT	VV. Endosulphan Sulphate
I. Dieldrin	S. alpha-Chlordane	CC. 2,4'-DDD	MM. o,p'-DDE	WW. Mirex
J. 4,4'-DDE	T. gamma-Chlordane	DD. 2,4'-DDE	NN. o,p'-DDD	



VALIDATION FINDINGS WORKSHEET <u>Laboratory Control Samples (LCS)</u>

Page:	
Reviewer:	<u> </u>
2nd Reviewer:	Ne

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y/N) N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

		Vere the LoorLoop		LCS	LCSD			
#	Date	LCS/LCSD ID	Compound	%R (Limits)	%R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		56805-BSV	A	6T TO-130	()	()	AII (ND)	VW D(XR)
				15 (,)	15 (70-130)	()	, , , , , , , , , , , , , , , , , , , ,	
			P.	12-()	2/()	()		V
			H	3 ()	<u> </u>	()		J/R/P
			FF	6T ()	()	()		VIVE.
			- -	143 (V)	146(/)	()		1155 (H4)
			Parthane	(')	134 (V)	(30)		V
			`#_	()	()	40 (575)		Idets & CHO)
			L K	()	()	55 ()		
				()	()	()		
		5/80T-CRM1	T	159 (60-140)	()	()	A11 (det3=4)	Jolets A (HP)
		(SRIU 1944)		()	()	()		7. (2
		/		()	()	()		
				()	()	()		
				()	()	()		
				()	()	()		
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polychlorinated Biphenyls as Congeners

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-014

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10037	56809	Sediment	07/31/18
B18-10038	56810	Sediment	07/31/18
B18-10041	56811	Sediment	07/31/18
B18-10179	56812	Sediment	07/31/18
B18-10180	56813	Sediment	07/31/18
B18-10181	56814	Sediment	07/31/18
B18-10042	56815	Sediment	08/01/18
B18-10085	56816	Sediment	08/01/18
B18-10086	56817	Sediment	08/01/18
B18-10087	56818	Sediment	08/01/18
B18-10088	56819	Sediment	08/01/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) as Congeners by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56805-BS1/BS2 (All samples in SDG 1807003-014)	PCB-003 PCB-005	60 (70-130) 67 (70-130)	- -	UJ (all non-detects) UJ (all non-detects)	Р
56805-BS1/BS2 (All samples in SDG 1807003-014)	PCB-156 PCB-169 PCB-189 PCB-194 PCB-195 PCB-206 PCB-209	131 (70-130) 153 (70-130) 146 (70-130) 165 (70-130) 133 (70-130) 158 (70-130) 135 (70-130)	148 (70-130) 144 (70-130) 161 (70-130) 134 (70-130) 147 (70-130)	NA	-
56805-BS1/BS2 (B18-10037 B18-10180 B18-10181)	PCB-180	135 (70-130)	131 (70-130)	J (all detects)	Р
56805-BS1/BS2 (B18-10038 B18-10041 B18-10179 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088)	PCB-180	135 (70-130)	131 (70-130)	NA	-

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
56807-CRM1	PCB-105 PCB-118 PCB-156	41 (60-140) 53 (60-140) 41 (60-140)	All samples in SDG 1807003-014	J (all detects) UJ (all non-detects)	A

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-014	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD and CRM %R and results reported below the RL and above the MDL, data were qualified as estimated in eleven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG 1807003-014

Sample	Compound	Flag	A or P	Reason (Code)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	PCB-003 PCB-005	UJ (all non-detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10037 B18-10180 B18-10181	PCB-180	J (all detects)	Р	Laboratory control samples (%R) (HL)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	PCB-105 PCB-118 PCB-156	J (all detects) UJ (all non-detects)	A	Certified reference material (%R) (LP)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification
Summary - SDG 1807003-014

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Field Blank Data Qualification
Summary - SDG 1807003-014

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45128G3b

SDG #: 1807003-014

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: GC/MS PCB as Congeners (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	4	
11.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates		25
IX.	Laboratory control samples / 🖘 🗸	W	Les D. CRM
X.	Field duplicates	N	,
XI.	Internal standards	N_	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

SW = See worksheet

N = Not provided/applicable

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank

OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10037	56809	Sediment	07/31/18
2	B18-10038	56810	Sediment	07/31/18
3	B18-10041	56811	Sediment	07/31/18
4	B18-10179	56812	Sediment	07/31/18
5	B18-10180	56813	Sediment	07/31/18
6	B18-10181	56814	Sediment	07/31/18
7	B18-10042	56815	Sediment	08/01/18
8	B18-10085	56816	Sediment	08/01/18
9	B18-10086	56817	Sediment	08/01/18
10	B18-10087	56818	Sediment	08/01/18
11	B18-10088	56819	Sediment	08/01/18
12				
13				



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		56805-851	FCB003	\$ 60 70-130	()	()	AIL (ND)	JM 6(4)
		_B52	1005		()	()		7 7 7
			156	[3] ()	()	()		Llots & (HK)
			169	153 ()	(48 (70-130)	()	V	
			180	135 ()	131 (1)	()	(dots=1,5-6)	
			189	146 ()	 	()	(ND)	
			194	165 ()	161 ()	()		
			195	(35)	134 (/)	()		
			206	158	147 (1)	()	7	
			V 209	135 (V)	()	()	V	V
		1 /- 5 11	,	()	()	()		
		5680T-CRM1 (SRM 1944)	PCB105	41 (60+40)	()	()	All (dets+ND)	JUJA(20)
		(SRM P444)	118	50 ()	()	()		////
			V 56	4/ ()	()	()		V
				()	()	()		
				()	()	()		
-				()	()	()		
-				()	()	()		
-				()	()	()		
				()	()	()		
				()	()	()		
				()	()	()		
				()		()		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: June 4, 2019

Parameters: Metals

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-014

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10037	56809	Sediment	07/31/18
B18-10038	56810	Sediment	07/31/18
B18-10041	56811	Sediment	07/31/18
B18-10179	56812	Sediment	07/31/18
B18-10180	56813	Sediment	07/31/18
B18-10181	56814	Sediment	07/31/18
B18-10042	56815	Sediment	08/01/18
B18-10085	56816	Sediment	08/01/18
B18-10086	56817	Sediment	08/01/18
B18-10087	56818	Sediment	08/01/18
B18-10088	56819	Sediment	08/01/18
B18-10037(SEM)	56809(SEM)	Sediment	07/31/18
B18-10038(SEM)	56810(SEM)	Sediment	07/31/18
B18-10041(SEM)	56811(SEM)	Sediment	07/31/18
B18-10179(SEM)	56812(SEM)	Sediment	07/31/18
B18-10180(SEM)	56813(SEM)	Sediment	07/31/18
B18-10181(SEM)	56814(SEM)	Sediment	07/31/18
B18-10042(SEM)	56815(SEM)	Sediment	08/01/18
B18-10085(SEM)	56816(SEM)	Sediment	08/01/18
B18-10086(SEM)	56817(SEM)	Sediment	08/01/18
B18-10087(SEM)	56818(SEM)	Sediment	08/01/18
B18-10088(SEM)	56819(SEM)	Sediment	08/01/18
B18-10181MS	56814MS	Sediment	07/31/18
B18-10181MSD	56814MSD	Sediment	07/31/18
B18-10181DUP	56814DUP	Sediment	07/31/18
B18-10181MS(SEM)	56814MS(SEM)	Sediment	07/31/18
B18-10181MSD(SEM)	56814MSD(SEM)	Sediment	07/31/18

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10181DUP(SEM)	56814DUP(SEM)	Sediment	07/31/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Iron, Lead, Nickel, Phosphorus, Selenium, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181	Mercury	164	28	J (all detects)	Р
B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Mercury	163	28	J (all detects)	Р

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. For B18-10181MS/MSD, no data were qualified for aluminum and iron percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

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

Spike ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10181MS/MSD (B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088)	Aluminum Iron	67 (≤25) 200 (≤25)	J (all detects) J (all detects)	А

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits with the following exceptions:

CRM ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
56806-CRM1	Aluminum Iron	136 158	B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	J (all detects) J (all detects)	Α
601520CRM1	Aluminum Iron	139 157	B18-10037 B18-10038 B18-10041 B18-10179 B18-10180	J (all detects) J (all detects)	А

XI. Field Duplicates

No field duplicates were identified in this SDG.

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-014	Analyte reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, MS/MSD RPD, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in twenty-two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-014

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Mercury	J (all detects)	Р	Technical holding times (H)
B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Aluminum Iron	J (all detects) J (all detects)	А	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10037 B18-10037 B18-10038 B18-10041 B18-10179 B18-10180	Aluminum Iron	J (all detects) J (all detects)	Α	Certified reference material (%R) (HP)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10085 B18-10086 B18-10087 B18-10037(SEM) B18-10038(SEM) B18-10038(SEM) B18-10179(SEM) B18-10180(SEM) B18-10181(SEM) B18-10181(SEM) B18-10085(SEM) B18-10085(SEM) B18-10086(SEM) B18-10086(SEM) B18-10087(SEM) B18-10088(SEM)	Analyte reported below the RL and above the MDL	J (all detects)	A	Sample result verification (DL)

2018 Regional Harbor Monitoring Program Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-014

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-014

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET

LDC #: 45128G4a SDG #: 1807003-014

Level II

Laboratory: Physis Environmental Laboratories, Inc.

2nd Reviewer

METHOD: Metals (EPA SW 846 Method 6020/EPA Method 200.8/EPA Method 245.7)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	ASW	
11.	ICP/MS Tune	, O N	
111.	Instrument Calibration	N	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Laboratory Blanks	A,	
VI.	Field Blanks	$\mathcal{N}_{\mathcal{A}}$	
VII.	Matrix Spike/Matrix Spike Duplicates	SW	
VIII.	Duplicate sample analysis	A	•
IX.	Serial Dilution	\mathcal{N}_{j}	/ _
X.	Laboratory control samples	5	USID, am
XI.	Field Duplicates	\mathcal{N}	5
XII.	Internal Standard (ICP-MS)	N	
XIII.	Sample Result Verification	N	
xıv	Overall Assessment of Data	A	

Note:

A = Acceptable

N = Not provided/applicable

R = Rinsate FB = Field blank

ND = No compounds detected

D = Duplicate

TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

SW = See worksheet Samples appended with "SEM" were analyzed as Simultaneously Extracted Metals

	Client ID	Lab ID	Matrix	Date
1	B18-10037	56809	Sediment	07/31/18
2	B18-10038	56810	Sediment	07/31/18
3	B18-10041	56811	Sediment	07/31/18
<u> </u>	B18-10179	56812	Sediment	07/31/18
5	B18-10180	56813	Sediment	07/31/18
3	B18-10181	56814	Sediment	07/31/18
7	B18-10042	56815	Sediment	08/01/18
3	B18-10085	56816	Sediment	08/01/18
)	B18-10086	56817	Sediment	08/01/18
0	B18-10087	56818	Sediment	08/01/18
1	B18-10088	56819	Sediment	08/01/18
2	B18-10037(SEM)	56809(SEM)	Sediment	07/31/18
3	B18-10038(SEM)	56810(SEM)	Sediment	07/31/18
4	B18-10041(SEM)	56811(SEM)	Sediment	07/31/18
15	B18-10179(SEM)	56812(SEM)	Sediment	07/31/18

LDC #: 45128G4a VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-014

Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: Metals (EPA SW 846 Method 6020/EPA Method 200.8/EPA Method 245.7)

Date: 6/3/19
Page: 2of 2
Reviewer: 2nd Reviewer: 2

16	B18-10180(SEM)	56813(SEM)	Sediment	07/31/18
17	B18-10181(SEM)	56814(SEM)	Sediment	07/31/18
18	B18-10042(SEM)	56815(SEM)	Sediment	08/01/18
19	B18-10085(SEM)	56816(SEM)	Sediment	08/01/18
20	B18-10086(SEM)	56817(SEM)	Sediment	08/01/18
21	B18-10087(SEM)	56818(SEM)	Sediment	08/01/18
22	B18-10088(SEM)	56819(SEM)	Sediment	08/01/18 07/31/18 07/31/18 07/31/18 07/31/18
23	B18-10181MS	56814MS	Sediment	
24	B18-10181MSD	56814MSD	Sediment	
25	B18-10181DUP	56814DUP	Sediment	
26	B18-10181MS(SEM)	56814MS(SEM)	Sediment Sediment	
27	B18-10181MSD(SEM)	56814MSD(SEM)		07/31/18
28	B18-10181DUP(SEM)	56814DUP(SEM)	Sediment	07/31/18
29				
30				
31				

Notes:			
		•	

LDC#: 4512864a

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: <u>1</u>	of	1
Reviewer:	Of	٦_
2nd reviewer:_	\forall	
	u	_

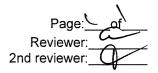
All circled elements are applicable to each sample.

Sample ID	<u> Matrix</u>	Target Analyte List (TAL)
1-11		(Al, Sb, As, Ba, Be, Cd, Ca(Cr) Co(Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, (Se, Ag), Na, Tl, V, (Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
12-22		Al, Sb, As, Ba, Be(Cd), Ca, Cr, Co(Ct), Fe, (Pb) Mg, Mn, Hg(Ni), K, Se(Ag), Na, Tl, \(\sqrt{2}\), Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
QC: 23	75	(Al, Sb, As, Ba, Be, Cd) Ca, (Cr) Co, Cu, Fe, Pb, Mg, Mn, (Hg, Ni)K, Se, Ag, Na, Tl, V, Zn) Mo, B, Sn, Ti,
25	48	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni)K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
·		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Ph, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti

Comments:	Mercury by C\	/AA if performed	 	 	

LDC #: 45128G4a

VALIDATION FINDINGS WORKSHEET Technical Holding Times



Were samples preserved? Y N N/A All circled dates have exceeded the technical holding time.

METHOD:		Mercury Holding time = 28 days				
Sample ID:	Sampling Date	Analysis Date	Total Time until Analysis (days)	Qualifier Code: 1	Det/ND	
1-6	7/31/18	1/11/19	164	J/R/P	Det	
7-11	8/1/18	1/11/19	163	J/R/P	Det	
				1 AMS 77%		

Technical Holding Time Criteria

Mercury: 28 days All other metals: 180 days - 1 year if frozen

LDC #: 4512664a

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page: ____of__ Reviewer: _____ 2nd Reviewer: ____

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor

of 4 or more, no action was taken.

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

HD

11				MS	MSD	[[
#	MS/MSD ID	Matrix	Analyte	%Recovery	%Recovery	RPD (Limits)	Associated Samples	Qualifications
	23 24		Al			67 (52s)	15-6-11	JUSIA (Det)
Ш			FC			2000 T		1
$\parallel \perp$								
\mathbb{H}								
\mathbb{H}								
H			<u> </u>					
\vdash								
$\parallel \uparrow$								
H								
Ш								
Ш			<u> </u>			<u> </u>		
\parallel								
H								
\parallel								

Comments:	35)184;HI	TC	7X	177		

LDC#: 4512642

VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page:c	of
Reviewer:	
2nd Reviewer:	

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

YNN/A Were all aqueous LCS percent recoveries (%R) within the control limits of 80-120% and all soil LCS %R within laboratory established control limits.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	1.00.10	112-4				
	1 CS 10 56806 - CR	Matrix M]	Analyte	158 (33-156)	Associated Samples	Joseph HP
			Fe	158 (33-18)		
\parallel	60152-CR	 	N /	139	1-5	
	401304	1	AI Fe	157	<u> </u>	
			-			7

\parallel						

Comments:			

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

June 4, 2019

Parameters:

Wet Chemistry

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-014

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10037	56809	Sediment	07/31/18
B18-10038	56810	Sediment	07/31/18
B18-10041	56811	Sediment	07/31/18
B18-10179	56812	Sediment	07/31/18
B18-10180	56813	Sediment	07/31/18
B18-10181	56814	Sediment	07/31/18
B18-10042	56815	Sediment	08/01/18
B18-10085	56816	Sediment	08/01/18
B18-10086	56817	Sediment	08/01/18
B18-10087	56818	Sediment	08/01/18
B18-10088	56819	Sediment	08/01/18
B18-10037MS	56809MS	Sediment	07/31/18
B18-10037MSD	56809MSD	Sediment	07/31/18
B18-10037DUP	56809DUP	Sediment	07/31/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Acid Volatile Sulfide by Plumb 1981
Ammonia as Nitrogen by Standard Method 4500-NH3-D
Particle Size by Standard Method 2560D
Percent Solids by Standard Method 2540B
Total Nitrogen and Total Organic Carbon by Environmental Protection Agency (EPA) SW 846 Method 9060

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181	Acid volatile sulfide Ammonia as N Total nitrogen	162 days 160 days 168 days	14 days 28 days 28 days	J (all detects) J (all detects) J (all detects)	A
B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Acid volatile sulfide Ammonia as N Total nitrogen	161 days 159 days 167 days	14 days 28 days 28 days	J (all detects) J (all detects) J (all detects)	A

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-014	Analytes reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time and results reported below the RL and above the MDL, data were qualified as estimated in eleven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-014

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Acid volatile sulfide Ammonia as N Total nitrogen	J (all detects) J (all detects) J (all detects)	A	Technical holding times (H)
B18-10037 B18-10038 B18-10041 B18-10179 B18-10180 B18-10181 B18-10042 B18-10085 B18-10086 B18-10087 B18-10088	Analytes reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-014

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-014

No Sample Data Qualified in this SDG

LDC #: 45128G6 VALIDATION COMPLETENESS WORKSHEET SDG #: 1807003-014 Level II Page:
Validation Area Comments

	Validation Area		Comments
l.	Sample receipt/Technical holding times	MSW	
Ш	Initial calibration	N	
111.	Calibration verification	N	
IV	Laboratory Blanks	A	
	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	A	
VII.	Duplicate sample analysis	A	
VIII.	Laboratory control samples	A	LOS/D , ORM
IX.	Field duplicates	\mathcal{N}	
Χ.	Sample result verification	ΔN	
ΧI	Overall assessment of data	H	

Note:

A = Acceptable N = Not provided/applicable SW = See worksheet

ND = No compounds detected R = Rinsate FB = Field blank

D = Duplicate TB = Trip blank EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10037	56809	Sediment	07/31/18
2	B18-10038	56810	Sediment	07/31/18
3	B18-10041	56811	Sediment	07/31/18
4	B18-10179	56812	Sediment	07/31/18
5	B18-10180	56813	Sediment	07/31/18
6	B18-10181	56814	Sediment	07/31/18
7	B18-10042	56815	Sediment	08/01/18
8	B18-10085	56816	Sediment	08/01/18
9	B18-10086	56817	Sediment	08/01/18
10	B18-10087	56818	Sediment	08/01/18
11	B18-10088	56819	Sediment	08/01/18
12	B18-10037MS	56809MS	Sediment	07/31/18
13	B18-10037MSD	56809MSD	Sediment	07/31/18
14	B18-10037DUP	56809DUP	Sediment	07/31/18
15				

15	 		 <u> </u>
Notes:			
<u> </u>			

LDC#: 4512866

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: 1 of 1

Reviewer: CR
2nd reviewer:

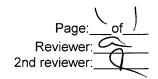
All circled methods are applicable to each sample.

Sample ID	Parameter
M	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CH NH) TKN (TOC Cr6+ CIO4 (AVS) (VS) (N) (PS)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
QC:12/3	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN(NH ₃)TKN TOC Cr6+ ClO ₄
14	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4 VOS VOS
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
·	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH_TDS_CL_F_NONOSO_O-POAlk_CN_NHTKN_TOC_Cr6+_ClO

Comments:				
-		 		

LDC #: 45128G6

VALIDATION FINDINGS WORKSHEET Technical Holding Times



All circled dates have exceeded the technical holding time.

Y N N/A

Were all samples preserved as applicable to each method?

Y N N/A

Were all cooler temperatures within validation criteria?

(H)

Method:		Plumb			SM 4500 NH3D			
Parameters:		AVS			Ammonia as N			
Technical h	olding time:	14 days				28 days		
Sampling date		Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier	
1-6	7/31/18	1/9/19	162	J/R/A (Det)	1/7/19	160	J/R/A (Det)	
7-11	8/1/18	1/9/19	161	J/R/A (Det)	1/7/19	159	J/R/A (Det)	

Method: Parameters:		SM2540B Percent solids			EPA 9060			
					Total nitrogen			
Technical h	olding time:		180 days			28 days		
Sampling Sampling		Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier	
1-6	7/31/18				1/15/19	168	J/R/A (Det)	
7-11	8/1/18				1/15/19	167	J/R/A (Det)	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polynuclear Aromatic Hydrocarbons

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-016

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10040	57537	Sediment	08/14/18
B18-10043	57538	Sediment	08/14/18
B18-10044	57539	Sediment	08/14/18
B18-20043	57540	Sediment	08/14/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
57533-BS1/BS2 (All samples in SDG 1807003-016)	Anthracene	67 (70-130)	-	J (all detects)	Р

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
57535-CRM1 (SRM 1944)	Benzo(k)fluoranthene	41 (60-140)	All samples in SDG 1807003-016)	J (all detects)	А

X. Field Replicates

Samples B18-10043 and B18-20043 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentr		
Compound	B18-10043	B18-20043	RPD
1,6,7-Trimethylnaphthalene	2.99036	2.809331	6
1-Methylnaphthalene	2.324625	1.852006	23
1-Methylphenanthrene	3.113301	3.156736	1
2,6-Dimethylnaphthalene	2.002984	1.927649	4
2-Methylnaphthalene	3.297661	3.295014	0
Acenaphthene	0.5443842	0.4131123	27
Acenaphthylene	0.9490548	0.8162883	15
Anthracene	2.13437	2.099126	2
Benzo(a)anthracene	12.79955	14.87139	15
Benzo(a)pyrene	22.64412	24.64431	8
Benzo(b)fluoranthene	22.47953	22.78465	1

	Concentr		
Compound	B18-10043	B18-20043	RPD
Benzo(e)pyrene	21.50939	21.96691	2
Benzo(g,h,i)perylene	29.29789	28.84531	2
Benzo(k)fluoranthene	21.75439	23.67522	8
Biphenyl	0.6808496	0.7100799	4
Chrysene	23.30638	24.76834	6
Dibenzo(a,h)anthracene	4.580828	4.401746	4
Dibenzothiophene	1.502037	1.396281	7
Fluoranthene	30.62514	36.66845	18
Fluorene	2.084437	1.708983	20
Indeno(1,2,3-cd)pyrene	23.17154	24.24481	5
Naphthalene	3.634394	3.5898	1
Perylene	7.801467	7.522212	4
Phenanthrene	16.34855	17.55809	7
Pyrene	35.09925	39.58696	12

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-016	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD %R, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-016

Sample	Compound	Flag	A or P	Reason (Code)
B18-10040 B18-10043 B18-10044 B18-20043	Anthracene	J (all detects)	Р	Laboratory control samples (%R) (LL)
B18-10040 B18-10043 B18-10044 B18-20043	Benzo(k)fluoranthene	J (all detects)	А	Certified reference material (%R) (LP)
B18-10040 B18-10043 B18-10044 B18-20043	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-016

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary SDG 1807003-016

No Sample Data Qualified in this SDG

I DC	#: 45120U2b VALIDATIC		DI ETENES!	S WORKSHEET		Data: AZ/
	#: <u>45128H2b</u> VALIDATIO ;#: 1807003-016		Level II	5 WURNSHELT		Date: 5/5/
	oratory: <u>Physis Environmental Laboratories</u>		LCVCIII			eviewer:
The	'HOD: GC/MS Polynuclear Aromatic Hydrosamples listed below were reviewed for eation findings worksheets.	·				eviewer: <u>M</u>
	Validation Area			Comm	ents	
I.	Sample receipt/Technical holding times	TA	-			
11.	GC/MS Instrument performance check	N				
111.	Initial calibration/ICV	N/N				
IV.	Continuing calibration	N		With the same of t		
<u>v.</u>	Laboratory Blanks	<u></u>		· · · · · · · · · · · · · · · · · · ·		
VI.	Field blanks	N				
VII.	Surrogate spikes	A				
VIII	. Matrix spike/Matrix spike duplicates	TU	19			
IX.	Laboratory control samples	W	109	<i>D</i>		
<u>X.</u>	Field duplicates	1	D = >t	4		
XI.	Internal standards	<u>N</u>				
XII.	Compound quantitation RL/LOQ/LODs	N				
XIII.	. Target compound identification	N				
XIV.	System performance	N				
XV.	Overall assessment of data	A				
Note:	N = Not provided/applicable R = Rin	No compounds nsate ïeld blank	s detected	D = Duplicate TB = Trip blank EB = Equipment blank	SB=Source OTHER:	e blank
	Client ID			Lab ID	Matrix	Date
1	B18-10040			57537	Sediment	08/14/18
2	B18-10043			57538	Sediment	08/14/18
3	B18-10044			57539	Sediment	08/14/18
4	B18-20043			57540	Sediment	08/14/18
				1		

3	B18-10044			57539		Sediment	08/14/18
4	B18-20043			57540		Sediment	08/14/18
5							
6							
7							
8							
Note	s:						
Note	s:	<u> </u>			, 1		
Note	S:						
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VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

		· · · · · · · · · · · · · · · · · · ·		
A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	of
Reviewer:	9
2nd Reviewer:	316

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

YN N/A Was a LCS required?

Y(N)N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		5T533-BSV	VV	6T TO-130	()	()	Al (dets)	1/4/6(22)
		-BS/		()	()	()		
		•		()	()	()		
				()	()	()		
		57535-CRM	ННН	41 (60+10)	()	()	All (dots)	1/4/A (2)
		57535-CRM1 (SPM 1944)		()	()	()	,	/ / /
	<u></u>			()	()	()		
				()	()	()		
				()	()	()		
				()	()	()		
				()	()	()		
				()	()	()		
 				()	()	()		
╟				()	()	()		
 -				()	()	()		
				()	()	()		
				()	()	()		
				()	<u> </u>			
 				()	()	()		
-				()	()	()		
$\parallel \rightarrow \parallel$				()	()	()		
				()	()	()		
-				()	()	()		
$\parallel \rightarrow \parallel$				()	()	()		<u> </u>



VALIDATION FINDINGS WORKSHEET <u>Field Duplicates</u>

Page: / of / Reviewer 2nd Reviewer: 1/6

METHOD: GCMS PAH 8270D

	Concentrat		
Compound	2	4	RPD
YYY	2.99036	2.809331	6
ттт	2.324625	1.852006	23
нннн	3.113301	3.156736	1
xxx	2.002984	1.927649	4
w	3.297661	3.295014	0
GG	0.5443842	0.4131123	27
DD	0.9490548	0.8162883	15
W	2.13437	2.099126	2
ccc	12.79955	14.87139	15
Ш	22.64412	24.64431	8
GGG	22.47953	22.78465	1
www	21.50939	21.96691	2
LLL	29.29789	28.84531	2
ннн	21.75439	23.67522	8
EEEE	0.6808496	0.7100799	4
DDD	23.30638	24.76834	6
KKK	4.580828	4.401746	4
AAAA	1.502037	1.396281	7
YY	30.62514	36.66845	18
NN	2.084437	1.708983	20
JJJ	23.17154	24.24481	5
S	3.634394	3.5898	1
ZZZ	7.801467	7.522212	4
UU	16.34855	17.55809	7
ZZ	35.09925	39.58696	12

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polybrominated Diphenyl Ethers

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-016

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10040	57537	Sediment	08/14/18
B18-10043	57538	Sediment	08/14/18
B18-10044	57539	Sediment	08/14/18
B18-20043	57540	Sediment	08/14/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polybrominated Diphenyl Ethers (PBDE) by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Replicates

Samples B18-10043 and B18-20043 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentr		
Compound	B18-10043	B18-20043	RPD
PBDE099	0.334	0.446	29
PBDE209	1.56	0.1U	Not calculable

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-016	Compound reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polybrominated Diphenyl Ethers - Data Qualification Summary - SDG 1807003-016

Sample	Compound	Flag	A or P	Reason (Code)
B18-10040 B18-10043 B18-10044 B18-20043	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Laboratory Blank Data Qualification Summary SDG 1807003-016

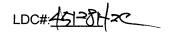
No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Field Blank Data Qualification Summary - SDG
1807003-016

No Sample Data Qualified in this SDG

SDG Labo MET	#:45128H2c	s <u>, Inc.</u> Ethers (EPA	Level II A SW 846 Meth		2nd Re	Date: 5/39/ Page:of eviewer:
	ation findings worksheets. Validation Area	T	T	Comme		310d III G. 1.
				COIIIIIE	nis	
<u> </u>	Sample receipt/Technical holding times GC/MS Instrument performance check	N				
<u> </u>		N/N				
IV.		N N				
V.		A			A	
VI.						
VII.	. Surrogate spikes	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				<u> </u>
VIII.		1/1	09	The second secon		
IX.	(at 11)	TÃ	 	B. CRM		
X.		JW.	0=212	Ł		
XI.						
XII.	Compound quantitation RL/LOQ/LODs	N				
XIII.		N		-		
XIV.		N				
XV.	. Overall assessment of data					
Note:	N = Not provided/applicable R = Rin	No compounds nsate ïeld blank	s detected	D = Duplicate TB = Trip blank EB = Equipment blank	SB=Source OTHER:	: blank
	Client ID			Lab ID	Matrix	Date
1	B18-10040			57537	Sediment	08/14/18
2	B18-10043			57538	Sediment	08/14/18
3	B18-10044	***************************************		57539	Sediment	08/14/18
4	B18-20043		*****	57540	Sediment	08/14/18
5	1					
6	1	· · · · · · · · · · · · · · · · · · ·				
						

Notes:



VALIDATION FINDINGS WORKSHEET Field Replicates

Page: ____of___ Reviewer: ______ 2nd Reviewer: ______

METHOD: GC/MS PBDE

	Concen		
Compound	2	4	RPD
PBDE099	0.334	0.446	29
PBDE209	1.56	0.1U	NC

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Fipronil & Degradates

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-016

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10040	57537	Sediment	08/14/18
B18-10043	57538	Sediment	08/14/18
B18-10044	57539	Sediment	08/14/18
B18-20043	57540	Sediment	08/14/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Fipronil and Degradates by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Replicates

Samples B18-10043 and B18-20043 were identified as field replicates. No results were detected in any of the samples.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-016	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Fipronil & Degradates - Data Qualification Summary - SDG 1807003-016

Sample	Compound	Flag	A or P	Reason (Code)
B18-10040 B18-10043 B18-10044 B18-20043	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program Fipronil & Degradates - Laboratory Blank Data Qualification Summary - SDG 1807003-016

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Fipronil & Degradates - Field Blank Data Qualification Summary - SDG 1807003016

No Sample Data Qualified in this SDG

	ratory: <u>Physis Environmental Laboratorie</u> HOD: GC/MS Fipronil & Degradates (EP		Method 8270	D-NCI)		Reviewer: X
	samples listed below were reviewed for eation findings worksheets.	each of the f	ollowing valid	lation areas. Val	idation findings are	noted in attache
	Validation Area			C	omments	
Ī.	Sample receipt/Technical holding times	14				
11.	GC/MS Instrument performance check	N				
III.	Initial calibration/ICV	N/N				
IV.	Continuing calibration	N				
V.	Laboratory Blanks	A				
VI.	Field blanks	N				
VII.	Surrogate spikes	N		· · · · · · · · · · · · · · · · · · ·		- 11
VIII.	Matrix spike/Matrix spike duplicates	N	25			
IX.	Laboratory control samples	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	100/2	 5		
X.	Field duplicates	ND	D=2+	4		
XI.	Internal standards	N				
XII.	Compound quantitation RL/LOQ/LODs	N				
XIII.	Target compound identification	N				
XIV.		N				
XV.	Overall assessment of data	A				
Note:	A = Acceptable ND = N = Not provided/applicable R = R	No compounds insate Field blank	s detected	D = Duplicate TB = Trip blank EB = Equipmen		ce blank
	Client ID			Lab ID	Matrix	Date
1	B18-10040			57537	Sediment	08/14/18
2	B18-10043			57538	Sediment	08/14/18
3	B18-10044			57539	Sediment	08/14/18
4	B18-20043			57540	Sediment	08/14/18
5						
6						
7						
8						
Notes	:					
						·

						· · · ·

Level II

LDC #: 45128H2d VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-016

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Synthetic Pyrethroid Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-016

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10040	57537	Sediment	08/14/18
B18-10043	57538	Sediment	08/14/18
B18-10044	57539	Sediment	08/14/18
B18-20043	57540	Sediment	08/14/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Synthetic Pyrethroid Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D-MRM

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Replicates

Samples B18-10043 and B18-20043 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentr		
Compound	B18-10043	B18-20043	RPD
Bifenthrin	2.62	2.88	9
Danitol (Fenpropathrin)	1.19	1.3	9

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-016	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Synthetic Pyrethroid Pesticides - Data Qualification Summary - SDG 1807003-016

Sample	Compound	Flag	A or P	Reason (Code)
B18-10040 B18-10043 B18-10044 B18-20043	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Laboratory Blank Data Qualification Summary SDG 1807003-016

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Field Blank Data Qualification Summary - SDG 1807003-016

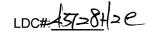
No Sample Data Qualified in this SDG

SDG#	#:45128H2eVALIDATIC #:1807003-016 atory:_Physis Environmental Laboratorie		PLETEN Level II	ESS WORKSHE	F	Date: 5/29/9 Page:
The sa	OD: GC/MS Synthetic Pyrethroid Pestic amples listed below were reviewed for ea- tion findings worksheets.	,)	
	Validation Area			Co	omments	
1.	Sample receipt/Technical holding times	A				
11.	GC/MS Instrument performance check	N				
111.	Initial calibration/ICV	N/N				
IV.	Continuing calibration	N				
V.	Laboratory Blanks	A				
VI.	Field blanks	N				
VII.	Surrogate spikes	Ŋ		, , ,		
VIII.	Matrix spike/Matrix spike duplicates	1 1	<u> </u>			
IX.	Laboratory control samples	A	20	5/3		
X.	Field duplicates	SN	7D=	214		
XI.	Internal standards					
XII.	Compound quantitation RL/LOQ/LODs	N				
XIII.	Target compound identification	N				
XIV.	System performance	N		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
XV.	Overall assessment of data	<u> </u>				
Note:	A = Acceptable ND = N N = Not provided/applicable R = Rin	No compounds nsate ield blank	s detected	D = Duplicate TB = Trip blank EB = Equipment	SB=Sourc OTHER: blank	ce blank
	Client ID			Lab ID	Matrix	Date
1 E	318-10040			57537	Sediment	08/14/18
2 E	318-10043			57538	Sediment	08/14/18
3 E	318-10044			57539	Sediment	08/14/18
4 E	318-20043			57540	Sediment	08/14/18
5						
6						
7						
8						
lotes:	<u> </u>				- T T	

VALIDATION FINDINGS WORKSHEET

METHOD: Pyrethroids

VIETHOD. Pyretinolos			
A. Allethrin			
B. Bifenthrin			
C. Cyfluthrin			
D. Cyhalothrin, Total Lambda			
E. Cypermethrin			
F. Danitol (Fenpropathrin)			
G. Deltamethrin/Tralomethrin			
H. Esfenvalerate	,		
I. Fluvalinate			
J. Permethrin, cis-		 	
K. Permethrin, trans-			
L. Prallethrin			
M. Fenvalerate			
	·		
	,		
		``	



VALIDATION FINDINGS WORKSHEET Field Replicates

METHOD: GC/MS Pyrethroids

	Concent		
Compound	2	4	RPD
В	2.62	2.88	9
F	1.19	1.3	9

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Chlorinated Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-016

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10040	57537	Sediment	08/14/18
B18-10043	57538	Sediment	08/14/18
B18-10044	57539	Sediment	08/14/18
B18-20043	57540	Sediment	08/14/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D/8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
57533-BS1/BS2 (All samples in SDG 1807003-016)	alpha-BHC Endosulfan II Endrin aldehyde Hexachlorobenzene	67 (70-130) 15 (70-130) 12 (70-130) 67 (70-130)	- 15 (70-130) 21 (70-130) -	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Р
57533-BS1/BS2 (All samples in SDG 1807003-016)	Endosulfan I	3 (70-130)	2 (70-130)	R (all non-detects)	Р
57533-BS1/BS2 (All samples in SDG 1807003-016)	Methoxychlor Perthane	143 (70-130) -	146 (70-130) 134 (70-130)	NA	-

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

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
57533-BS1/BS2 (All samples in SDG 1807003-016)	Endosulfan II Endrin aldehyde	40 (≤30) 55 (≤30)	NA	-

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
57535-CRM1	gamma-Chlordane	159 (60-140)	All samples in SDG 1807003-016	NA	-

X. Field Replicates

Samples B18-10043 and B18-20043 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentration (ng/g)		
Compound	B18-10043	B18-20043	RPD
4,4'-DDE	1.56	1.38	12
4,4'-DDT	2.25	0.5U	Not calculable

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-016	Compound reported below the RL and above the MDL	J (all detects)	A

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to LCS/LCSD %R, data were rejected in four samples.

Due to LCS/LCSD %R and results reported below the RL and above the MDL, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Data Qualification Summary - SDG 1807003-016

Sample	Compound	Flag	A or P	Reason (Code)
B18-10040 B18-10043 B18-10044 B18-20043	alpha-BHC Endosulfan II Endrin aldehyde Hexachlorobenzene	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10040 B18-10043 B18-10044 B18-20043	Endosulfan I	R (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10040 B18-10043 B18-10044 B18-20043	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 1807003-016

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 1807003-016

No Sample Data Qualified in this SDG

LDC #:_	45128H3a	VALIDATION COMPLETENESS WORKSHEET
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SDG #: 1807003-016 Level II

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: GC/MS Chlorinated Pesticides (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	I N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	<i>c</i> 5
IX.	Laboratory control samples	W	Les D. AM
X.	Field duplicates	SIL	D= 2+4
XI.	Internal standards		/
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank
EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10040	57537	Sediment	08/14/18
2	B18-10043	57538	Sediment	08/14/18
3	B18-10044	57539	Sediment	08/14/18
4	B18-20043	57540	Sediment	08/14/18
5				
6				
7				
8				

Notes:

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticides

A. alpha-HCH	K. Endrin	U. Toxaphene	EE. 2,4'-DDT	OO. oxy-Chlordane
B. beta-HCH	L. Endosulfan II	V. Aroclor-1016	FF. Hexachlorobenzene	PP. cis-Nonachlor
C. delta-HCH	M. 4,4'-DDD	W. Aroclor-1221	GG. Chlordane	QQ. trans-Nonachlor
D. gamma-HCH	N. Endosulfan sulfate	X. Aroclor-1232	HH. Chlordane (Technical)	RR. cis-Chlordane
E. Heptachlor	O. 4,4'-DDT	Y. Aroclor-1242	II. p,p'-DDE	SS. trans-Chlordane
F. Aldrin	P. Methoxychlor	Z. Aroclor-1248	JJ. p,p'-DDD	TT. alpha-Endosulphan
G. Heptachlor epoxide	Q. Endrin ketone	AA. Aroclor-1254	KK. p,p'-DDT	UU. beta-Endosulphan
H. Endosulfan I	R. Endrin aldehyde	BB. Aroclor-1260	LL. o,p'-DDT	VV. Endosulphan Sulphate
I. Dieldrin	S. alpha-Chlordane	CC. 2,4'-DDD	MM. o,p'-DDE	WW. Mirex
J. 4,4'-DDE	T. gamma-Chlordane	DD. 2,4'-DDE	NN. o,p'-DDD	



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: __(of__ Reviewer: _____ 2nd Reviewer: ______

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Y (N N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		5T533-1351/	Ä	6T 70-BU	()	()	AII(ND)	VMA (24)
		-B02	4	15 (1)	15 (TO-130)	()	•	7.7
			N	127)	2/(,)	()		,
			FF	3 ()	()	()		V
			1	3 ()	> ()	()		VRA
			Þ	H3 (V)	134(V)	()		Solets (HZ)
		te	ythane	(1)	134(V)	()		V
		•	Z R	()	()	40 (\$30)		Jdet3 F(HD)
			R	()		55 (1/)		\/`
				()	()	()		
				()	()	()		
		57535-CAU	7	159 (60+40)	()	()	ALL (ND)	Step A(HP)
		(SRM1944		()	()	()		/
				()	()	()		
				()	()	()		
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L				()	()	(<u> </u>

LDC#:45128H3A

VALIDATION FINDINGS WORKSHEET Field Replicates

METHOD: GC/MS Pesticides

	Concent	Concentration (ng/g)		
Compound	2	4	RPD	
J	1.56	1.38	12	
o	2.25	0.5U	NC	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polychlorinated Biphenyls as Congeners

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-016

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10040	57537	Sediment	08/14/18
B18-10043	57538	Sediment	08/14/18
B18-10044	57539	Sediment	08/14/18
B18-20043	57540	Sediment	08/14/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) as Congeners by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
57533-BS1/BS2 (All samples in SDG 1807003-016)	PCB-003 PCB-005	60 (70-130) 67 (70-130)	- -	UJ (all non-detects) UJ (all non-detects)	Р
57533-BS1/BS2 (All samples in SDG 1807003-016)	PCB-156 PCB-169 PCB-189 PCB-194 PCB-195 PCB-206 PCB-209	131 (70-130) 153 (70-130) 146 (70-130) 165 (70-130) 133 (70-130) 158 (70-130) 135 (70-130)	148 (70-130) 144 (70-130) 161 (70-130) 134 (70-130) 147 (70-130)	NA	-
57533-BS1/BS2 (B18-10043 B18-20043)	PCB-180	135 (70-130)	131 (70-130)	J (all detects)	Р
57533-BS1/BS2 (B18-10040 B18-10044)	PCB-180	135 (70-130)	131 (70-130)	NA	-

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
57535-CRM1	PCB-105 PCB-118 PCB-156	41 (60-140) 53 (60-140) 41 (60-140)	All samples in SDG 1807003-016	J (all detects) UJ (all non-detects)	А

X. Field Replicates

Samples B18-10043 and B18-20043 were identified as field replicates. No results were detected in any of the samples with the following exceptions:

	Concentr		
Compound	B18-10043	B18-20043	RPD
PCB-052	0.233	0.2U	Not calculable
PCB-095	0.439	0.276	46
PCB-099	0.444	0.407	9
PCB-101	0.566	0.410	32

	Concentr		
Compound	B18-10043	B18-20043	RPD
PCB-110	0.411	0.286	36
PCB-118	0.408	0.338	19
PCB-138	0.693	0.532	26
PCB-149	0.528	0.421	23
PCB-153	0.781	0.781	0
PCB-158	0.141	0.224	45
PCB-168+132	0.153	0.145	5
PCB-180	0.258	0.314	20
PCB-187	0.172	0.237	32

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-016	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD and CRM %R and results reported below the RL and above the MDL, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG 1807003-016

Sample	Compound	Flag	A or P	Reason (Code)
B18-10040 B18-10043 B18-10044 B18-20043	PCB-003 PCB-005	UJ (all non-detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10043 B18-20043	PCB-180	J (all detects)	Р	Laboratory control samples (%R) (HL)
B18-10040 B18-10043 B18-10044 B18-20043	PCB-105 PCB-118 PCB-156	J (all detects) UJ (all non-detects)	А	Certified reference material (%R) (LP)
B18-10040 B18-10043 B18-10044 B18-20043	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

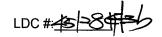
2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification
Summary - SDG 1807003-016

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Field Blank Data Qualification
Summary - SDG 1807003-016

No Sample Data Qualified in this SDG

SDG Labo MET The	#: 45128H3b VALIDATIO #: 1807003-016 pratory: Physis Environmental Laboratories HOD: GC/MS PCB as Congeners (EPA Separation findings worksheets)	s <u>, Inc.</u> SW 846 Me	Level II thod 8270D)		F 2nd F	Date: 539/ Page: /of / Reviewer: Reviewer: Noted in attached
	Validation Area			Comn	nents	
l.	Sample receipt/Technical holding times	A				
11.	GC/MS Instrument performance check	N				
.	Initial calibration/ICV	N/N			· · · · · · · · · · · · · · · · · · ·	
IV.		N A				
V.	Laboratory Blanks	1				
VI.		N				
VII			20			
VIII		N Zu/	25	7		
IX.	Laboratory control samples	W	105	<u>8. eru</u>		
Χ.	Field duplicates	31	70 = -	7-7		
XI.	Internal standards	N		······································		***************************************
XII.	Compound quantitation RL/LOQ/LODs	N			· · · · · · · · · · · · · · · · · · ·	
XIII	Target compound identification	N				
ΧIV	System performance	N				
XV.	Overall assessment of data	A				
Note:	N = Not provided/applicable R = Rin	o compounds sate eld blank	detected	D = Duplicate TB = Trip blank EB = Equipment blar	SB=Sourc OTHER: nk	ce blank
	Client ID			Lab ID	Matrix	Date
1	B18-10040			57537	Sediment	08/14/18
2	B18-10043		to Co.	57538	Sediment	08/14/18
3	B18-10044			57539	Sediment	08/14/18
4	B18-20043			57540	Sediment	08/14/18
5		,				
_						



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

N/A Was a LCS required?

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

- 1	were the LC3/LC3D percent recoveries (%K) and the relative percent differences (KPD) within the QC limits?								
#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications	
		57533-Bd/	PCB03	60 (70-126)	()	()	AII (ND)	My (22)	
		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	1 005	67 (1)	()	()	1		
			156	131 ()	()	()		Jolets & (HZ)	
			169	153 ()	148 (TO-B)	()	V	, , , , , , , , , , , , , , , , , , ,	
			180	135 ()	13/()	()	(dets=2, 4)		
			189	146 ()	144 ()	()	(ND)		
			194	165 ()	161 ()	()			
			195	133 ()	134 ()	()			
			206	(58)	H7 (1)	()			
			V 209	135 ()	()	()	V		
			1	()	()	()			
		57535-CANI	PCB105	41 (60-40)	()	()	All Clots+NO	WYA (4)	
		(*	118	53 ()	()	()	/		
 			156	41 (V)	()	()			
<u> </u>				()	()	()			
				()	()	()			
				()	()	()			
				()	()	()			
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LDC #: 45128H3b

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page: 1 of 1
Reviewer: 2nd reviewer: 1

METHOD: GC/MS PCB (EPA SW 846 Method 8270D)

0	Concentra	555	
Compound	2	4	RPD
PCB052	0.233	0.2U	NC
PCB095	0.439	0.276	46
PCB099	0.444	0.407	9
PCB101	0.566	0.410	32
PCB110	0.411	0.286	36
PCB118	0.408	0.338	19
PCB138	0.693	0.532	26
PCB149	0.528	0.421	23
PCB153	0.781	0.781	0
PCB158	0.141	0.224	45
PCB168+132	0.153	0.145	5
PCB180	0.258	0.314	20
PCB187	0.172	0.237	32

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

June 4, 2019

Parameters:

Metals

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-016

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10040	57537	Sediment	08/14/18
B18-10043	57538	Sediment	08/14/18
B18-10044	57539	Sediment	08/14/18
B18-20043	57540	Sediment	08/14/18
B18-10040(SEM)	57537(SEM)	Sediment	08/14/18
B18-10043(SEM)	57538(SEM)	Sediment	08/14/18
B18-10044(SEM)	57539(SEM)	Sediment	08/14/18
B18-20043(SEM)	57540(SEM)	Sediment	08/14/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Iron, Lead, Nickel, Phosphorus, Selenium, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-10040 B18-10043 B18-10044 B18-20043	Mercury	150	28	J (all detects)	Р

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits with the following exceptions:

CRM ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
57534-CRM1	Aluminum Iron	136 (42-124) 158 (33-155)	B18-10040 B18-10043 B18-10044 B18-20043	J (all detects) J (all detects)	А

XI. Field Duplicates

Samples B18-10043 and B18-20043 and samples B18-10043(SEM) and B18-20043(SEM) were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concentr		
Analyte	B18-10043	B18-20043	RPD
Aluminum	30800	29900	3
Antimony	0.214	0.214	0
Arsenic	6.23	6.27	1
Barium	67.4	60	12
Beryllium	0.538	0.58	8
Cadmium	0.483	0.416	15
Chromium	32.2	31.7	2
Copper	54.3	54.4	0
Iron	26400	26000	2

	Concentr		
Analyte	B18-10043	B18-20043	RPD
Lead	17	16.6	2
Mercury	0.0754	0.0795	5
Nickel	11.1	11.5	4
Phosphorus	400	417	4
Selenium	0.361	0.389	7
Silver	0.298	0.342	14
Zinc	156	150	4

	Concentrat		
Analyte	B18-10043(SEM)	B18-20043(SEM)	RPD
Copper	0.0257	0.0603	80
Lead	0.0283	0.0388	31
Nickel	0.00935	0.0155	49
Zinc	0.858	1.06	21

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-016	Analyte reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in eight samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-016

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10040 B18-10043 B18-10044 B18-20043	Mercury	J (all detects)	Р	Technical holding times (H)
B18-10040 B18-10043 B18-10044 B18-20043	Aluminum Iron	J (all detects) J (all detects)	Α	Certified reference material (%R) (HP)
B18-10040 B18-10043 B18-10044 B18-20043 B18-10040(SEM) B18-10043(SEM) B18-10044(SEM) B18-20043(SEM)	Analyte reported below the RL and above the MDL	J (all detects)	Α	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-016

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-016

No Sample Data Qualified in this SDG

LDC #: 45128H4a

VALIDATION COMPLETENESS WORKSHEET

Level II

Laboratory: Physis Environmental Laboratories, Inc.

SDG #: 1807003-016

Reviewer: 2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6020/EPA Method 200.8/EPA Method 245.7)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A SW	
11.	ICP/MS Tune	N	
111.	Instrument Calibration	N	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Laboratory Blanks	A	
VI.	Field Blanks	\mathcal{N}	
VII.	Matrix Spike/Matrix Spike Duplicates	\mathcal{N}_{ℓ}	
VIII.	Duplicate sample analysis	N	
IX.	Serial Dilution	$\mathcal{N}_{\mathcal{N}}$	
X.	Laboratory control samples	$\mathcal{S}_{\mathcal{N}}$	usid
XI.	Field Duplicates	5	(2,4)(6,8)
XII.	Internal Standard (ICP-MS)	N	
XIII.	Sample Result Verification	Ŋ	
ΧIV	Overall Assessment of Data	A	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

Samples appended with "SEM" were analyzed as Simultaneously Extracted Metals Client ID Lab ID Matrix Date B18-10040 57537 Sediment 08/14/18 B18-10043 57538 Sediment 08/14/18 B18-10044 57539 Sediment 08/14/18 B18-20043 57540 Sediment 08/14/18 5 B18-10040(SEM) 57537(SEM) Sediment 08/14/18 B18-10043(SEM) 57538(SEM) Sediment 08/14/18 B18-10044(SEM) 57539(SEM) Sediment 08/14/18 8 B18-20043(SEM) 57540(SEM) Sediment 08/14/18 9 10 11

Notes:	
Notes:	

LDC #: 45128HUA

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: 1 of 1
Reviewer: CR
2nd reviewer:

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
14		(Al, Sb, As, Ba, Be, Cd) Ca, (Cd, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni) K (Se, Ag, Na, Tl, V, (Zn) Mo, B, Sn, Ti, (C)
5-8		Al, Sb, As, Ba, Be,Cd, Ca, Cr, Co,Cd, Fe,Pb, Mg, Mn, Hg,Ni) K, Se, Ag, Na, Tl, V(Zr), Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GEAA		Al, Sh, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,

Comments:	Mercury by CVAA if performed		

LDC #: 45128H4a

VALIDATION FINDINGS WORKSHEET Technical Holding Times

2nd reviewer:

Were samples preserved? \underline{Y} \underline{N} $\underline{N/A}$ All circled dates have exceeded the technical holding time.

ł	}	

METHOD:		Mercury Holding time = 28 days				
Sample ID:	Sampling Date	Analysis Date	Total Time until Analysis (days)	Qualifier Code: 1	Det/ND	
AH 1-4	8/14/18	1/11/19	150	J/R/P	Det	

Technical Holding Time Criteria

Mercury:

28 days

All other metals: 180 days - 1 year if frozen

LDC#: USILSHY

VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page:of	
Reviewer:	
2nd Reviewer:	_

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

Y N N/A Were all aqueous LCS percent recoveries (%R) within the control limits of 80-120% and all soil LCS %R within laboratory established control limits.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

П						
#	LCS ID	Matrix	Analyte	%R (limits)	Associated Samples	Qualifications
	5753400	5WI	Al	136 (42-124) 158 (33-155)	1-4	Jdet (A (Det) HP
			FC	158 (33-155)		
\vdash						
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님						
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Comments:	 	

LDC#: 45128H4a

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Page: of Reviewer: 2nd Reviewer:

METHOD: Metals (EPA Method 6010B/7000)

	Concentration (ug/g)		
Analyte	2	4	RPD
Aluminum	30800	29900	3
Antimony	0.214	0.214	0
Arsenic	6.23	6.27	1
Barium	67.4	60	12
Beryllium	0.538	0.58	8
Cadmium	0.483	0.416	15
Chromium	32.2	31.7	2
Соррег	54.3	54.4	0
Iron	26400	26000	2
Lead	17	16.6	2
Mercury	0.0754	0.0795	5
Nickel	11.1	11.5	4
Phosphorus	400	417	4
Selenium	0.361	0.389	7
Silver	0.298	0.342	14
Zinc	156	150	4

LDC#: 45128H4a

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Page:__ Reviewer:_ 2nd Reviewer:

METHOD: Metals (EPA Method 6010B/7000)

	Concentrat			
Analyte	6	8	RPD	
Copper	0.0257	0.0603	80	
Lead	0.0283	0.0388	31	
Nickel	0.00935	0.0155	49	
Zinc	0.858	1.06	21	

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2019\45128H4a.wpd

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

June 4, 2019

Parameters:

Wet Chemistry

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-016

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10040	57537	Sediment	08/14/18
B18-10043	57538	Sediment	08/14/18
B18-10044	57539	Sediment	08/14/18
B18-20043	57540	Sediment	08/14/18
B18-10040DUP	57537DUP	Sediment	08/14/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Acid Volatile Sulfide by Plumb 1981
Ammonia as Nitrogen by Standard Method 4500-NH3-D
Particle Size by Standard Method 2560D
Percent Solids by Standard Method 2540B
Total Nitrogen and Total Organic Carbon by Environmental Protection Agency (EPA) SW 846 Method 9060

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
All samples in SDG 1807003-016	Acid volatile sulfide	148 days	14 days	J (all detects)	А
All samples in SDG 1807003-016	Ammonia as N	142 days	28 days	J (all detects)	Α
All samples in SDG 1807003-016	Total nitrogen	154 days	28 days	J (all detects)	А

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits.

IX. Field Duplicates

Samples B18-10043 and B18-20043 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concer		
Analyte	B18-10043	B18-20043	RPD
Acid volatile sulfide	324 mg/Kg	221 mg/Kg	38
Ammonia as N	11.7 mg/Kg	23.5 mg/Kg	67
Percent solids	49.6 %	47.7 %	4
Total organic carbon	0.12 %	0.14 %	15
Total organic carbon	1.45 %	1.62 %	11

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-016	Analyte reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time and results reported below the RL and above the MDL, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-016

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10040 B18-10043 B18-10044 B18-20043	Acid volatile sulfide Ammonia as N Total nitrogen	J (all detects) J (all detects) J (all detects)	A	Technical holding times (H)
B18-10040 B18-10043 B18-10044 B18-20043	Analyte reported below the RL and above the MDL	J (all detects)	А	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-016

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-016

No Sample Data Qualified in this SDG

	#: <u>45128H6</u> VALIDATI (#: 1807003-016		PLETENES Level II	S WORKSHEE	:T	Date: 63(6
	pratory: Physis Environmental Laboratoric				F	Page:of Reviewer:
			NA	39	2nd F	Reviewer:
MET Nitro	HOD: (Analyte) AVS (Plumb 1981), Amigen (EPA SW846 9060), TOC (EPA SW	monia as N (/ 846 Method	(SM4500,10), F	Particle Size (SM 2	560D), % Solids (SM2540B), Tota
	samples listed below were reviewed for eation findings worksheets.	each of the f	ollowing valid	ation areas. Valida	ation findings are	noted in attached
	Validation Area		,	Com	nments	
I.	Sample receipt/Technical holding times	ASW				
	Initial calibration	, N				
111.	Calibration verification	N				
IV	Laboratory Blanks	A				
V	Field blanks	N				
VI.	Matrix Spike/Matrix Spike Duplicates	N	CS			
VII.	Duplicate sample analysis	NA				
VIII	. Laboratory control samples	A	USIN	, CRM		
IX.	Field duplicates	SW	(24)			
<u>X.</u>	Sample result verification	N	, ,			
LxL	Overall assessment of data	<u> </u>				
Note:	N = Not provided/applicable R = R	No compounds Rinsate Field blank	s detected	D = Duplicate TB = Trip blank EB = Equipment b	SB=Sourd OTHER: lank	ce blank
	Client ID			Lab ID	Matrix	Date
1	B18-10040			57537	Sediment	08/14/18
1 2	B18-10043			57538	Sediment	08/14/18
3	B18-10044			57539	Sediment	08/14/18
4	B18-20043			57540	Sediment	08/14/18
5	MIDUR					
6						
7						
8						
9						
10						
11						
12						

Notes:

13

LDC#: 45128H6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: CR
2nd reviewer: _____

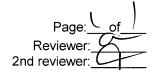
All circled methods are applicable to each sample.

Sample ID	Parameter
14	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN(NH) TKN FOC Cr6+ CIO4 (AVS) & SO (OS)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
Q(`S	pH TDS CI F NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ AIK CN NH $_3$ TKN TOC Cr6+ CIO $_4$ (\mathcal{P} S)
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	ph TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
٠	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	ph TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO, NO, SO, O-PO, Alk CN NH, TKN TOC Cr6+ ClO,

Comments:				

LDC #: 45128H6

VALIDATION FINDINGS WORKSHEET Technical Holding Times



All circled dates have exceeded the technical holding time.

Y N N/A

Were all samples preserved as applicable to each method?

Y N N/A

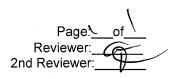
Were all cooler temperatures within validation criteria?

Method:		Plumb			SM 4500 NH3D		
Parameters	•		AVS		Ammonia as N		N
Technical h	olding time:		14 days		and the same of th	28 days	
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier
All	8/14/18	1/9/19	148	J/R/A (Det)	1/3/19	142	J/R/A (Det)

Method:		SM2540B EPA 906			EPA 9060		
Parameters	•		Percent solids	5	Total nitrogen		
Technical h	olding time:		180 days			28 days	Carage Control of the
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier
All	8/14/18				1/15/19	154	J/R/A (Det)
						# 43 MATERIAL AND ADDRESS AND	
			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			, , , , , , , , , , , , , , , , , , ,	

LDC#: 45128H6

VALIDATION FINDINGS WORKSHEET Field Duplicates



Inorganics, Method See Cover

	Concentratio		
Analyte	2	4	RPD
Acid volatile sulfides	324	221	38
Ammonia as N	11.7	23.5	67
Percent solids (%)	49.6	47.7	4
Total nitrogen (%)	0.12	0.14	15
TOC (%)	1.45	1.62	11

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2019\45128H6.wpd

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018

2018 Regional Harbor Monitoring Program

LDC Report Date: May 31, 2019

Parameters: Polynuclear Aromatic Hydrocarbons

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-018

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10200	58908	Sediment	09/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
57533-BS1/BS2 (All samples in SDG 1807003-018)	Anthracene	67 (70-130)	-	J (all detects)	Р

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
57535-CRM1 (SRM 1944)	Benzo(k)fluoranthene	41 (60-140)	All samples in SDG 1807003-018)	J (all detects)	Α

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-018	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD %R, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-018

Sample	Compound	Flag	A or P	Reason (Code)
B18-10200	Anthracene	J (all detects)	Р	Laboratory control samples (%R) (LL)
B18-10200	Benzo(k)fluoranthene	J (all detects)	Α	Certified reference material (%R) (LP)
B18-10200	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-018

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary SDG 1807003-018

No Sample Data Qualified in this SDG

	#: <u>1807003-018</u> atory: <u>Physis Environmental Laboratories</u>		Level II		-	Page: /of // Reviewer: /
Labora	atory. Physis Environmental Laboratories	<u>5, IIIC.</u>				Reviewer:
METH	IOD: GC/MS Polynuclear Aromatic Hydro	ocarbons (I	EPA SW 846	6 Method 8270D)		• ,
The sa	amples listed below were reviewed for ea	ach of the fo	ollowing vali	dation areas. Valid	ation findings are	noted in attache
	tion findings worksheets.					
	Validation Area			Cor	nments	
I.	Sample receipt/Technical holding times	TA				
11.	GC/MS Instrument performance check	N				
III.	Initial calibration/ICV	N/N				
IV.	Continuing calibration	N				
V.	Laboratory Blanks	A				
VI.	Field blanks	1/1				
VII.	Surrogate spikes	 '}				
VIII.	Matrix spike/Matrix spike duplicates	 '}	09			
IX.	Laboratory control samples	au/		B. CR.	N	
X.	Field duplicates	1 1	60	10.00	, ,	
XI.	Internal standards	 '\'				
		<u>'V</u>			1	
XII.	Compound quantitation RL/LOQ/LODs	N		M***		
XIII.	Target compound identification	N				
XIV.	System performance	N				
XV.	Overall assessment of data	<u> </u>				
Note:	N = Not provided/applicable R = Rin	lo compounds nsate ield blank	s detected	D = Duplicate TB = Trip blank EB = Equipment I	SB=Source OTHER: olank	ce blank
C	Client ID			Lab ID	Matrix	Date
1 E	318-10200			58908	Sediment	09/12/18
2						
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lotes:						

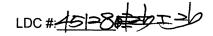
VALIDATION COMPLETENESS WORKSHEET

LDC #: 45128I2b

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

			· · · · · · · · · · · · · · · · · · ·	
A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Reviewer: 7

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y∡N N/A Wasa

Was a LCS required?

Y(N)N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

 		vveie tile LCS/LCSD p				rices (rai <i>b)</i> within the	QO III III S :	,
#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		5T533-BSV	VV	6T TO-130	()	()	All (dets)	1/4/6(4)
		BS/		()	()	()		
		· · · · · · · · · · · · · · · · · · ·		()	()	()		
				()	()	()		
		57535-CRM1 (SPM 1944)	HHH	41 (60+40)	()	()	All (dots)	1/WA (2)
		(SPM 1944)		()	()	()	,	
				()	()	()		
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polybrominated Diphenyl Ethers

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-018

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10200	58908	Sediment	09/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polybrominated Diphenyl Ethers (PBDE) by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-018	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polybrominated Diphenyl Ethers - Data Qualification Summary - SDG 1807003-018

Sample	Compound	Flag	A or P	Reason (Code)
B18-10200	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Laboratory Blank Data Qualification Summary SDG 1807003-018

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Field Blank Data Qualification Summary - SDG
1807003-018

No Sample Data Qualified in this SDG

SDG#	#:45128l2c VALI [#:1807003-018 atory:_Physis Environmental Labo	1	PLETENESS Level II	WORKSHEET	F	Date: 5/3// Page:of/ Reviewer:
METH	OD: GC/MS Polybrominated Dip	henyl Ethers (EPA	SW 846 Meth	od 8270D-NCI)	2na F	Reviewer:
The sa	amples listed below were reviewe ion findings worksheets.	d for each of the fo	ollowing valida	tion areas. Validatio	on findings are	noted in attached
	Validation Area			Comn	nents	
1.	Sample receipt/Technical holding times	s A				
II.	GC/MS Instrument performance check	N N			·	
111.	Initial calibration/ICV	N/N		***************************************		
IV.	Continuing calibration	Ŋ		· · · · · · · · · · · · · · · · · · ·		
. V.	Laboratory Blanks	A				
VI.	Field blanks	\sim				
VII.	Surrogate spikes	4				
VIII.	Matrix spike/Matrix spike duplicates	Ň	09			
IX.	Laboratory control samples	1 4	205/0	. CRM		
X.	Field duplicates	\mathcal{N}	/			
XI.	Internal standards	\mathcal{N}				
XII.	Compound quantitation RL/LOQ/LODs	N				
XIII.	Target compound identification	N				
XIV.	System performance	N				
XV.	Overall assessment of data	A				
Note:	A = Acceptable N = Not provided/applicable SW = See worksheet	ND = No compounds R = Rinsate FB = Field blank	s detected	D = Duplicate TB = Trip blank EB = Equipment blar	SB=Sourd OTHER: nk	ce blank
	Client ID			Lab ID	Matrix	Date
1 E	318-10200			58908	Sediment	09/12/18
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Notes:						

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Fipronil & Degradates

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-018

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10200	58908	Sediment	09/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Fipronil and Degradates by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-018	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Fipronil & Degradates - Data Qualification Summary - SDG 1807003-018

Sample	Compound	Flag	A or P	Reason (Code)
B18-10200	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Fipronil & Degradates - Laboratory Blank Data Qualification Summary - SDG 1807003-018

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Fipronil & Degradates - Field Blank Data Qualification Summary - SDG 1807003018

No Sample Data Qualified in this SDG

LDC #: 45128I2d	VALIDATION COMPLETENESS WORKSHEET
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SDG #: 1807003-018 Level II

Date: 5/39/9
Page: of /
Reviewer: 2nd Reviewer: 1/6

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: GC/MS Fipronil & Degradates (EPA SW 846 Method 8270D-NCI)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	4	
VI.	Field blanks	\ \\\/_\	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	25
IX.	Laboratory control samples	△	1cs/0
X.	Field duplicates	N.	/
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	B18-10200	58908	Sediment	09/12/18
2				
3				
4				
5				
6				
7				
8				

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Synthetic Pyrethroid Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-018

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10200	58908	Sediment	09/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Synthetic Pyrethroid Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D-MRM

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-018	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Synthetic Pyrethroid Pesticides - Data Qualification Summary - SDG 1807003-018

Sample	Compound	Flag	A or P	Reason (Code)	
B18-10200	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)	

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Laboratory Blank Data Qualification Summary SDG 1807003-018

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Field Blank Data Qualification Summary - SDG
1807003-018

No Sample Data Qualified in this SDG

SDG#	#: 45128l2e VALIDATIO #: 1807003-018 atory: Physis Environmental Laboratorie		Level II	SS WORKSHEET		Date: <u>5/39</u> Page:of_ Reviewer:
The sa	OD: GC/MS Synthetic Pyrethroid Pestic amples listed below were reviewed for e tion findings worksheets.	·		·		Reviewer:
	Validation Area			Comm	ents	
l.	Sample receipt/Technical holding times	4				
H.	GC/MS Instrument performance check	N				18-47
III.	Initial calibration/ICV	N/N				Sec.
IV.	Continuing calibration	Ŋ				
V.	Laboratory Blanks	A	1			
VI.	Field blanks	$ \mathcal{N} $				
VII.	Surrogate spikes	N				
VIII.	Matrix spike/Matrix spike duplicates	N	19			
IX.	Laboratory control samples	A	LCS/	8		
X.	Field duplicates	Λ/	/			
XI.	Internal standards	N				
XII.	Compound quantitation RL/LOQ/LODs	N				
XIII.	Target compound identification	N				
XIV.	System performance	N				
XV.	Overall assessment of data	A				
Note:	A = Acceptable ND = I N = Not provided/applicable R = Ri	No compounds insate Field blank	s detected	D = Duplicate TB = Trip blank EB = Equipment blan	SB=Sourd OTHER: k	ce blank
c	Client ID			Lab ID	Matrix	Date
1 E	318-10200			58908	Sediment	09/12/18
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Notes:					I I	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Chlorinated Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-018

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10200	58908	Sediment	09/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D/8270D-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
57533-BS1/BS2 (All samples in SDG 1807003-018)	alpha-BHC Endosulfan II Endrin aldehyde Hexachlorobenzene	67 (70-130) 15 (70-130) 12 (70-130) 67 (70-130)	- 15 (70-130) 21 (70-130) -	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Р
57533-BS1/BS2 (All samples in SDG 1807003-018)	Endosulfan I	3 (70-130)	2 (70-130)	R (all non-detects)	Р
57533-BS1/BS2 (All samples in SDG 1807003-018)	Methoxychlor Perthane	143 (70-130) -	146 (70-130) 134 (70-130)	NA	-

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

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
57533-BS1/BS2 (All samples in SDG 1807003-018)	Endosulfan II Endrin aldehyde	40 (≤30) 55 (≤30)	NA	-

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
58906-CRM1	gamma-Chlordane	159 (60-140)	All samples in SDG 1807003-018	J (all detects)	А

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-018	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to LCS/LCSD %R, data were rejected in one sample.

Due to LCS/LCSD %R, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Data Qualification Summary - SDG 1807003-018

Sample	Compound	Flag	A or P	Reason (Code)
B18-10200	alpha-BHC Endosulfan II Endrin aldehyde Hexachlorobenzene	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10200	Endosulfan I	R (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10200	gamma-Chlordane	J (all detects)	Α	Certified reference material (%R) (HP)
B18-10200	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 1807003-018

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 1807003-018

No Sample Data Qualified in this SDG

	#: <u>1807003-018</u> atory: <u>Physis Environmental Laboratories</u>		Level II				Page: /of // eviewer: Of eviewer: OV
The sa	AOD: GC/MS Chlorinated Pesticides (EP/ amples listed below were reviewed for ea tion findings worksheets.						
	Validation Area				Comme	ents	
l.	Sample receipt/Technical holding times	A					
II.	GC/MS Instrument performance check	N					
HI.	Initial calibration/ICV	N/N					
IV.	Continuing calibration	N _.					
V.	Laboratory Blanks	*					
VI.	Field blanks	N					
VII.	Surrogate spikes	X			M-7		
VIII.	Matrix spike/Matrix spike duplicates	N	09				
IX.	Laboratory control samples	w	40	5/2	D. CHM		
X.	Field duplicates	N.					
XI.	Internal standards						
XII.	Compound quantitation RL/LOQ/LODs	N					
XIII.	Target compound identification	N					
XIV.	System performance	N				.,	
XV.	Overall assessment of data	A					
Note:	N = Not provided/applicable R = Rin	o compounds sate eld blank	detected		D = Duplicate TB = Trip blank EB = Equipment blank	SB=Sourc OTHER:	e blank
- 0	Client ID	<u>.</u>			Lab ID	Matrix	Date
1 E	318-10200				58908	Sediment	09/12/18
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Notes:							
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VALIDATION COMPLETENESS WORKSHEET

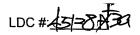
Level II

LDC #: 45128I3a

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticides

A. alpha-HCH	K. Endrin	U. Toxaphene	EE. 2,4'-DDT	OO. oxy-Chlordane
B. beta-HCH	L. Endosulfan II	V. Aroclor-1016	FF. Hexachlorobenzene	PP. cis-Nonachlor
C. delta-HCH	M. 4,4'-DDD	W. Aroclor-1221	GG. Chlordane	QQ. trans-Nonachlor
D. gamma-HCH	N. Endosulfan sulfate	X. Aroclor-1232	HH. Chlordane (Technical)	RR. cis-Chlordane
E. Heptachlor	O. 4,4'-DDT	Y. Aroclor-1242	II. p,p'-DDE	SS. trans-Chlordane
F. Aldrin	P. Methoxychlor	Z. Aroclor-1248	JJ. p,p'-DDD	TT. alpha-Endosulphan
G. Heptachlor epoxide	Q. Endrin ketone	AA. Aroclor-1254	KK. p,p'-DDT	UU. beta-Endosulphan
H. Endosulfan I	R. Endrin aldehyde	BB. Aroclor-1260	LL. o,p'-DDT	VV. Endosulphan Sulphate
I. Dieldrin	S. alpha-Chlordane	CC. 2,4'-DDD	MM. o,p'-DDE	WW. Mirex
J. 4,4'-DDE	T. gamma-Chlordane	DD. 2,4'-DDE	NN. o,p'-DDD	



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(X) (N/A

Was a LCS required?

Y N N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		5T533-1361/	Á	6T 70-BU	()	()	AII(ND)	V14 (22)
		-B02	4	15 (1)	15 (TO-130)	()		7 7
			7	127)	2/()	()		
			FF	67 ()	()	()		V
			<u> </u>	3 ()	> ()	()		VER
			Þ	H3(V)	46()	()		Solets (HZ)
		te	vthane	()	134(1)	()		
		`	Z R	()	()	40 (=30)		Jdet3 F(HD)
			R	()		55 (1/)		
				()	()	()		
				()	()	()	<u> </u>	
		58906-0+MI	工	159 (60-140)	()	()	All (dots)	Web/A(HP)
		<i>'</i>		' ()	()	()		
				()	()	()		
				()	()	()		
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polychlorinated Biphenyls as Congeners

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-018

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10200	58908	Sediment	09/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) as Congeners by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
57533-BS1/BS2 (All samples in SDG 1807003-018)	PCB-003 PCB-005	60 (70-130) 67 (70-130)	- - -	UJ (all non-detects) UJ (all non-detects)	Р
57533-BS1/BS2 (All samples in SDG 1807003-018)	PCB-156 PCB-169 PCB-189 PCB-194 PCB-195 PCB-206 PCB-209	131 (70-130) 153 (70-130) 146 (70-130) 165 (70-130) 133 (70-130) 158 (70-130) 135 (70-130)	148 (70-130) 144 (70-130) 161 (70-130) 134 (70-130) 147 (70-130)	NA	-
57533-BS1/BS2 (All samples in SDG 1807003-018)	PCB-180	135 (70-130)	131 (70-130)	J (all detects)	Р

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
57535-CRM1	PCB-105 PCB-118 PCB-156	41 (60-140) 53 (60-140) 41 (60-140)	All samples in SDG 1807003-018	J (all detects) UJ (all non-detects)	A

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-018	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD and CRM %R and results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG 1807003-018

Sample	Compound	Flag	A or P	Reason (Code)
B18-10200	PCB-003 PCB-005	UJ (all non-detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10200	PCB-180	J (all detects)	Р	Laboratory control samples (%R) (HL)
B18-10200	PCB-105 PCB-118 PCB-156	J (all detects) UJ (all non-detects)	А	Certified reference material (%R) (LP)
B18-10200	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification
Summary - SDG 1807003-018

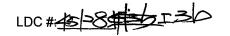
No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Field Blank Data Qualification
Summary - SDG 1807003-018

No Sample Data Qualified in this SDG

METHOD: GC/MS PCB as Congeners (EPA SW 846 Method 8270D) The samples listed below were reviewed for each of the following validation areas. Validation findings are no validation findings worksheets. Validation Area Comments I. Sample receipt/Technical holding times II. GC/MS Instrument performance check N III. Initial calibration/ICV N/N IV. Continuing calibration N	Date: <u>5/9/</u> Page:of /_ eviewer:
The samples listed below were reviewed for each of the following validation areas. Validation findings are no validation findings worksheets. Validation Area Comments	eviewer:n/
II. Sample receipt/Technical holding times III. GC/MS Instrument performance check III. Initial calibration/ICV N/N	oted in attached
II. GC/MS Instrument performance check N III. Initial calibration/ICV N/N	
II. GC/MS Instrument performance check N III. Initial calibration/ICV N/N	
IV. Continuing calibration N	
· I	
V. Laboratory Blanks	
VI. Field blanks	
VII. Surrogate spikes	
VIII. Matrix spike/Matrix spike duplicates	
IX. Laboratory control samples AM LCS O. CRM	
X. Field duplicates	
XI. Internal standards	
XII. Compound quantitation RL/LOQ/LODs N	
XIII. Target compound identification N	
XIV. System performance N	
XV. Overall assessment of data	
lote: A = Acceptable ND = No compounds detected D = Duplicate SB=Source N = Not provided/applicable R = Rinsate TB = Trip blank OTHER: SW = See worksheet FB = Field blank EB = Equipment blank	; blank
Client ID Lab ID Matrix	Date
1 B18-10200 58908 Sediment	09/12/18
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Notes:



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		5T533-Bay	PCB03	60 (70-126)	()	()	AH (NO)	JAY (22)
				67 (1)	()	()		771
			156	131 ()	()	()		Jets (HZ)
			169	153 ()	148 (TO-BO)	()	V	
			180	135 ()	3/ (³)	()	(dets)	
			189	146 ()	144 ()	()	(ND)	
			194	165 ()	161 ()	()		
			195	133,()	134 ()	()		
					HT (1)		/	
			V 209	135 ()	()	()	V	
				()	()	()		
		57535-CAMI	PCB105	41 (60-40)	()	()	All (dots+NO)	JULYA (20)
		<u> </u>	118	53 ()) 41 (V)	()	()	/	//
<u> </u>			156	41 (V)	()	()		
			L	()	()	()		
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

June 4, 2019

Parameters:

Metals

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-018

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10200	58908	Sediment	09/12/18
B18-10200(SEM)	58908(SEM)	Sediment	09/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Iron, Lead, Nickel, Phosphorus, Selenium, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to nonconformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-10200	Mercury	121	28	J (all detects)	Р

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits with the following exceptions:

CRM ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
58905-CRM1	Aluminum Iron	136 (42-124) 158 (33-155)	B18-10200	J (all detects) J (all detects)	Α

XI. Field Duplicates

No field duplicates were identified in this SDG.

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-018	Analyte reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-018

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10200	Mercury	J (all detects)	Р	Technical holding times (H)
B18-10200	Aluminum Iron	J (all detects) J (all detects)	А	Certified reference material (%R) (HP)
B18-10200 B18-10200(SEM)	Analyte reported below the RL and above the MDL	J (all detects)	А	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-018

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-018

No Sample Data Qualified in this SDG

LDC #: 45128I4a

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-018

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6020/EPA Method 200.8/EPA Method 245.7)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	ASh	
11.	ICP/MS Tune	' N	
111.	Instrument Calibration	N	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Laboratory Blanks	A	
VI.	Field Blanks	\mathcal{N}	
VII.	Matrix Spike/Matrix Spike Duplicates	\mathcal{N}	
VIII.	Duplicate sample analysis	$\mathcal{N}_{\mathcal{L}}$	
IX.	Serial Dilution	\mathcal{N}	
X.	Laboratory control samples	54	LCSID CRM
XI.	Field Duplicates	\mathcal{N}	
XII.	Internal Standard (ICP-MS)	N	
XIII.	Sample Result Verification	N	
Lxıv	Overall Assessment of Data	A	

Note:

A = Acceptable

N = Not provided/applicable

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

SW = See worksheet Samples appended with "SEM" were analyzed as Simultaneously Extracted Metals Client ID Lab ID Matrix Date B18-10200 58908 Sediment 09/12/18 B18-10200(SEM) 09/12/18 58908(SEM) Sediment 5 6 8 10

12				
	· · · · · · · · · · · · · · · · · · ·			

LDC#: USP8IB

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: <u>1</u>	_of1_
Reviewer:	CR,
2nd reviewer:	4

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
	WIGHTA	
		(Al, Sb, As, Ba, Be, Cd, Ca (G), Co, Cu, Fe, Pb) Mg, Mn, Hg, Ni, K, 6e, Ag, Na, Tl, V(Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni K, Se Ag, Na, Tl, V (Zn) Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	······································	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA		Al, Sh, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,

Comments:	Mercury by CVAA if performed

LDC #: 45128I4a

VALIDATION FINDINGS WORKSHEET Technical Holding Times

Were samples preserved? $\underline{Y} \underline{N} \underline{N/A}$ All circled dates have exceeded the technical holding time.

METHOD:		Mercury Holding time = 28 days				
Sample ID:	Sampling Date	Analysis Date	Total Time until Analysis (days)	Qualifier Code: 1	Det/ND	
1	9/12/18	1/11/19	121	J/R/P	Det	

Technical Holding Time Criteria

Mercury: 28 days All other metals: 180 days - 1 year if frozen

LDC#: 4512874

VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page:of
Reviewer:
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

Y N N/A Were all aqueous LCS percent recoveries (%R) within the control limits of 80-120% and all soil LCS %R within laboratory established control limits.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

П						
#	LCS ID	Matrix	Analyte	%R (limits)	Associated Samples	/ Qualifications
	58905-CR1	NI	Analyte	136 (42-124)		Jost (A (ped) HP
П			Fe	158 (33-155)	7	
П						
П						
Н						
Н						
H						
$\ - \ $						
\vdash						
Н						
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H						
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Comments:	 	····		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

June 4, 2019

Parameters:

Wet Chemistry

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-018

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10200	58908	Sediment	09/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Acid Volatile Sulfide by Plumb 1981
Ammonia as Nitrogen by Standard Method 4500-NH3-D
Particle Size by Standard Method 2560D
Percent Solids by Standard Method 2540B
Total Nitrogen and Total Organic Carbon by Environmental Protection Agency (EPA) SW 846 Method 9060

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
B18-10200	Acid volatile sulfide Ammonia as N Total nitrogen	119 days 113 days 125 days	14 days 28 days 28 days	J (all detects) J (all detects) J (all detects)	A

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-018	Analytes reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time and results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-018

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10200	Acid volatile sulfide Ammonia as N Total nitrogen	J (all detects) J (all detects) J (all detects)	А	Technical holding times (H)
B18-10200	Analytes reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-018

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-018

No Sample Data Qualified in this SDG

LDC :	#: 45128I6 VALIDAT		PLETENESS	WORKSHEET		Date 6/3/19
	#: 1807003-018		Level II	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Page: of
	atory: Physis Environmental Laborator					viewer:
			, NH.	3 D	2nd Re	viewer:
METH Nitrog	IOD: (Analyte) <u>AVS (Plumb 1981), Ar</u> en (EPA SW846 9060), TOC (EPA SV	nmonia as N (W 846 Method	(SM4500 / D), Pa	article Size (SM 2560	DD), % Solids (SI	M2540B), Tota
	amples listed below were reviewed for tion findings worksheets.	r each of the fo	ollowing valida	ition areas. Validation	n findings are no	ted in attached
	Validation Area		,	Comme	ents	
l.	Sample receipt/Technical holding times	ASW				
<u> </u>	Initial calibration	N		**************************************		
111.	Calibration verification	N				
IV	Laboratory Blanks	A				
V	Field blanks	\mathcal{N}		***************************************		
VI.	Matrix Spike/Matrix Spike Duplicates	$\frac{1}{N}$				
VII.	Duplicate sample analysis	/V				
VIII.	Laboratory control samples	A	USIV	,99		
IX.	Field duplicates	\mathcal{N}	_	<u> </u>		
Χ.	Sample result verification	Ŋ				
LXL_	Overall assessment of data					
Note:	N = Not provided/applicable R =	= No compounds Rinsate = Field blank	s detected	D = Duplicate TB = Trip blank EB = Equipment blank	SB=Source OTHER:	blank
	Client ID			Lab ID	Matrix	Date
1 E	318-10200			58908	Sediment	09/12/18
2						
3						
4						
5 6 7						
6						
7						
8					ļ	
9		Manufacture				
10						
11						

Notes:

12

LDC #: 45128I6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:	<u>1_</u> of	1_
Reviewer:	СF	<u>h_</u>
2nd reviewer:	$\overline{}$	

All circled methods are applicable to each sample.

Sample ID	
1	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN (NH3)TKN(TOO C16+ C104 (AVS)950 (Ob) (PS)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
· · · · · · · · · · · · · · · · · · ·	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
<u>:</u>	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO ₂ NO ₂ SO ₂ O-PO ₂ Alk CN NH ₃ TKN TOC Cr6+ ClO ₂

Comments:	 	

LDC #: 45128I6

VALIDATION FINDINGS WORKSHEET Technical Holding Times

2nd reviewer

All circled dates have exceeded the technical holding time.

Y N N/A Were all samples preserved as applicable to each method?

Y N N/A Were all cooler temperatures within validation criteria?

Method: Plumb Parameters: AVS Technical holding time: 14 days Sampling Analysis Total Gays Sample ID date date Time Qualifie (days)		AVS			SM 4500 NH3D Ammonia as N 28 days		
		Qualifier	Analysis date	Qualifier			
All	9/12/18	1/9/19	119	J/R/A (Det)	1/3/19	(days) 113	J/R/A (Det)

Method: Parameters		SM2540B EPA 9060 Percent solids Total nitroge		n			
	Technical holding time:		180 days		28 days		
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier
All	9/12/18				1/15/19	125	J/R/A (Det)

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polynuclear Aromatic Hydrocarbons

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-019

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-SED-EB	56384	Water	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) Method 625

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample B18-SED-EB was identified as an equipment blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56379-BS1 (All samples in SDG 1807003-019)	Benzo(a)anthracene	140 (70-130)	141 (70-130)	NA	-

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

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
56379-BS1 (All samples in SDG 1807003-019)	Naphthalene	26 (≤25)	NA	-

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-019	Compound reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-019

Sample	Compound	Flag	A or P	Reason (Code)
B18-SED-EB	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-019

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary SDG 1807003-019

No Sample Data Qualified in this SDG

SDG#	#:45128J2b VALIDATIO	I	LETENESS Level II	S WORKSHEET		Date: Self Page:
METH	OD: GC/MS Polynuclear Aromatic Hydro	carbons (E	EPA Method 6	25)		•
	amples listed below were reviewed for eaction findings worksheets.	ch of the fo	ollowing valida	tion areas. Validatio	n findings are	noted in attached
	Validation Area			Comm	ents	
I.	Sample receipt/Technical holding times	A				
II.	GC/MS Instrument performance check	N				
111.	Initial calibration/ICV	N/N				
IV.	Continuing calibration	N				
V.	Laboratory Blanks	A				
VI.	Field blanks	NO	ZB=/			
VII.	Surrogate spikes	A	-			
VIII.	Matrix spike/Matrix spike duplicates	\mathcal{N}	()			
IX.	Laboratory control samples	W	105/	か		
X.	Field duplicates	\mathcal{N}				
XI.	Internal standards	٨/				
XII.	Compound quantitation RL/LOQ/LODs	N				
XIII.	Target compound identification	N				
XIV.	System performance	N			· · · · · · · · · · · · · · · · · · ·	
XV.	Overall assessment of data	A				
lote:	N = Not provided/applicable R = Rins	o compounds sate eld blank	detected	D = Duplicate TB = Trip blank EB = Equipment blant	SB=Sou OTHER:	
c	Client ID			Lab ID	Matrix	Date
1 E	318-SED-EB			56384	Water	07/10/18
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lotes:						

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

WETTIOD: CONVICTOR				
A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	<u> </u>
Reviewer:	7
2nd Reviewer:	54

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Y(N)N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		56379-BS/	ac	40 70-130	141 70-130	()	All(ND)	1 det3 = (H2)
			S	()	()	2526(x X5)		V (HD)
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polybrominated Diphenyl Ethers

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-019

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-SED-EB	56384	Water	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polybrominated Diphenyl Ethers (PBDE) by Environmental Protection Agency (EPA) Method 625-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to nonconformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk
 (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample B18-SED-EB was identified as an equipment blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-019	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polybrominated Diphenyl Ethers - Data Qualification Summary - SDG 1807003-019

Sample Compound		Flag	A or P	Reason (Code)
B18-SED-EB	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Laboratory Blank Data Qualification Summary SDG 1807003-019

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Field Blank Data Qualification Summary - SDG 1807003-019

No Sample Data Qualified in this SDG

1		44.	45128J2c	
1	11/1/2	#	401/03/0	

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-019

Level II

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer:

2nd Reviewer:

METHOD: GC/MS Polybrominated Diphenyl Ethers (EPA Method 625-NCI)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	N	
111.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	ZB=/
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	Ň	25
IX.	Laboratory control samples	A	205/0
X.	Field duplicates	\mathcal{N}	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note	
14010	•

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank

EB = Equipment blank

SB=Source blank

OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-SED-EB	56384	Water	07/10/18
2				
3				
4				
5				
3				
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NO	.03.	 		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Fipronil & Degradates

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-019

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-SED-EB	56384	Water	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Fipronil and Degradates by Environmental Protection Agency (EPA) Method 625-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

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- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample B18-SED-EB was identified as an equipment blank. No contaminants were found.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

_			
Sample	Finding	Flag	AorP
All samples in SDG 1807003-019	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Fipronil & Degradates - Data Qualification Summary - SDG 1807003-019

Sample	Compound	Flag	A or P	Reason (Code)
B18-SED-EB	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program Fipronil & Degradates - Laboratory Blank Data Qualification Summary - SDG 1807003-019

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Fipronil & Degradates - Field Blank Data Qualification Summary - SDG 1807003019

No Sample Data Qualified in this SDG

SDG Labo MET The	#:45128J2d VALIDATION 6 #:1807003-019 oratory: Physis Environmental Laboratories THOD: GC/MS Fipronil & Degradates (EPA) samples listed below were reviewed for each ation findings worksheets.	, Inc. Method 6	Level II 625-NCI)		2nd	Date: 539 Page: /ot / Reviewer: 70 Reviewer: 70 Page: /ot / Reviewer: 70 Page: /ot / Page: //ot / Page: / Page: //ot / Page: //ot / Page: / Page: / Page: / Page: / Page: / Page: / Page: / Page: / Page: / Page: / Page: / Page: / Page:
	Validation Area				Comments	
ī.	Sample receipt/Technical holding times	A				
II.		N				
111.	Initial calibration/ICV	N/N				
IV.	Continuing calibration	N				
V.	Laboratory Blanks	4				
VI.	Field blanks	NB	ZB=/			
VII	. Surrogate spikes	\mathcal{N}_{-}				
VIII	. Matrix spike/Matrix spike duplicates	N	45			
IX.	Laboratory control samples	₩.	Le5/2	グ		
Χ.	Field duplicates	N	/			
XI.	Internal standards	\mathcal{N}				
XII.	Compound quantitation RL/LOQ/LODs	N				
XIII	. Target compound identification	N				
ΧIV	. System performance	N				
XV.	Overall assessment of data	A		***************************************		
Note:	N = Not provided/applicable R = Rins	compounds sate eld blank	s detected	D = Duplicate TB = Trip blanl EB = Equipme	k OTHER:	rce blank
	Client ID			Lab ID	Matrix	Date
1	B18-SED-EB			56384	Water	07/10/18
2				<u> </u>		
3						
4		-				
5						
6						

8_		 		
Not	es:			

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Synthetic Pyrethroid Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-019

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-SED-EB	56384	Water	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Synthetic Pyrethroid Pesticides by Environmental Protection Agency (EPA) Method 625-MRM

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample B18-SED-EB was identified as an equipment blank. No contaminants were found.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
56379-BS1/BS2 (All samples in SDG 1807003-019)	Resmethrin	0 (0-94)	0 (0-94)	UJ (all non-detects)	Р

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

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
56379-BS1/BS2 (All samples in SDG 1807003-019)	Deltamethrin/Tralomethrin Esfenvalerate Fenvalerate Fluvalinate	44 (≤30) 49 (≤30) 44 (≤30) 51 (≤30)	NA	-

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-019	Compound reported below the RL and above the MDL	J (all detects)	A

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD %R and results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Synthetic Pyrethroid Pesticides - Data Qualification Summary - SDG 1807003-019

Sample	Compound	Flag	A or P	Reason (Code)
B18-SED-EB	Resmethrin	UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-SED-EB	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Laboratory Blank Data Qualification Summary SDG 1807003-019

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Field Blank Data Qualification Summary - SDG 1807003-019

No Sample Data Qualified in this SDG

SDG 7	#:45128J2eVALIDATIO #:1807003-019 atory: Physis Environmental Laboratories		PLETENESS Level II	S WORKSHEE		Date: 5/39 Page:of/ Reviewer: Reviewer:(\forall /
METH	IOD: GC/MS Synthetic Pyrethroid Pestici	ides (EPA I	Method 625-M	RM)	2110	Keviewei
The savalida	amples listed below were reviewed for ea tion findings worksheets.	nch of the fo	ollowing valida	tion areas. Validat	tion findings are	noted in attached
	Validation Area			Com	ments	
l	Sample receipt/Technical holding times	A				
II.	GC/MS Instrument performance check	N				
111.	Initial calibration/ICV	N/N				
IV.	Continuing calibration	N				
V.	Laboratory Blanks	A				
VI.	Field blanks	ND	ZB=/			
VII.	Surrogate spikes	\mathcal{N}	/			
VIII.	Matrix spike/Matrix spike duplicates	\mathcal{N}	C5			
IX.	Laboratory control samples	w	LC5/2	>		
X.	Field duplicates	N,	'			
XI.	Internal standards	N				
XII.	Compound quantitation RL/LOQ/LODs	N				
XIII.	Target compound identification	N				
XIV.	System performance	Ņ				
XV.	Overall assessment of data	A				
Note:	N = Not provided/applicable R = Rin	o compounds sate eld blank	detected	D = Duplicate TB = Trip blank EB = Equipment bla	OTHER	rce blank
	Client ID			Lab ID	Matrix	Date
1 E	318-SED-EB			56384	Water	07/10/18
2						
3						

	Client ID	 		Lab ID	Matrix	Date
1	B18-SED-EB			56384	Water	07/10/18
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VALIDATION FINDINGS WORKSHEET

METHOD: Pyrethroids

METHOD: Pyrethrolas		
A. Allethrin		
B. Bifenthrin		
C. Cyfluthrin		
D. Cyhalothrin, Total Lambda		
E. Cypermethrin		
F. Danitol (Fenpropathrin)		
G. Deltamethrin/Tralomethrin		
H. Esfenvalerate		
I. Fluvalinate		
J. Permethrin, cis-		
K. Permethrin, trans-		
L. Prallethrin		
M. Resmethrin N. Fenvakrate		
N. Fenvalerate		



VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	_/of_/_
Reviewer:	9
2nd Reviewer:	Do

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

80N N/A Y (N N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		5637918	H	0 (0-94)	0 (0-94)	()	All (ND)	VM/P(W)
		352	4	()	()			JANS SIHON
			14	()	()	49(1)		
			X N	()	()	44 ()		
			エ	()	()	5/(/)		
				()	()	()		
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Chlorinated Pesticides

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-019

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-SED-EB	56384	Water	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) Method 625/625-NCI

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample B18-SED-EB was identified as an equipment blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-019	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Data Qualification Summary - SDG 1807003-019

Sample	Compound	Flag	A or P	Reason (Code)
B18-SED-EB	Compound reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 1807003-019

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 1807003-019

No Sample Data Qualified in this SDG

SDG a Labor	#: <u>1807003-019</u> atory: <u>Physis Environmental Laboratories</u>	, Inc.	Level II	SS WORKSH	F	Date: 5/2// Page: //of/ Reviewer: //
The sa	IOD: GC/MS Chlorinated Pesticides (EP/ amples listed below were reviewed for ea tion findings worksheets.		·	idation areas. Va	lidation findings are	noted in attached
	Validation Area			C	Comments	
I.	Sample receipt/Technical holding times	4				
II.	GC/MS Instrument performance check	N				
III.	Initial calibration/ICV	N/N				
IV.	Continuing calibration	N.				
V.	Laboratory Blanks	\$				
VI.	Field blanks	NB	EB =			-
VII.	Surrogate spikes	A		- -		·
VIII.	Matrix spike/Matrix spike duplicates	N	05			
IX.	Laboratory control samples	A	105	10		
Χ.	Field duplicates	N				
XI.	Internal standards	N				
XII.	Compound quantitation RL/LOQ/LODs	N				
XIII.	Target compound identification	N				
XIV.	System performance	N				
XV.	Overall assessment of data	A			1	
lote:	A = Acceptable ND = N N = Not provided/applicable R = Rin	o compounds sate eld blank	detected	D = Duplicate TB = Trip blanl EB = Equipme		ce blank
	Client ID		in a const	Lab ID	Matrix	Date
1 E	318-SED-EB			56384	Water	07/10/18
2			H-18-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1			
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

May 31, 2019

Parameters:

Polychlorinated Biphenyls as Congeners

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-019

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-SED-EB	56384	Water	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) as Congeners by Environmental Protection Agency (EPA) Method 625

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
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- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
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- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample B18-SED-EB was identified as an equipment blank. No contaminants were found.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standard data were not reviewed for Level II validation.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-019	Compound reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identification

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG 1807003-019

Sample	Compound	Flag	A or P	Reason (Code)
B18-SED-EB	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification
Summary - SDG 1807003-019

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Field Blank Data Qualification
Summary - SDG 1807003-019

No Sample Data Qualified in this SDG

SDG #: 1807003-019 Laboratory: Physis Environmental Laboratories			Level II		F Revi 2nd Revi	Page: /of // iewer: \frac{1}{2}
The s	HOD: GC/MS PCB as Congeners (EPA Mamples listed below were reviewed for eation findings worksheets.			ation areas. Validation		
	Validation Area			Comme	nts	
I.	Sample receipt/Technical holding times		ļ	and the second s		
II.	GC/MS Instrument performance check	N				
III.	Initial calibration/ICV	N/N				
IV.	Continuing calibration	N				
V.	Laboratory Blanks	A				
VI.	Field blanks	ND	ZB=1			
VII.	Surrogate spikes	N				
VIII.	Matrix spike/Matrix spike duplicates	\sim	25			
IX.	Laboratory control samples	A	105/	0		
X.	Field duplicates		and the second s			
XI.	Internal standards	<i>N</i>				
XII.	Compound quantitation RL/LOQ/LODs	N				
XIII.	Target compound identification	N				
XIV.	System performance	N				
XV.	Overall assessment of data	\(\)				
Note:	N = Not provided/applicable R = Rins	lo compounds nsate ield blank	; detected	D = Duplicate TB = Trip blank EB = Equipment blank	SB=Source bl OTHER:	lank
	Client ID			Lab ID	Matrix	Date
	B18-SED-EB			56384	Water	07/10/18
2						
3						
4						
5						
6						
7						
8						
Notes:				T		

LDC #: 45128J3b VALIDATION COMPLETENESS WORKSHEET

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

June 4, 2019

Parameters:

Metals

Validation Level:

Level II

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-019

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-SED-EB	56384	Water	07/10/18
B18-SED-EBMS	56384MS	Water	07/10/18
B18-SED-EBMSD	56384MSD	Water	07/10/18
B18-SED-EBDUP	56384DUP	Water	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Iron, Lead, Nickel, Selenium, Silver, and Zinc by Environmental Protection Agency (EPA) Method 200.8

Mercury by EPA Method 245.7

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. ICPMS Tune

ICP-MS tune data were not reviewed for Level II validation.

III. Instrument Calibration

Instrument calibration data were not reviewed for Level II validation.

IV. ICP Interference Check Sample Analysis

Interference check sample (ICS) analysis data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample B18-SED-EB was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Analyte	Concentration
B18-SED-EB	Copper Iron Nickel Zinc	0.386 ug/L 3.61 ug/L 12.5 ug/L 2.47 ug/L

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

XI. Field Duplicates

No field duplicates were identified in this SDG.

XII. Internal Standards (ICP-MS)

Internal standard data were not reviewed for Level II validation.

XIII. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-019	Analyte reported below the RL and above the MDL	J (all detects)	А

Raw data were not reviewed for Level II validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-019

Sample	Analyte	Flag	A or P	Reason (Code)
B18-SED-EB	Analyte reported below the RL and above the MDL	J (all detects)	A	Sample result verification (DL)

2018 Regional Harbor Monitoring Program Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-019

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-019

No Sample Data Qualified in this SDG

SDG	; #:_	45128J4a VALIDATIO 1807003-019 ory: Physis Environmental Laboratories		PLETENESS Level II	S WORKSHEET		Date: <u>6(3)</u> Page:of_] Reviewer:
		D: Metals (EPA Method 200.8/245.7)				2nd	Reviewer:
		nples listed below were reviewed for ea n findings worksheets.	ch of the fo	ollowing valida	ition areas. Validation	n findings are	noted in attached
		Validation Area			Comme	ents	
1.		Sample receipt/Technical holding times	AA				
11.		CP/MS Tune	N				
#11.	1	nstrument Calibration	N				
IV.		CP Interference Check Sample (ICS) Analysis	N				
V.	L	_aboratory Blanks	A				
VI.	F	Field Blanks	SW	EB=1			
VII.	. N	Matrix Spike/Matrix Spike Duplicates	A				
VIII	. [Duplicate sample analysis	A				
IX.	5	Serial Dilution	\mathcal{N}				
Χ.	L	aboratory control samples	A	LCS/D)		
XI.	_ F	Field Duplicates	\mathcal{N}_{-}	•			
XII.	<u> </u>	nternal Standard (ICP-MS)	N				
XIII	s	Sample Result Verification	N_				
XIV		Overall Assessment of Data					
Note:	1	N = Not provided/applicable R = Rin	o compounds sate eld blank	s detected	D = Duplicate TB = Trip blank EB = Equipment blank	OTHER:	rce blank
	Clie	ent ID			Lab ID	Matrix	Date
1	B18	8-SĘD-EB			56384	Water	07/10/18
2		l ms					
1		ms()					
3 4		VOQ					
5							
6							
7							

Notes:

10



VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page:1_	_of	1_
Reviewer:	CR	
2nd reviewer:	U	

All circled elements are applicable to each sample.

Г		
Sample ID	Matrix	Towart Anglyta Lint (TAL)
Sample ID	Matrix	Target Analyte List (TAL)
1		(Al, Sb, As, Ba, Be, Co) Ca(Cr, Co(Cu, Fe, Pb) Mg, Mn, (Hg, Ni) K, (Se, Ag, Na, Tl, V(Zn) Mo, B, Sn, Ti,
8000		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
Q1.2-4		(Al, Sb, As, Ba, Be, Cg, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni) K, Se, Ag, Na, Tl, V, (Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA		Al Sh As Ba Be Cd Ca Cr Co Cu Fe Ph Mg Mn Hg Ni K Se Ag Na Tl V Zn Mo B Sn Ti

ILIFAA I	If Al, Sb, As, Ba, Be, Cd, Ca, Cl, Cb, Ch, Fe, Pb, Mg, Mh, Fig, Ni, K, Se, Ag, Na, Ti, V, ZH, Mb, B, Sh, Ti,	╝
Commonto	Margury by CV/AA if parformed	
Comments:	Mercury by CVAA if performed	
		—

LDC #: US1785 VALIDATION FINDINGS WORKSHEET

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2nd reviewer:_	4	

Field Blanks METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000) Sample: _____ Field Blank / Trip Blank / Rinsate / Other_____(circle one) Concentration
<u>Units (AC</u>) Analyte 0,386 Sample: _____ Field Blank / Trip Blank / Rinsate / Other____ (circle one) Concentration Units (Analyte

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: June 4, 2019

Parameters: Wet Chemistry

Validation Level: Level II

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-019

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-SED-EB	56384	Water	07/10/18
B18-SED-EBMS	56384MS	Water	07/10/18
B18-SED-EBMSD	56384MSD	Water	07/10/18
B18-SED-EBDUP	56384DUP	Water	07/10/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Ammonia as Nitrogen by Standard Method 4500-NH3-D

Nitrate as Nitrogen and Nitrite as Nitrogen by Environmental Protection Agency (EPA) Method 300.0

Total Organic Carbon by Standard Method 5310B

Total Phosphorus by Standard Method 4500-P E

Total Suspended Solids by Standard Method 2540D

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. Initial Calibration

Initial calibration data were not reviewed for Level II validation.

III. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample B18-SED-EB was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Analyte	Concentration
B18-SED-EB	Total suspended solids	0.95 mg/L

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-SED-EBMS/MSD (All samples in SDG 1807003-019)	Nitrate as N	-	74 (76-121)	UJ (all non-detects)	Α

Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-019	Analytes reported below the RL and above the MDL	J (all detects)	Α

Raw data were not reviewed for Level II validation.

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to MS/MSD %R and results reported below the RL and above the MDL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-019

Sample	Analyte	Flag	A or P	Reason (Code)
B18-SED-EB	Nitrate as N	UJ (all non-detects)	Α	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-SED-EB	Analytes reported below the RL and above the MDL	J (all detects)	Α	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-019

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-019

No Sample Data Qualified in this SDG

LDC #: 45128J6 VALIDATION COMPLETENESS WORKSHEET SDG #: 1807003-019 Level II

Laboratory: Physis Environmental Laboratories, Inc.

Date:6319
Page:_\of_
Reviewer:
2nd Reviewer:

METHOD: (Analyte) Ammonia as N (SM4500-NH3 D), Nitrate as N, Nitrite as N (EPA Method 300.0), TOC (SM 5310B), Total Phosphorus (SM 4500-P E), TSS (SM 2540D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	AA	
Ш	Initial calibration	N	
111.	Calibration verification	N	
IV	Laboratory Blanks	A	
v_	Field blanks	5W	EB=
VI.	Matrix Spike/Matrix Spike Duplicates	5	
VII.	Duplicate sample analysis	A	
VIII.	Laboratory control samples	A	LCSID
IX.	Field duplicates	\mathcal{N}	
Χ.	Sample result verification	N	
XI	Overall assessment of data	K	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

Client ID		Lab ID	Matrix	Date
B18-SED		56384	Water	07/10/18
	ms			
	msp			
	OP			
•				

Notes:			

LDC #: 4512856

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: <u>1</u>	_0	f	1
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All circled methods are applicable to each sample.

Sample ID	Parameter
[ph tds ci f (NO3 (NO2) SO4 O-PO4 AIK CN(NH3)TKN TOO Cr6+ ClO4 (P) TSS
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
QC.2-4	PH TDS CI F (NO3) NO2 SO4 O-PO4 AIK CN NH3 TKN(TOC) Cr6+ CIQ4 (P)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F $\mathrm{NO_3}$ $\mathrm{NO_2}$ $\mathrm{SO_4}$ O-PO $_4$ Alk CN $\mathrm{NH_3}$ TKN TOC Cr6+ CIO $_4$
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	ph TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
•	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH_TDS_CLF_NO ₂ _NO ₂ _SO ₄ _O-PO ₄ _Alk_CN_NH ₂ _TKN_TOC_Cr6+_ClO ₄

Comments:		

	4512656
LDC #:	(7)0000
SDG #	

VALIDATION FINDINGS WORKSHEET Field Blanks

Page:_	of
Reviewer:	0
2nd reviewer:	$\overline{\psi}$

SDG #:	Field Blanks	Reviewer: 2nd reviewer:
METHOD: Trace Me	tals (EPA SW 846 Method 6010/7000)	
	e field blanks identified in this SDG? e target analytes detected in the field blanks?	
Sample:	Field Blank / Trip Blank / Rinsate / Other	(circle one)
	Analyte	Concentration Units ()
	T55	1095 mg/L
2		
		× ×
Sample:	Field Blank / Trip Blank / Rinsate / Other	(circle one)
	Analyte	Concentration Units ()

LDC#: 4512856

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:of	_
Reviewer:	_
2nd Reviewer:	_
, _	\

METHOD: Inorganics, EPA Method______

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

YNN/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor

of 4 or more, no action was taken.

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤35% for soil samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD.ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications	
	23		N03-N		74(76-121)		All	JUJIA (M)	LM
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Comments:		

LDC#: 45/28

EDD POPULATION COMPLETENESS WORKSHEET

Date: 65
Page: 1 of 1
2nd Reviewer:

The LDC job number listed above was entered by ______.
Entered from Body or Summary

<u> </u>			
	EDD Process		Comments/Action
I.	EDD Completeness		
Ia.	- All methods present?	4	
Ib.	- All samples present/match report?	ÿ	
Ic.	- All reported analytes present?	4	
Id.	r 10%) or 100% verification of EDD?	4	
II.	EDD Preparation/Entry	-	
IIa.	- Carryover U/J?		
IIb.	- Reason Codes used? If so, note which codes.	4	dient
IIc.	- Additional Information (QC Level, Validator, Validated Y/N, etc.)	,	
(a)			
III.	Reasonableness Checks	-	
IIIa.	- Do all qualified ND results have ND qualifier (e.g. UJ)?	4	
IIIb.	- Do all qualified detect results have detect qualifier (e.g. J)?	4	
IIIc.	- If reason codes are used, do all qualified results have reason code field populated, and vice versa?	4	
IIId.	-Does the detect flag require changing for blank qualifier? If so, are all U results marked ND?	-	
IIIe.	- Do blank concentrations in report match EDD where data was qualified due to blank contamination?		
IIIf.	- Were multiple results reported due to dilutions/reanalysis? If so, were results qualified appropriately?	+	
IIIg.	-Are there any discrepancies between the data packet and the EDD?	2	

Notes:	*see discrepancy sheet	 	 	



LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Wood Environment & Infrastructure 9210 Sky Park Ct San Diego, CA 92123 Attn: Ms. Corey Sheredy corey.sheredy@woodplc.com

June 5, 2019

SUBJECT: 2018 Regional Harbor Monitoring Program, Data Validation

Dear Ms. Sheredy

Enclosed are the final validation reports for the fractions listed below. This SDG was received on May 30, 2019. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #45174:

SDG # Fraction

1807003-008 Metals, Wet Chemistry

The data validation was performed under Level IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California; June 2018
- USEPA Contract Laboratory Program National Functional Guidelines for Organic Superfund Data Review; January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng

pgeng@lab-data.com

Project Manager/Senior Chemist

3,314 pages-ADV Attachment 1 LDC #45174 (Wood Environment & Infrastructure Solutions-San Diego, CA / Level IV / Client Select 2018 Regional Harbor Monitoring Program) Pyre. Pyre. PBDE PCB SEM Part. (3) Pest. Pest. Total DATE DATE **PAHs** (8270D/ (8270D (8270D Pest. Cong. Metals Hg Metals AVS NH,-N Size Solids N. TOC LDC SDG# REC'D DUE (8270D) -NCI) -NCI) -MRM) (8270D) (8270D) (6020) (245.7) (200.8) (1981) (4500D) (2560D) (2540B) (9060)(9060)w s w s w s w s w s W s W Matrix: Water/Sediment S w s w s S S W S w s W w s S 0 0 8 0 8 0 8 0 8 0 8 0 8 8 0 8 0 8 0 8 8 0 8 0 8 0 8 0 1807003-008 05/30/19 06/20/19 0 0 8 8 0 8 0 J/PG Total

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: June 5, 2019

Parameters: Metals

Validation Level: Level IV

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-008

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10022	56582	Sediment	07/18/18
B18-10076	56583	Sediment	07/18/18
B18-10077	56584	Sediment	07/18/18
B18-10113	56586	Sediment	07/18/18
B18-10024	56587	Sediment	07/19/18
B18-10114	56589	Sediment	07/19/18
B18-10115	56590	Sediment	07/19/18
B18-10116	56591	Sediment	07/19/18
B18-10022(SEM)	56582(SEM)	Sediment	07/18/18
B18-10076(SEM)	56583(SEM)	Sediment	07/18/18
B18-10077(SEM)	56584(SEM)	Sediment	07/18/18
B18-10113(SEM)	56586(SEM)	586(SEM) Sediment	
B18-10024(SEM)	56587(SEM)	Sediment	07/19/18
B18-10114(SEM)	56589(SEM)	Sediment	07/19/18
B18-10115(SEM)	56590(SEM)	Sediment	07/19/18
B18-10116(SEM)	56591(SEM)	Sediment	07/19/18
B18-10076MS	56583MS	Sediment	07/18/18
B18-10076MSD	56583MSD	Sediment	07/18/18
B18-10076DUP	56583DUP	Sediment	07/18/18
B18-10076MS(SEM)	56583MS(SEM)	Sediment	07/18/18
B18-10076MSD(SEM)	56583MSD(SEM)	Sediment	07/18/18
B18-10076DUP(SEM)	56583DUP(SEM)	Sediment	07/18/18

Samples appended with "SEM" were analyzed for Simultaneously Extracted Metals

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Iron, Lead, Nickel, Phosphorus, Selenium, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020 and EPA Method 200.8 Mercury by EPA Method 245.7

All sample results were subjected to Level IV evaluation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to nonconformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
B18-10022 B18-10076 B18-10077 B18-10113	Mercury	177	28	J (all detects)	Р
B18-10024 B18-10114 B18-10115 B18-10116	Mercury	176	28	J (all detects)	Р

II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

III. Instrument Calibration

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

IV. ICP Interference Check Sample Analysis

The frequency of interference check sample (ICS) analysis was not performed for this SDG.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods with the following exceptions:

Sample	Analyte	Finding
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115	Mercury	No closing CCB was analyzed.

No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116)	Mercury	-	138 (75-125)	J (all detects)	Α

For B18-10076MS/MSD, no data were qualified for aluminum and iron percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

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

Spike ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116)	Aluminum Iron	29 (≤25) 67 (≤25)	J (all detects) J (all detects)	A

VIII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

IX. Serial Dilution

Serial dilution was not performed for this SDG.

X. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits with the following exceptions:

CRM ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
56579-CRM1	Aluminum	151 (42-124)	B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	J (all detects)	A

XI. Field Duplicates

Samples B18-10116 and B18-20116 and samples B18-10116(SEM) and B18-20116(SEM) were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concentr		
Analyte	B18-10116 B18-20116		RPD
Aluminum	4330	5990	32
Antimony	0.132	0.16	19
Arsenic	4.16	5	18
Barium	9.67	16.7	53
Beryllium	0.0925	0.137	39

	Concentr	Concentration (ug/g)		
Analyte	B18-10116	B18-20116	RPD	
Cadmium	0.0295	0.0352	18	
Chromium	8.67	9.66	11	
Copper	10.2	14.6	35	
Iron	8500	8790	3	
Lead	6.82	8.4	21	
Mercury	0.0236	0.0425	57	
Nickel	1.94	2.58	28	
Phosphorus	176	234	28	
Selenium	0.097	0.108	11	
Silver	0.0938	0.0808	15	
Zinc	33.9	45.8	30	

	Concentrat		
Analyte	B18-10116(SEM) B18-20116(SEM)		RPD
Copper	0.0894	0.0989	10
Lead	0.0148	0.0219	39
Nickel	0.00363	0.00526	37
Zinc	0.238	0.371	44

XII. Internal Standards (ICP-MS)

All internal standard percent recoveries (%R) were within QC limits.

XIII. Sample Result Verification

All sample result verifications were acceptable.

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-008	Analyte reported below the RL and above the MDL	J (all detects)	Α

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, MS/MSD %R and RPD, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in sixteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Metals - Data Qualification Summary - SDG 1807003-008

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Mercury	J (all detects)	P	Technical holding times (H)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Mercury	J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (HM)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Aluminum Iron	J (all detects) J (all detects)	А	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Aluminum	J (all detects)	А	Certified reference material (%R) (HP)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116 B18-10022(SEM) B18-10076(SEM) B18-10077(SEM) B18-10113(SEM) B18-10114(SEM) B18-10114(SEM) B18-10115(SEM) B18-10116(SEM)	Analyte reported below the RL and above the MDL	J (all detects)	Α	Sample result verification (DL)

2018 Regional Harbor Monitoring Program Metals - Laboratory Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Metals - Field Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-008

LDC #: 45174A4a

Level IV

Reviewer: 2nd Reviewer:

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: Metals (EPA SW 846 Method 6020/EPA Method 200.8/EPA Method 245.7)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	A Sh	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	not preformed: Text
V.	Laboratory Blanks	SW.	
VI.	Field Blanks	N.	
VII.	Matrix Spike/Matrix Spike Duplicates	Sv_	
VIII.	Duplicate sample analysis	\mathcal{N}	
IX.	Serial Dilution	N_{ℓ}	,
X.	Laboratory control samples	SW.	LCS/D CRM
XI.	Field Duplicates	$\beta_{\mathcal{W}}$	(8, 'BIE-2016), (16, BIE-2016SEM)
XII.	Internal Standard (ICP-MS)	fA	
XIII.	Sample Result Verification	A	
LxIV_	Overall Assessment of Data	A	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

Samples appended with "SEM" were analyzed as Simultaneously Extracted Metals Date Client ID Lab ID Matrix B18-10022 56582 Sediment 07/18/18 2 B18-10076 56583 Sediment 07/18/18 3 B18-10077 56584 Sediment 07/18/18 4 B18-10113 56586 Sediment 07/18/18 5 B18-10024 Sediment 07/19/18 56587 6 B18-10114 56589 Sediment 07/19/18 B18-10115 07/19/18 56590 Sediment B18-10116 56591 Sediment 07/19/18 9 B18-10022(SEM) 56582(SEM) Sediment 07/18/18 10 Sediment B18-10076(SEM) 56583(SEM) 07/18/18 07/18/18 11 B18-10077(SEM) 56584(SEM) Sediment 12 07/18/18 B18-10113(SEM) 56586(SEM) Sediment 13 B18-10024(SEM) 56587(SEM) Sediment 07/19/18 07/19/18 14 B18-10114(SEM) 56589(SEM) Sediment B18-10115(SEM) 56590(SEM) Sediment 07/19/18

LDC #: 45174A4a

VALIDATION COMPLETENESS WORKSHEET

Level IV

SDG #: 1807003-008 Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6020/EPA Method 200.8/EPA Method 245.7)

	T		I .	1
16	B18-10116(SEM)	56591(SEM)	Sediment	07/19/18
17	B18-10076MS	56583MS	Sediment	07/18/18
18	B18-10076MSD	56583MSD	Sediment	07/18/18
19	B18-10076DUP	56583DUP	Sediment	07/18/18
20	B18-10076MS(SEM)	56583MS(SEM)	Sediment	07/18/18
21	B18-10076MSD(SEM)	56583MSD(SEM)	Sediment	07/18/18
22	B18-10076DUP(SEM)	56583DUP(SEM)	Sediment	07/18/18
23				
24				

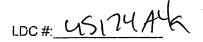
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VALIDATION FINDINGS CHECKLIST

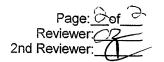
Page: of A
Reviewer: 2
2nd Reviewer:

Method: Metals (EPA SW 846 Method 6010/6020/7000)

Yes	No	NA /	Findings/Comments
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VALIDATION FINDINGS CHECKLIST



Validation Area	Yes	No	NA	Findings/Comments
VIII. Internal Standards (EPA SW 846 Method 6020/EPA 200.8)				
Were all the percent recoveries (%R) within the 30-120% (6020)/60-125% (200.8) of the intensity of the internal standard in the associated initial calibration?	V			
If the %Rs were outside the criteria, was a reanalysis performed?			/	
IX. ICP Serial Dilution			· · · · · · · · · · · · · · · · · · ·	
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the MDL (ICP)/>100X the MDL(ICP/MS)?			/	
Were all percent differences (%Ds) < 10%?				
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			/	
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?				
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.				
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.		/		
Target analytes were detected in the field duplicates.				
XIII. Field blanks				
Field blanks were identified in this SDG.		/		
Target analytes were detected in the field blanks.			1	

LDC# USINGALA

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: 1 of 1
Reviewer: CR
2nd reviewer:

All circled elements are applicable to each sample.

[T		
Sample ID	Matrix	Target Analyte List (TAL)
1-8		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zh, Mo, B, Sn, Ti,
9-16		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu) Fe, Pb, Mg, Mn, Hg, Ni, K, Se Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
Q:9-1	9	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
17-19		(Al, Sb, As, Ba, Be, Cd, Ca, Cr) Co, Cu, Fe, Pb, Mg, Mn, (Hg, Ni, K, Se, Ag, Na, Tl, V, (Zn) Mo, B, Sn, Ti,
20-2	2	Al, Sb, As, Ba, Be, (Cd) Ca, Cr, Co, (Ct), Fe, (Pb) Mg, Mn, Hg, (Ni) K, Se, (Ag,)Na, Tl, V, (Zn) Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		AI, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	11	Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr. Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GEAA		Al Sh As Ba Be Cd Ca Cr Co Cu Fe Ph Mg Mn Hg Ni K Se Ag Na Ti V Zn Mo B Sn Ti

Comments:	lercury by CVAA if performed	

LDC #: 45174A4a

VALIDATION FINDINGS WORKSHEET Technical Holding Times

Were samples preserved? $\underline{Y} \underline{N} \underline{N/A}$ All circled dates have exceeded the technical holding time.

METHOD:		Mercury Holding time = 28 days				
Sample ID:	Sampling Date	Analysis Date	Total Time until Analysis (days)	Qualifier Code: 1	Det/ND	
1-4	7/18/18	1/11/19	177	J/R/P	Det	
5-8	7/19/18	1/11/19	176	J/R/P	Det	
•						
		-				
						·

Technical Holding Time Criteria

Mercury: 28 days

All other metals: 180 days - 1 year if frozen

LDC #:_		
SDG#:	Selcover	

VALIDATION FINDINGS WORKSHEET Blanks

Page: of	
<u> </u>	
Reviewer:	
2nd Reviewer:	

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

#	Date	Closing CCB	Analyte HG	No closing CCB	Associated Samples	Qualifications
$\vdash \vdash$		CIOSITIES CELS	15	NO CLOSING CLIS	7117 1-0	IEAI
\vdash						
H	· · · · · · · · · · · · · · · · · · ·					
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H						
		<u> </u>		<u> </u>		

Comments:

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:	of
Reviewer:	

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see o	ualifications	below for all	questions answered	"N". I	Not applicable	auestions a	are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Were matrix spike percent recoveries (%R) within the control limits of 75-125?) If the sample concentration exceeded the spike concentration by a factor Y N N/A

of 4 or more, no action was taken.

≤20% for samples? Were all duplicate sample relative percent differences (RPD) Y N N/A

LEVEL IV ONLY:

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations. Y N N/A

#	MS/MŞD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
#	17/18	Marix	A\		ARECOVERY	29(525)	1 - 5	JUJIA (Del) (HD)
╟┼			Fe			67 L	<u> </u>	
			149		138	-		Idetia (HM)
			19					
							· · · · · · · · · · · · · · · · · · ·	
Ш		<u> </u>			<u> </u>	1		
Com	ments:			7/18: Al	, Fe 7	1× +	318-20116ms	O: Al, Fe 24xa

Comments:	17/18: Al	,Fe	74X	B18-2016ms	O: PI,F	e 74x	2
						•	

LDC#: USIZYAYA

VALIDATION FINDINGS WORKSHEET <u>Laboratory Control Samples (LCS)</u>

Page:of
Reviewer:
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

YN N/A Were all aqueous LCS percent recoveries (%R) within the control limits of 80-120% and all soil LCS %R within laboratory established control limits.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

L #	L CS ID	Matrix	Analyte	%R (limits)	Associated Samples	Qualifications
	56579-CR	ml	AI	151 (43-124)	1-9	Jdet A (Bet) (HP)
-	60150-08	M	AI.	187	8	I da
F						
L						
\parallel	·					
H						
-						

Comments:					
		 	 	 · · · · · · · · · · · · · · · · · · ·	

LDC#: 45174A4a

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page: ____of___ Reviewer: _____2nd Reviewer: ____

METHOD: Metals (EPA Method 6010B/7000)

	Concentra	ation (ug/g)	RPD	
Analyte	8	B18-20116	ОЧЯ	
Aluminum	4330	5990	32	
Antimony	0.132	0.16	19	
Arsenic	4.16	5	18	
Barium	9.67	16.7	53	
Beryllium	0.0925	0.137	39	
Cadmium	0.0295	0.0352	18	
Chromium	8.67	9.66	11	
Copper	10.2	14.6	35	
Iron	8500	8790	3	
Lead	6.82	8.4	21	
Mercury	0.0236	0.0425	57	
Nickel	1.94	2.58	28	
Phosphorus	176	234	28	
Selenium	0.097	0.108	11	
Silver	0.0938	0.0808	15	
Zinc	33.9	45.8	30	

LDC#: 45174A4a

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page: of Reviewer: 2nd Reviewer:

METHOD: Metals (EPA Method 6010B/7000)

	Concentrat		
Analyte	16	B18-20116(SEM)	RPD
Copper	0.0894	0.0989	10
Lead	0.0148	0.0219	39
Nickel	0.00363	0.00526	37
Zinc	0.238	0.371	44

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2019\45174A4a.wpd

LDC #: 451744

VALIDATION FINDINGS WORKSHEET <u>Initial and Continuing Calibration Calculation Verification</u>

Page: _of
Reviewer:
2nd Reviewer:

METHOD: Trace metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = <u>Found</u> x 100 True Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution

True = concentration (in ug/L) of each analyte in the ICV or CCV source

					Recalculated	Reported	
Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	%R	%R	Acceptable (Y/N)
	ICP (Initial calibration)						
ICV	ICP/MS (Initial calibration)	Sb	162-172	100	102	WZ	9
ICV	CVAA (Initial calibration)	HS	1030	1000	103		9
	ICP (Continuing calibration)						,
Ccu	ICP/MS (Continuing calibration)	P	4,625	5	93	93	9
CCU	CVAA (Continuing calibration)	Hg	1050	1000	105	_	9

Comments:	

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

	Page:_	<u> </u>	_of_	
	Reviewer:	C	2	
2nd	Reviewer:			

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Percent recoveries (%R) for an ICP interference chec	k sample, a laboratory contro	I sample and a matrix spike sample w	ere recalculated using the following formula
--	-------------------------------	--------------------------------------	--

 $\%R = Found \times 100$ True

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation,

Found = SSR (spiked sample result) - SR (sample result). Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

 $RPD = |S-D| \times 100$ (S+D)/2

Where, S = Original sample concentration

D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

 $\%D = |I-SDR| \times 100$

Where, I = Initial Sample Result (mg/L)

SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
N	ICP interference check						
LCS	Laboratory control sample	B	1.99	a	(00)	100	4
V7	Matrix spike	Cu	(SSR-SR) 59,5	56,2	(02	102	4
19	Duplicate	55	0.239	0.254	6	6	4
	ICP serial dilution						

Comments:	

LDC # 45/14/A

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:_	_of\
Reviewer:	a
2nd reviewer:	

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please Y N Y N Y N	<u>N/A</u> H <u>N/A</u> A	ave results re results w	ow for all question been reported a within the calibrat tion limits below	ind calculate ed range of	ed corr the ins	ectly?				
Detected analyte results forequation:			53	١٥	(Pb)	were reca	alculated	l and verified	using the followi	
Concentration = $\frac{(RD)(FV)(Dil)}{(In. Vol.)}$				Recalcu	ulation:	US19	15	LI Tund	la	
RD FV In. Vol. Dil	= Fi = In	aw data conce nal volume (m itial volume (m lution factor				701:	<u>usl9</u> =	0.13	-1 1000	
#	Samp	ole ID		Analyte			Reported Concentration		Calculated oncentration	Acceptable (Y/N)
		l		P	(3)	19)	797	5	MA	
		2		Sb		71	0.239	0.	239	
		3_		α			29,5	6	19.5	
		4		Fe			2950U		7500	
				Hg			0,289		7.89	
		6		M			15,6		6	
		7		<u>se</u>			0.403	0.	403,	
		\$		Ag	7	/	0.0938	0.0	0936	
		9		<u>C</u>	(unc	1/9)	0.162	0.	1590.163)
		10		Ph		<i></i>	0.155	0	.155	
		1)		<i>N</i> ;			0.0068	100	00681	
		12		Zn			1.66	1.	66	
		(3)		<u>Cu</u>			0.508	0.	508	
		14		PP			0.11	0.	17	
	 -	15		N_{i}^{i}	1		0.0182	0	5810	

Note:		 ······································	

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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: June 5, 2019

Parameters: Wet Chemistry

Validation Level: Level IV

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-008

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10022	56582	Sediment	07/18/18
B18-10076	56583	Sediment	07/18/18
B18-10077	56584	Sediment	07/18/18
B18-10113	56586	Sediment	07/18/18
B18-10024	56587	Sediment	07/19/18
B18-10114	56589	Sediment	07/19/18
B18-10115	56590	Sediment	07/19/18
B18-10116	56591	Sediment	07/19/18
B18-10022DUP	56582DUP	Sediment	07/18/18
B18-10076MS	56583MS	Sediment	07/18/18
B18-10076MSD	56583MSD	Sediment	07/18/18
B18-10076DUP	56583DUP	Sediment	07/18/18
B18-10114MS	56589MS	Sediment	07/19/18
B18-10114MSD	56589MSD	Sediment	07/19/18
B18-10114DUP	56589DUP	Sediment	07/19/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Acid Volatile Sulfide by Plumb 1981
Ammonia as Nitrogen by Standard Method 4500-NH3-D
Particle Size by Standard Method 2560D
Percent Solids by Standard Method 2540B
Total Nitrogen and Total Organic Carbon by Environmental Protection Agency (EPA) SW 846 Method 9060

All sample results were subjected to Level IV data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to nonconformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
B18-10022 B18-10076 B18-10077 B18-10113	Acid volatile sulfide Ammonia as N Total nitrogen	170 days 169 days 177 days	14 days 28 days 28 days	J (all detects) J (all detects) J (all detects)	А
B18-10114 B18-10115 B18-10116	Acid volatile sulfide Ammonia as N Total nitrogen	169 days 168 days 176 days	14 days 28 days 28 days	J (all detects) J (all detects) J (all detects)	• А

II. Initial Calibration

All criteria for the initial calibration of each method were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10114MS/MSD (All samples in SDG 1807003-008)	Acid volatile sulfide	-14 (80-120)	-5 (80-120)	J (all detects)	A

Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
B18-10022DUP (All samples in SDG 1807003-008)	Grain size-Phi 2.0	26 (≤20)	-	J (all detects) UJ (all non-detects)	Α

VIII. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the methods. The results were within QC limits.

IX. Field Duplicates

Samples B18-10116 and B18-20116 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Conce		
Analyte	B18-10116	B18-20116	RPD
Acid volatile sulfide	0.965 mg/Kg	1.69 mg/Kg	55
Ammonia as N	3.65 mg/Kg	6.28 mg/Kg	53
Percent solids	79.1 %	75.7 %	4
Total organic carbon	0.12 %	0.14 %	15
Gravel	4.5 %	1.3 %	110

X. Sample Result Verification

All analytes reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

2018 Regional Harbor Monitoring Program Wet Chemistry - Data Qualification Summary - SDG 1807003-008

Sample	Analyte	Flag	A or P	Reason (Code)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10114 B18-10115 B18-10116	Acid volatile sulfide Ammonia as N Total nitrogen	J (all detects) J (all detects) J (all detects)	А	Technical holding times (H)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Acid volatile sulfide	J (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Grain size-Phi 2.0	J (all detects) UJ (all non-detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Analyte reported below the RL and above the MDL	J (all detects)	A	Sample result verification (DL)

2018 Regional Harbor Monitoring Program
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Wet Chemistry - Field Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

LDC #: 45174A6 VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-008

Level IV

Laboratory: Physis Environmental Laboratories, Inc.

Date: 6/6/9
Page: of 1
Reviewer: 2nd Reviewer:

METHOD: (Analyte) AVS (Plumb 1981), Ammonia as N (SM4500\$\overline{\psi}\$), Particle Size (SM 2560D), % Solids (SM2540B), Total Nitrogen (EPA SW846 9060), TOC (EPA SW 846 Method 9060)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	ASW	
	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	6.7	
VII.	Duplicate sample analysis	54/	
VIII.	Laboratory control samples	A_{\perp}	LCSID, CRM,
IX.	Field duplicates	SW	(8, B18-20116)
X.	Sample result verification	A	,
LxL	Overall assessment of data	K	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10022	56582	Sediment	07/18/18
2	B18-10076	56583	Sediment	07/18/18
3	B18-10077	56584	Sediment	07/18/18
4	B18-10113	56586	Sediment	07/18/18
5	B18-10024	56587	Sediment	07/19/18
6	B18-10114	56589	Sediment	07/19/18
7	B18-10115	56590	Sediment	07/19/18
8	B18-10116	56591	Sediment	07/19/18
9	B18-10022DUP	56582DUP	Sediment	07/18/18
10	B18-10076MS	56583MS	Sediment	07/18/18
11	B18-10076MSD	56583MSD	Sediment	07/18/18
12	B18-10076DUP	56583DUP	Sediment	07/18/18
13	B18-10114MS	56589MS	Sediment	07/19/18
14	B18-10114MS()	56589MSD	Sediment	07/19/18
15	B18-10114DUP	56589DUP	Sediment	07/19/18
16				
17				



VALIDATION FINDINGS CHECKLIST

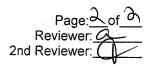
Page: of 3
Reviewer: 2
2nd Reviewer: 4

Method: Inorganics (EPA Method See wer)

Michiganics (El Almethod) Cettor /				
Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times		W	/	
All technical holding times were met.	P			
II. Calibration				
Were all instruments calibrated daily, each set-up time?				
Were the proper number of standards used?				
Were all initial calibration correlation coefficients > 0.995?				
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?				
Were titrant checks performed as required? (Level IV only)			/	
Were balance checks performed as required? (Level IV only)		'		
III. Blanks				
Was a method blank associated with every sample in this SDG?				
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.				
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.				
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.				
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.				·
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?				
Was an LCS analyzed per extraction batch?	7			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?				
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			\angle	
Were the performance evaluation (PE) samples within the acceptance limits?			,	



VALIDATION FINDINGS CHECKLIST



Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?		(
Were detection limits < RL?				
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.				
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.				
Target analytes were detected in the field duplicates.				
X. Field blanks				
Field blanks were identified in this SDG.				/
Target analytes were detected in the field blanks.			7	

LDC #: 45174A6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: 1 of 1

Reviewer: CR

2nd reviewer: CR

All circled methods are applicable to each sample.

Sample ID	
1-8	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN(NH)3 TKN(TOO C16+ CIO(AVS)(9650)) (N)(PS)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
QC-9	PH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4 (PS)
10,11	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
12	ph TDS CI F NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ AIK CN(NH) TKN TOC Cr6+ CIO $_4$ (N)
13,19	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4 (1)
15	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4 (+)
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
<u>.</u>	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	ph TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	ph TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	ph TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	ph TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	ph TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
`	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO, NO, SO, O-PO, Alk CN NH, TKN TOC Cr6+ ClO,

Comments:		

LDC #: 45174A6

VALIDATION FINDINGS WORKSHEET Technical Holding Times

All circled dates have exceeded the technical holding time.

Y N N/A Were all samples preserved as applicable to each method?
Y N N/A Were all cooler temperatures within validation criteria?

Method:			Plumb		SM 4500 NH3D			
Parameters	•		AVS		Ammonia as N			
Technical h	olding time:		14 days			28 days		
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier	
1-4	7/18/18	1/4/19	170	J/R/A (Det)	1/3/19	169	J/R/A (Det)	
6-18	7/19/18	1/4/19	169	J/R/A (Det)	1/3/19	168	J/R/A (Det)	

Method:			SM2540B		EPA 9060			
Parameters	*		Percent solids	i		Total nitroge	n	
Technical h	olding time:		180 days			28 days		
Sample ID	Sampling date	Analysis date	Total Time (days)	Qualifier	Analysis date	Total Time (days)	Qualifier	
1-4	7/18/18				1/11/19	177	J/R/A (Det)	
6-8	7/19/18				1/11/19	176	J/R/A (10, 11=ND)	
			· · · · · · · · · · · · · · · · · · ·					

LDC #: 4SIMAG

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	of
Reviewer:	5
2nd Reviewer:	4

METHOD: Inorganics, EPA Method See Carel

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A

Was a matrix spike analyzed for each matrix in this SDG?

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor Y N N/A

of 4 or more, no action was taken.

Were all duplicate sample relative percent differences (RPD) ≤ 26% for water samples and ≤25% for soil samples? Y N N/A

LEVEL IV ONLY:

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations. Y N N/A

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications	
	13/14		AVS	-14(80-120)	-5	•	AII	J/RIA (Dec)	(LM)
Ш				,				-	
Ш									
Ш									
Ш	·								
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Comments		 	 	 			
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LDC #: 4517476

VALIDATION FINDINGS WORKSHEET Duplicate Analysis

Page: of	
Reviewer:	
2nd Reviewer:	_

METHOD: Inorganics	. Method	SCCall

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a duplicate sample analyzed for each matrix in this SDG?

 $\underline{\underline{Y} \ N \ N/A}$ Were all duplicate sample relative percent differences (RPD) \leq 20% for water and \leq 35% for soil samples (\leq 10% for Method 300.0)? If no, see qualification

below. A control limit of ±CRDL (±2X CRDL for soil) was used for samples that were ≤5X the CRDL, including when only one of the duplicate sample values

were ≤5X the CRDL. If field blanks were used for laboratory duplicates, see overall assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications
		9		GrainSizé. Phi a.O	RPD (Limits) 26 (420)		AU	JUJ (A COELLY)
				phi a.O				
					<u> </u>			
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Comments:				

LDC#: 45174A6_

VALIDATION FINDINGS WORKSHEET Field Duplicates



Inorganics, Method See Cover

	Concentratio		
Analyte	8	B18-20116	RPD
Acid volatile sulfides	0.965	1.69	55
Ammonia as N	3.65	6.28	53
Percent solids (%)	79.1	75.7	4
TOC (%)	0.12	0.14	15
Gravel (%)	4.5	1.3	110

V:\FIELD DUPLICATES\Field Duplicates\FD_inorganic\2019\45174A6.wpd

LDC #: US17416

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page:____of_____of______ond Reviewer:_____

Method: Inorganics, Meth	iod <u>see a</u>	all
The correlation coefficient (r) f	or the calibration of $_{ extstyle au}$	was recalculated.Calibration date: <u>3138118</u>
An initial or continuing calibrat	tion verification percent	recovery (%R) was recalculated for each type of analysis using the following formula:
%R = <u>Found X 100</u>	Where,	Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True		True = concentration of each analyte in the ICV or CCV source

						Recalculated	Reported	Acceptable
Type of analysis	Ar	alyte	Standard	Conc. (mg)	Area	r or r²	r or r ²	(Y/N)
Initial calibration			s1	0.0104	27.5635			
		1	s2	0.0207	60.4996		:	
			s3	0.0311	61.3182			
			s4	0.0518	140.4841	0.999828	0.999832	
	1	\mathcal{X}	s5	0.1865	477.1572			1)
	'`		s6	0.3004	759.9895			
			s7	0.4144	1038.0624			1
	۱ ا		s8	0.5387	1355.2474			
			s9	0.6527	1612.4846			
Calibration verification	•		IEV	10	10,32	103	103	
Calibration verification	N	t-5N	CV	0,1	0.101	101	101	
Calibration verification	131	5	CCV	20	18.489	90	90	

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results._____

LDC #: 451746

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

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Reviewer:
2nd Reviewer:

METHOD: Inorganics,	Method	Steaver
METHOD: Inorganics,	Method	3 E CONDI

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

 $%R = \frac{Found}{True} \times 100$

Where,

Found =

concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation,

Found = SSR (spiked sample result) - SR (sample result).

True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

 $RPD = |S-D| \times 100$

Where,

S =

Original sample concentration

(S+D)/2

D =

Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	AVS	19,1	30.1	95	95	<u> </u>
10	Matrix spike sample	NH3N	(SSR-SR)	8,01	84	84	
12	Duplicate sample		12	11,9			+

Comments:			
	··············		

LDC#: 45/74/16

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page:_	of_
Reviewer:	OL,
2nd reviewer:	\leq

METH	HOD: Inorganics, Metho	od <u>slecave</u>			
	N/A Have results v	ow for all questions answered "N". Not apples been reported and calculated correctly? within the calibrated range of the instrumentation limits below the CRQL?		e identified as "N/	Ά".
Comp	ound (analyte) results a	for	repo	orted with a positi	ve detect were
	ntration =	Recalculation:			
	WE NOO		-× 100 -	0.83%	
	total	10.9mg	-X 100 =	0.0070	
#	Sample ID	Analyte	Reported Concentration (MC/C)	Calculated Concentration (NY ICK)	Acceptable (Y/N)
		AVS	7,82	7,80	Ÿ
	2	NH3-N	19	19	1
	3	0/0 Solida (%)	72.1	72.1	
	9	Total N (%)	0.1	0.1	
	5	TOC (%)	0.83	0,83	
	6	NH3N TOTAL Plays	-56 714.3		
	7	AVS	11.8	11.8	
	4	Gavel (%)	4,5	4.5	
		/			
-				· · · · · · · · · · · · · · · · · · ·	
Note:_			1		<u> </u>
NOIG					



LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Wood Environment & Infrastructure 9210 Sky Park Ct San Diego, CA 92123 Attn: Ms. Corey Sheredy corey.sheredy@woodplc.com

June 13, 2019

SUBJECT: 2018 Regional Harbor Monitoring Program, Data Validation

Dear Ms. Sheredy

Enclosed are the final validation reports for the fractions listed below. This SDG was received on May 30, 2019. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #45174:

SDG #	Fraction
1807003-008	Polynuclear Aromatic Hydrocarbons, Polybrominated Diphenyl Ethers, Synthetic Pyrethroid Pesticides, Chlorinated Pesticides,

The data validation was performed under Level IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California; June 2018
- USEPA Contract Laboratory Program National Functional Guidelines for Organic Superfund Data Review; January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng

pgeng@lab-data.com

Project Manager/Senior Chemist

3,314 pages-ADV Attachment 1 LDC #45174 (Wood Environment & Infrastructure Solutions-San Diego, CA / Level IV / Client Select 2018 Regional Harbor Monitoring Program) Pyre. Pyre. PBDE PCB SEM Part. (3) Pest. Pest. Total DATE DATE **PAHs** (8270D/ (8270D (8270D Pest. Cong. Metals Hg Metals AVS NH,-N Size Solids N. TOC LDC SDG# REC'D DUE (8270D) -NCI) -NCI) -MRM) (8270D) (8270D) (6020) (245.7) (200.8) (1981) (4500D) (2560D) (2540B) (9060)(9060)w s w s w s w s w s W s W Matrix: Water/Sediment S w s w s S S W S w s W w s S 0 0 8 0 8 0 8 0 8 0 8 0 8 8 0 8 0 8 0 8 8 0 8 0 8 0 8 0 1807003-008 05/30/19 06/20/19 0 0 8 8 0 8 0 J/PG Total

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

June 11, 2019

Parameters:

Polynuclear Aromatic Hydrocarbons

Validation Level:

Level IV

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-008

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10022	56582	Sediment	07/18/18
B18-10076	56583	Sediment	07/18/18
B18-10077	56584	Sediment	07/18/18
B18-10113	56586	Sediment	07/18/18
B18-10024	56587	Sediment	07/19/18
B18-10114	56589	Sediment	07/19/18
B18-10115	56590	Sediment	07/19/18
B18-10116	56591	Sediment	07/19/18
B18-10076MS	56583MS	Sediment	07/18/18
B18-10076MSD	56583MSD	Sediment	07/18/18
B18-10076DUP	56583DUP	Sediment	07/18/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level IV data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, percent relative standard deviations (%RSD) were less than or equal to 20.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r²) were greater than or equal to 0.990 with the following exceptions:

Date	Compound	r ²	Associated Samples	Flag	A or P
01/29/19	Benzo(b)fluoranthene Benzo(k)fluoranthene Fluoranthene Pyrene	0.986 0.988 0.988 0.989	All samples in SDG 1807033-008	J (all detects) J (all detects) J (all detects) J (all detects)	A

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
01/29/19	Biphenyl	60	All samples in SDG 1807003-008	J (all detects)	А

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
01/30/19	Chrysene Indeno(1,2,3-cd)pyrene	35 26	B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	J (all detects) J (all detects)	A

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	Benzo(b)fluoranthene Fluoranthene	194 (50-150) 162 (50-150)	183 (50-150) -	J (all detects) J (all detects)	А
B18-10076MS/MSD (B18-10076)	Naphthalene	43 (50-150)	-	J (all detects)	А

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	Naphthalene	28 (≤25)	J (all detects)	А

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076DUP (B18-10076)	1-Methylnaphthalene 2-Methylnaphthalene	32 (≤25) 26 (≤25)	J (all detects) J (all detects)	А

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
209040BS1/BS2 (All samples in SDG 1807003-008)	1-Methylnaphthalene 2-Methylnaphthalene Biphenyl Naphthalene 2,6-Dimethylnaphthalene Acenaphthene	59 (70-130) 61 (70-130) 64 (70-130) 48 (70-130) -	54 (70-130) 55 (70-130) 60 (70-130) 42 (70-130) 65 (70-130) 67 (70-130)	J (all detects) UJ (all non-detects)	Р
209040BS1/BS2 (All samples in SDG 1807003-008)	Benzo(a)anthracene Benzo(b)fluoranthene Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene Fluoranthene	171 (70-130) 131 (70-130) 139 (70-130) - -	171 (70-130) 135 (70-130) 144 (70-130) 134 (70-130) 131 (70-130)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Duplicates

Samples B18-10116 and B18-20116 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concenti		
Compound	B18-10116	B18-20116	RPD
1,6,7-Trimethylnaphthalene	1.27	1.38	8
1-Methylnaphthalene	0.814	0.836	3
1-Methylphenanthrene	1.51	1.32	13
2,6-Dimethylnaphthalene	0.577	0.624	8
2-Methylnaphthalene	1.64	1.70	4
Acenaphthene	0.50U	0.157	Not calculable
Acenaphthylene	0.233	0.331	35
Anthracene	0.762	0.767	1
Benzo(a)anthracene	21.8	6.02	113
Benzo(a)pyrene	8.1	3.69	75
Benzo(b)fluoranthene	11.8	5.47	73
Benzo(e)pyrene	7.06	3.58	65
Benzo(g,h,i)perylene	4.66	3.77	21
Benzo(k)fluoranthene	8.53	4.3	66
Biphenyl	0.291	0.275	6
Chrysene	7.27	2.52	97
Dibenzo(a,h)anthracene	4.79	3.2	40
Dibenzothiophene	0.324	0.357	10
Fluoranthene	10.4	4.96	71
Fluorene	0.643	0.605	6
Indeno(1,2,3-cd)pyrene	19.4	14.2	31
Naphthalene	2.17	1.91	13

	Concentr		
Compound	B18-10116	B18-20116	RPD
Perylene	1.64	0.766	73
Phenanthrene	4.51	4.29	5
Pyrene	9.84	5.13	63

XI. Internal Standards

All internal standard areas and retention times were within QC limits with the following exceptions:

Sample	Internal Standards	Area (Limits)	Affected Compound	Flag	A or P
B18-10077	d12-Benzo(a)pyrene d12-Benzo(g,h,i)perylene	66435150 (15953287-63813148) 31353208 (7832575-31330300)	Benzo(a)anthracene Chrysene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene Benzo(g,h,i)perylene Benzo(e)pyrene Perylene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р
B18-10024	d12-Benzo(a)pyrene d12-Benzo(g,h,i)perylene	69551936 (15953287-63813148) 33396202 (7832575-31330300)	Benzo(a)anthracene Chrysene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene Benzo(g,h,i)perylene Benzo(e)pyrene Perylene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р
B18-10116	d12-Benzo(a)pyrene d12-Benzo(g,h,i)perylene	67114126 (15953287-63813148) 34112307 (7832575-31330300)	Benzo(a)anthracene Chrysene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene Benzo(g,h,i)perylene Benzo(e)pyrene Perylene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р

XII. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-008	Compound reported below the RL and above the MDL	J (all detects)	А

XIII. Target Compound Identifications

All target compound identifications were within validation criteria.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to initial calibration r², ICV %D, continuing calibration %D, MS/MSD %R and RPD, DUP RPD, LCS/LCSD %R, internal standards area, and results reported below the RL and above the MDL, data were qualified as estimated in eight samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 1807003-008

Sample	Compound	Flag	A or P	Reason (Code)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Benzo(b)fluoranthene Benzo(k)fluoranthene Fluoranthene Pyrene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	А	Initial calibration (r²) (BC)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Biphenyl	J (all detects)	А	Initial calibration verification (%D) (LV)
B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Chrysene	J (all detects)	А	Continuing calibration (%D) (LC)
B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Indeno(1,2,3-cd)pyrene	J (all detects)	А	Continuing calibration (%D) (CH)
B18-10076	Benzo(b)fluoranthene Fluoranthene	J (all detects) J (all detects)	Α	Matrix spike/Matrix spike duplicate (%R) (HM)
B18-10076	Naphthalene	J (all detects)	А	Matrix spike/Matrix spike duplicate (%R)(RPD) (LM) (HD)
B18-10076	1-Methylnaphthalene 2-Methylnaphthalene	J (all detects) J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	1-Methylnaphthalene 2-Methylnaphthalene Biphenyl Naphthalene 2,6-Dimethylnaphthalene Acenaphthene	J (all detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)

Sample	Compound	Flag	A or P	Reason (Code)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Benzo(a)anthracene Benzo(b)fluoranthene Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene Fluoranthene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р	Laboratory control samples (%R) (HL)
B18-10077 B18-10024 Chrysene Benzo(a)anthracene Chrysene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene Benzo(g,h,i)perylene Benzo(e)pyrene Perylene		J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	Р	Internal standards (area) (*XI)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Compound reported below the RL and above the MDL	J (all detects)	A .	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification
Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45174A2b

SDG #: 1807003-008

Level IV

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer 2nd Reviewer:

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	A	
11.	GC/MS Instrument performance check	A	
111.	Initial calibration/ICV	SKIW	√2, RS0 < 20/0. EV < 30/0
IV.	Continuing calibration	w	ecv = 2070
V.	Laboratory Blanks	A	(
VI.	Field blanks	\mathcal{N}	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	ww	
IX.	Laboratory control samples	WA	D=8+B18-2016
Χ.	Field duplicates	1	D=3+B18-2016
XI.	Internal standards	W	
XII.	Compound quantitation RL/LOQ/LODs	4	
XIII.	Target compound identification	A	
XIV.	System performance	₩.	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

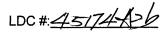
D = Duplicate

TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10022	56582	Sediment	07/18/18
2	B18-10076	56583	Sediment	07/18/18
3	B18-10077	56584	Sediment	07/18/18
4	B18-10113	56586	Sediment	07/18/18
5	B18-10024	56587	Sediment	07/19/18
6	B18-10114	56589	Sediment	07/19/18
7	B18-10115	56590	Sediment	07/19/18
8	B18-10116	56591	Sediment	07/19/18
9	B18-10076MS	56583MS	Sediment	07/18/18
10	B18-10076MSD	56583MSD	Sediment	07/18/18
11	B18-10076DUP	56583DUP	Sediment	07/18/18
12				
13_				



VALIDATION FINDINGS CHECKLIST

Method: Semivolatiles (EPA SW 846 Method 8270D)

Method: Semivolatiles (EPA SW 846 Method 8270D)				Ţ.
Validation Area	Yes	No	NA	Findings/Comments
1 Technical holding times				
Were all technical holding times met?	/	<u> </u>	<u></u>	
Was cooler temperature criteria met?				
II. GC/MS Instrument performance check				All Control of the Control
Were the DFTPP performance results reviewed and found to be within the specified criteria?	/			
Were all samples analyzed within the 12 hour clock criteria?	2			(
Illa: Initial calibration	4.4			
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) ≤ 20% and relative response factors (RRF) within method criteria?	/			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?				
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?				
Were all percent differences (%D) ≤ 30% or percent recoveries (%R) 70-130%?			Section 1	ELFORGACIO DE UN ANTICIPA DE CONTRACTOR DE C
IV. Continuing calibration	ar Sa			The second of th
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?		-		
Were all percent differences (%D) \leq 20% and relative response factors (RRF) within method criteria?				
V.Laboratory Blanks			ul Car	
Was a laboratory blank associated with every sample in this SDG?				
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?				
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.				
VI. Field blanks.	164			The state of the s
Were field blanks were identified in this SDG?				
Were target compounds detected in the field blanks?				
VII. Surrogate spikes		Ti.		en Blander (1985) de 1981 Hande de 1986 de 1986
Were all surrogate percent recovery (%R) within QC limits?				
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis?				
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?				



VALIDATION FINDINGS CHECKLIST

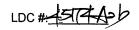
Page: of 2 Reviewer: 2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates		2		
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	/	*		
Was a MS/MSD analyzed every 20 samples of each matrix?				
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?				
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?				
Was an LCS analyzed per analytical batch?				
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?				
X Field duplicates				
Were field duplicate pairs identified in this SDG?				
Were target compounds detected in the field duplicates?				
XI Internal standards				
Were internal standard area counts within -50% to +100% of the associated calibration standard?		1		
Were retention times within <u>+</u> 30 seconds of the associated calibration standard?				
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?				
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?				
XIII. Target compound identification			i la	
Were relative retention times (RRT's) within <u>+</u> 0.06 RRT units of the standard?				
Did compound spectra meet specified EPA "Functional Guidelines" criteria?				
Were chromatogram peaks verified and accounted for?				
XIV System performance				The state of the s
System performance was found to be acceptable.				
XV. Overall assessment of data		1 H	1	
Overall assessment of data was found to be acceptable.				

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

WIETHOD. GC/IVIS SVOA				
A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJJ: Indeno(1,2;3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK: Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 4,8,5 -Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



VALIDATION FINDINGS WORKSHEET Initial Calibration

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

YN N/A Did the laboratory conduct an acceptable 5 point calibration prior to sample analysis?

Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?

Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation? < 0.990

YNN/A Did the initial calibration meet the acceptance criteria?

Y N N/A Were all %RSDs and RRFs within the validation criteria of ≤20 %RSD and ≥0.05 RRF?

2 14	N N/A Were all %RSDs and RRFs within the validation criteria of ≤20 %RSD and ≥0.05 RRF?							
#	Date	Standard ID	Compound	Finding %RSD (Limit: <u><</u> 20.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications	
	1/29/19	ICAL	444	r=0.986	•	All (dots)	VIIV 05 (3C)	
	1 1 /	,	HHH	1=0.98	/			
			77	= 0.98%			/	
			22	= 0.989	7		√	
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VALIDATION FINDINGS WORKSHEET Initial Calibration Verification

2nd Reviewer:

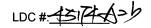
METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was an initial calibration verification standard analyzed after each ICAL for each instrument? Were all %D within the validation criteria of ₹30 %D?

#	Date	Standard ID	Compound	Finding %D (Limit: < 20.0%) >> / o	Associated Samples	Qualifications 1/
	1/29/19	10V	ELEZ	60	A11 (Lot=)	JMA (202)
	/ / /					7 1 7
	/					
=				I Total		
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VALIDATION FINDINGS WORKSHEET Continuing Calibration

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

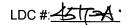
N/A

Was a continuing calibration standard analyzed at least once every 12 hours for each instrument

YN_N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?

Y/N N/A Were percent differences (%D) ≤20 % and relative response factors (RRF) within the method criteria?

#	Date	Standard ID	Compound	Finding %D (Limit: <u>≤</u> 20.0%)	Finding RRF (Limit)	Associated Samples	Qualifications
	1/30/19	æV	DDD	35 26		3-8. (dots)	1/W/A (LC)
	· '		7/1	26		,	LHCH LHC)
					*		
					-		
<u> </u>							
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VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

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Reviewer:	9
2nd Reviewer:	N6

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

		For the second s	ms	MSD			
#	MS/MSD ID	Compound	%R (Limits)	%R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	9/10	444	194 50-150	183 1849	()	2(dots)	Llots ACHM)
		YY	162 ()	()	()		
		5	43 (/)	()	()		JMA(ZM)
		5	()	()	28 (525)		(HD)
			()	()	()		/
			()	()	()		
			()	()	()		
		TIT	()	()	32 (575) 36 (V)	2 (dets)	lets A (HD)
		W'		()	36 (V)		
			()	()	()		
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	
Reviewer:	9
2nd Reviewer:	No

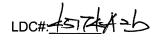
METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

YN N/A Was a LCS required?

Y/N M/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	20904-351/	777	59 (0-130)	54 70-130	()	All (dots+ND)	VUVD (XX)
	-BS2		61 (55 ()	()		
		622E	GA ()	60 ()	()		
		3	48 ()	42 ()	()		
		XXX	()	65 ()	()		
		44	()	67 ()	()		
		act	171 ()	(†)	()	(dets)	Slots D(HZ)
		444	131 ()	135 ()	()		
		11	139 ()	H4 ()	()		
		KK	1 ()	134 ()	()		
		YY	()	13/ ()	()	V	√
		′ /	()	(,)	()	<u>, </u>	·
			()	()	()		
			()	()	()		
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			()	()	()		



VALIDATION FINDINGS WORKSHEET <u>Field Duplicates</u>

METHOD: GCMS PAH 8270D

	Concentra			
Compound	8	B18-20116	RPD	
YYY	1.27	1.38	8	
ттт	0.814	0.836	3	
нннн	1.51	1.32	13	
xxx	0.577	0.624	8	
w	1.64	1.70	4	
GG	0.50U	0.157	NC	
DD	0.233	0.331	35	
w	0.762	0.767	1	
ccc	21.8	6.02	113	
111	8.1	3.69	75	
GGG	11.8	5.47	73	
www	7.06	3.58	65	
LLL	4.66	3.77	21	
ннн	8.53	4.3	66	
EEEE	0.291	0.275	6	
DDD	7.27	2.52	97	
ккк	4.79	3.2	40	
АААА	0.324	0.357	10	
YY	10.4	4.96	71	
NN	0.643	0.605	6	
111	19.4	14.2	31	
s	2.17	1.91	13	
ZZZ	1.64	0.766	73	
υυ	4.51	4.29	5	
ZZ	9.84	5.13	63	



VALIDATION FINDINGS WORKSHEET Internal Standards

Page: __(of ___ Reviewer: _____ 2nd Reviewer: ______

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were all internal standard area counts within -50 to +100 of the associated calibration standard?

Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications (X#)
		11 (Sabdup)	dp-111	Area (Limits) 33924831 (36560522-1-	6>4>088)	JANA No Cena
	<u></u>	3 (dets)	412-111	66136157(16053287-1	(28/2148)	1/11/12
		- (A-CV)	12-111 12-666	66435150(1695328T-1 31353208(T832575-	B1330300)	1/47
		5	d12-111	69551936()	
			d12-111	33396202 ()	
		8 /	d12-111	6T114126 (1	
			d12-14	6T1141=6 (3411=30T()	V
						see as
						1
	1					
				, AMB 144		
			<u> </u>			

(DCB) = 1,4-Dichlorobenzene-d4

(NPT) = Naphthalene-d8 (ANT) = Acenaphthene-d10 (PHN) = Phenanthrene-d10

(CRY) = Chrysene-d12

(PRY) = Perylene-d12



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Reviewe: 2nd Reviewer: M6

Method: GC/MS (EPA SW 846 Method 8270D)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
1/29/2019	Acenaphthene	1	0.015	0.0088530127
		2	0.025	0.0174844030
		3	0.050	0.0363520050
		4	0.125	0.0953528780
		5	0.250	0.1872326480
		6	0.500	0.4189896000

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	0.81638005	0.816000
Correlation Coefficient	0.998902	0.99700
Coefficient of Determination (r^2)	0.997806	



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Method: GC/MS (EPA SW 846 Method 8270D)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
1/29/2019	Benzo(a)pyrene	1	0.015	0.012202480
	\	2	0.025	0.023791305
		3	0.050	0.049201355
		4	0.125	0.131370343
		5	0.250	0.278827900
		6	0.500	0.569758500

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	1.12903056	1.130000
Correlation Coefficient	0.999729	1.00000
Coefficient of Determination (r^2)	0.999458	



Page: →of → Reviewwe: 2nd Reviewer: _______

Method: GC/MS (EPA SW 846 Method 8270D)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
1/29/2019	Benzo(g,h,i)perylene	1	0.015	0.012184192
	Ι	2	0.025	0.024221793
		3	0.050	0.048328508
		4	0.125	0.129520280
		5	0.250	0.286553700
		6	0.500	0.630932300

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	1.22633485	1.230000
Correlation Coefficient	0.998468	0.99700
Coefficient of Determination (r^2)	0.996939	

VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page:_	of
Reviewer:	9
2nd Reviewer:	JYG

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF $RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF

RRF = continuing calibration RRF

 A_x = Area of compound,

A_{is} = Area of associated internal standard Cis = Concentration of internal standard

 C_x = Concentration of compound,

					Reported	Recalculated	Reported	Recalculated
#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	RRF (CC)	RRF (CC)	%D	%D
1	ecv	1/30/19	Phonel (1st internal standard)	500	4T3.14	473.42	5	53
		/ / 	Naphthalene (2nd internal standard)		489.14	188,78	2	2.2
			Eluorene (3rd internal standard)		423.90	422.69	15	15.5
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Renzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)			•		
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					

Comments: _.	Refer to C	ontinuing (<u>Calibration</u>	<u>findings wo</u>	orksheet for	r list of	qualifications	<u>and</u>	<u>associated</u>	samples	when r	<u>eported</u>	<u>results d</u>	<u>o not a</u>	<u>gree withi</u>	<u>า 10.0%</u>	of the
recalculated	results.																
																,	



VALIDATION FINDINGS WORKSHEET Surrogate Results Verification

Page:_	
Reviewer:	9
2nd reviewer:	M

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270D)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found SS = Surrogate Spiked

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene d5			2		
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-do					
2-Fluorophenol					
2,4,6-ribromophenol				/	
2-Ch/orophenol-d4		·			
1,2-Dichlorobenzene-d4					

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-de dio	1000.0	593.86	59	59	
2-Fluorobiphenyl Alb-UU		805.7/	81	ප/	
Terphenyld14		882.19	88	87	
Phenol-05 / 12-222	,	804.91	80	80	
2-Flugrophenol d8-S	V	225.5	3323	23	
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlerobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5		·			
2-Fluorobiphenyl					
Terphenyl-d14			·		
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates Results Verification

Page:_	of
Reviewer:	
2nd Reviewer:	1/6

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked sample concentration SA = Spike added

SC = Sample concentation

RPD = I MSC - MSC I * 2/(MSC + MSDC)

MSC = Matrix spike concentration

MSDC = Matrix spike duplicate concentration

MS/MSD samples:

Compound	Add	ike ded	Sample Concentration		Sample ntration		Spike Recovery	Matrix Spike		MS/M	sn *
	MS	MSD		MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol											
N-Nitroso-di-n-propylamine						 					
4-Chloro-3-methylphenol			255								
Acenaphthene	104	103	829	80.9	83.5	75	75	79	79	5	35
Pentachlorophenol									/		
Pyrene	102	103	18	323	310	137	137	125	125	9	A
						/				7	
1.											

Comments: Refer to Matrix Sp	oike/Matrix Spike I	Duplicates findi	ings worksheet for list o	f qualifications ar	nd associated sam	nples when reported res	sults do not agree within 10.0%
of the recalculated results.	X 700	here >		due to		conc dit	
•	7 (1						

VALIDATION FINDINGS WORKSHEET Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page:_	<u>/</u> _of <u>/</u>
Reviewer:	9
2nd Reviewer:	No

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA)

Where: SSC = Spike concentration

SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC)

LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 20004-

Compound	∦ Ad	oike ded (A)	Conce	oike entration		CS Recovery		SD Recovery		/LCSD
	LCS	LCSD		LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene	500	500	349	336	70	70	6T	67	4	14
Pentachlorophenol			·			Ü		,		
Pyrene	500	500	635	48	12T	127	130	130	>	2
					1					
										†
		·								

Comments: Refer to Laboratory Control Sample/Laboratory (Control Sample Duplicates	findings worksheet for list of	qualifications and associa	ated samples when reported
results do not agree within 10.0% of the recalculated results.				
	. +			

LDC #: 151740-6

VALIDATION FINDINGS WORKSHEET <u>Sample Calculation Verification</u>

Page:_	of
Reviewer:_	9
2nd reviewer:	NC

METHOD: GC/MS SVOA (EPA SW 846 Method 8270D)

K	N	N/A
V	N	N/A

Were all reported results recalculated and verified for all level IV samples?

Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $(A_s)(I_s)(V_t)(DF)(2.0)$ $(A_{is})(RRF)(V_o)(V_i)(\%S)$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

V_o = Volume or weight of sample extract in milliliters (ml) or grams (g).

V_I = Volume of extract injected in microliters (ul)

V, = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

%S = Percent solids, applicable to soil and solid matrices

only.

2.0 = Factor of 2 to account for GPC cleanup

Sample I.D.

Conc. = (6)-848)(-2003)(0.7/3)

= 2.49 ns/g

#	Sample ID	Compound	Reported Concentration	Calculated Concentration ()	Qualification
	>	46	249		
		T			
			·		
1					
	·		·		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

June 11, 2019

Parameters:

Polybrominated Diphenyl Ethers

Validation Level:

Level IV

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-008

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10022	56582	Sediment	07/18/18
B18-10076	56583	Sediment	07/18/18
B18-10077	56584	Sediment	07/18/18
B18-10113	56586	Sediment	07/18/18
B18-10024	56587	Sediment	07/19/18
B18-10114	56589	Sediment	07/19/18
B18-10115	56590	Sediment	07/19/18
B18-10116	56591	Sediment	07/19/18
B18-10076MS	56583MS	Sediment	07/18/18
B18-10076MSD	56583MSD	Sediment	07/18/18
B18-10076DUP	56583DUP	Sediment	07/18/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polybrominated Diphenyl Ethers by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level IV data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A perfluorotributylamine (PFTBA) tune was performed.

All ion abundance requirements were met.

III. Initial Calibration

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r²) was greater than or equal to 0.990.

Average relative response factors (RRF) for all compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
01/18/19	PBDE-209	36	B18-10022 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	J (all detects) UJ (all non-detects)	A

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	PBDE-190 PBDE-209 PBDE-183	36 (50-150) 12 (50-150) -	28 (50-150) 7 (50-150) 45 (50-150)	J (all detects) UJ (all non-detects)	А

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	PBDE-209	53 (≤25)	J (all detects)	А

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076DUP (B18-10076)	PBDE-099 PBDE-100 PBDE-153 PBDE-154 PBDE-209	49 (<25) 35 (<25) 93 (<25) 26 (<25) 36 (<25)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	А

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
20904-BS1/BS2 (All samples in SDG 1807003-008)	PBDE-190 PBDE-209	65 (70-130) 22 (70-130)	- 51 (70-130)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	Р

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

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
20904-BS1/BS2 (B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115)	PBDE-209	79 (≤30)	J (all detects)	Р
20904-BS1/BS2 (B18-10022 B18-10116)	PBDE-209	79 (≤30)	NA	-

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Duplicates

Samples B18-10116 and B18-20116 were identified as field duplicates. No results were detected in any of the samples.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-008	Compound reported below the RL and above the MDL	J (all detects)	Α

XIII. Target Compound Identifications

All target compound identifications were within validation criteria.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to continuing calibration %D, MS/MSD %R and RPD, DUP RPD, LCS/LCSD %R and RPD, and results reported below the RL and above the MDL, data were qualified as estimated in eight samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polybrominated Diphenyl Ethers - Data Qualification Summary - SDG 1807003-008

Sample	Compound	Flag	A or P	Reason (Code)
B18-10022 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	PBDE-209	J (all detects) UJ (all non-detects)	Α Α	Continuing calibration (%D) (CH)
B18-10076	PBDE-190 PBDE-209 PBDE-183	J (all detects) UJ (all non-detects)	А	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10076	PBDE-209	J (all detects)	Α	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10076	PBDE-099 PBDE-100 PBDE-153 PBDE-154 PBDE-209	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	PBDE-190 PBDE-209	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115	PBDE-209	J (all detects)	Р	Laboratory control samples (RPD) (HD)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Compound reported below the RL and above the MDL	J (all detects)	А	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Laboratory Blank Data Qualification Summary SDG 1807003-008

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polybrominated Diphenyl Ethers - Field Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45174A2c

SDG #: 1807003-008

Level IV

Laboratory: Physis Environmental Laboratories, Inc.

2nd Reviewer

METHOD: GC/MS Polybrominated Diphenyl Ethers (EPA SW 846 Method 8270D-NCI)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	\forall	PFIBA.
III.	Initial calibration/i	A	Y- No lev-not available
IV.	Continuing calibration	SW	acv < 200
V.	Laboratory Blanks	*	7
VI.	Field blanks		
VII.	Surrogate spikes	A.	
VIII.	Matrix spike/Matrix spike duplicates	w KN	,
IX.	Laboratory control samples	w	LCS/b, CRM
X.	Field duplicates	NO	209/0, ORM 0=8+-\$18-20116
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	Å	
XIV.	System performance	A	
XV.	Overall assessment of data		

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10022	56582	Sediment	07/18/18
2	B18-10076	56583	Sediment	07/18/18
3	B18-10077	56584	Sediment	07/18/18
4	B18-10113	56586	Sediment	07/18/18
5	B18-10024	56587	Sediment	07/19/18
6	B18-10114	56589	Sediment	07/19/18
7	B18-10115	56590	Sediment	07/19/18
8	B18-10116	56591	Sediment	07/19/18
9	B18-10076MS	56583MS	Sediment	07/18/18
10	B18-10076MSD	56583MSD	Sediment	07/18/18
11	B18-10076DUP	56583DUP	Sediment	07/18/18
12				
13				

LDC # 15/74/20

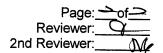
VALIDATION FINDINGS CHECKLIST

Method: Semivolatiles (EPA SW 846 Method 8270D)

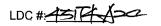
Wetnod: Semivolatiles (EPA SVV 846 Metnod 8270D)	V	N _a	NI A	Eindings/Comments
Validation Area 1. Technical holding times	Yes	No No	NA NA	Findings/Comments
Were all technical holding times met?	/			
Was cooler temperature criteria met?				
II. GC/MS Instrument performance check*	7. TEM			
Were the BFTPP performance results reviewed and found to be within the specified criteria?				
Were all samples analyzed within the 12 hour clock criteria?				c
Illa. Initial calibration			i i	Market Same (Market Same)
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) ≤ 20% and relative response factors (RRF) within method criteria?				
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?				
IIIb. Initial Calibration Verification		No.	7 (1) 7 (3)	Are local light
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?				
Were all percent differences (%D) ≤ 30% or percent recoveries (%R) 70-130%?				
IV Continuing calibration				in the second se
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?				
Were all percent differences (%D) \leq 20% and relative response factors (RRF) within method criteria?				
V. Laboratory Blanks				and the state of t
Was a laboratory blank associated with every sample in this SDG?				
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?				
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.				
VI. Field blanks		2		
Were field blanks were identified in this SDG?				
Were target compounds detected in the field blanks?				
VII. Surrogate spikes				
Were all surrogate percent recovery (%R) within QC limits?	<u> </u>			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis?				
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?				



VALIDATION FINDINGS CHECKLIST



Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.				
Was a MS/MSD analyzed every 20 samples of each matrix?				
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		/		
iX Laboratory control samples			14	
Was an LCS analyzed for this SDG?				:
Was an LCS analyzed per analytical batch?				
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?			/	
X. Field duplicates			radi 1	
Were field duplicate pairs identified in this SDG?		-		
Were target compounds detected in the field duplicates?				
XI Internal standards is the standards in the standards in the standards is the standards in the standard in the standard		4.5		Track Control of the
Were internal standard area counts within -50% to +100% of the associated calibration standard?				
Were retention times within ± 30 seconds of the associated calibration standard?				
XII Compound quantitation	### ###			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?				
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?				
XIII. Target compound identification				to a market and the second
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?				
Did compound spectra meet specified EPA "Functional Guidelines" criteria?				
Were chromatogram peaks verified and accounted for?				
XIV System performance	300		10.TH	
System performance was found to be acceptable.				
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.				



VALIDATION FINDINGS WORKSHEET <u>Continuing Calibration</u>

Page:_	of
Reviewer:_	A
2nd Reviewer:	W

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

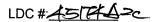
N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument

Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?

YN N/A

Were percent differences (%D) ≤20 % and relative response factors (RRF) within the method criteria?

#	Date	Standard /D	Compound	Finding %D (Limit: ≤20.0%)	Finding RRF (Limit)	Associated Samples	Qualifications
	1/8/9	ecV	PBDE 209	36		1,3-8 clas+NO	VIN A CHX)
	/ / '					/	
					71-3-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1		
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VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:	<u></u>
Reviewer:	9
2nd Reviewer:	Mo

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Was a MS/MSD analyzed every 20 samples of each matrix?

YN N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	2/9/10	PBDE 190	36 (50.150)	28 <i>(50-150</i>)	()	2 (dets+NO)	JUNA(KU)
	7 /	1 209	12 (1)	7 ()	()		
<u></u>		183	()	45 (V)	()		
		209	()	()	<i>5</i> 3 (≤>5)	(# Dolets)	Idets/A (HD)
			()	()	()	/	/
<u> </u>			()	()	()		
<u> </u>		1500	()	()	()		. 0
 		\$BX099	()	()	49 (€ 25) 35 (1)	2 (dots)	Wets/A (HD)
					93()		1 1
<u> </u>		153	()	()	26 ()		7
		1 209	()	()	36 ()		
		V 2007	()	()	()		<u> </u>
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

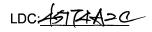
METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		>0904-BSI/	\$BD2190	65 (70-130)	()	()	All (dots+ND)	-VM/+ (24)
		450		22 ()	5 70-80	()		
			1 209	()	()	TA (\$30)	(2-7=dets)	Llots (HD)
				()	()	()		91 7
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Method: GC/MS (EPA SW 846 Method 8270D-NCI)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
1/17/2019	PBDE209	1	0.050	0.0029847
		2	0.125	0.0054766
		3	0.250	0.0161952
		4	0.500	0.0338814
		5	1.000	0.0785261

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	0.07541524	0.075400
Correlation Coefficient	0.996869	0.99500
Coefficient of Determination (r^2)	0.993748	

VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page:	of
Reviewer:_	Y
2nd Reviewer:_	W

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF $RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF

RRF = continuing calibration RRF

 A_{ν} = Area of compound, $C_x = Concentration of compound,$ A_i = Area of associated internal standard C_{is} = Concentration of internal standard

Reported Recalculated Reported Recalculated Calibration Compound (Reference Internal Average RRF **RRF RRF** %D %D Standard ID Date Standard) (initial) (CC) (CC) Phenof (1st internal standard) 500 C-1/ (8:15) Naphthalene (2nd internal standard) Fluorene (3rd internal standard) Pentachlorophenol (4th internal standard) Bis(2-ethylhexyl)phthalate (5th internal standard) Benzo(a)pyrene (6th internal standard) 2 Phenol (1st internal standard) Naphthalene (2nd internal standard) Fluorene (3rd internal standard) Pentachlorophenol (4th internal standard) Bis(2-ethylhexyl)phthalate (5th internal standard) Benzo(a)pyrene (6th internal standard) 3 Phenol (1st internal standard) Naphthalene (2nd internal standard) Fluorene (3rd internal standard) Pentachlorophenol (4th internal standard) Bis(2-ethylhexyl)phthalate (5th internal standard) Benzo(a)pyrene (6th internal standard)

Comments: _	Refer to Continuing	<u>g Calibration f</u>	<u>indings worksheet</u>	for list of qua	alifications and	associated sa	mples when	reported result	<u>s do not agree v</u>	<u>vithin 10.0%</u>	of the
recalculated	results.										
						·····					



VALIDATION FINDINGS WORKSHEET Surrogate Results Verification

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Reviewer:_	9_
2nd reviewer:_	-W-

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270D)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the follow	wing calculation:
---	-------------------

% Recovery: SF/SS * 100

Where: SF = Surrogate Found SS = Surrogate Spiked

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-dg DFPBDE	50.0	37.79	76	76	
2-Fluorobiphenyl FTBDE	V	40.26	8	8	
Terphenyl-d14			/		
Phenol-d5				·	
2-Fluorophenol					
2,4,6-7ribromophenol					
2-Chilorophenol-d4		· ·			
1,z-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chiorophenol-d4					
1,2-Dichlorobenzene-d4					

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates Results Verification

Page:_	of
Reviewer:_	<u> </u>
2nd Reviewer:_	No

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked sample concentration

SC = Sample concentation

RPD = I MSC - MSC I * 2/(MSC + MSDC)

MSC = Matrix spike concentration

SA = Spike added

MSDC = Matrix spike duplicate concentration

MS/MSD samples:

Compound	Ad	ike ded (Q)	Sample Concentration	Concer	Sample ntration	Matrix Percent F		Matrix Spike		MS/MS	•
No. of the second	MS	MSD		MS	MSD	Reported	Recalc	Reported	Recalc	Reported *	Recalculated
Phenol										·	
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene											
Pentachlorophenol											
Pyrene											
PBDE04T	10.4	10.3	0.747	12.2	1>	110	110	109	1001		>
V 209	52.	5.3	1.63	8.12	5.37	12	12	7	7/	53	41

Comments: Refer to Matrix Sp	ike/Matı	ix Spike D	uplicates find	lings worksheet	for list of qualifications a	and associated sample	es when reported res	sults do not agree within 10.0
of the recalculated results.	*	Lach	use	TORTO	calculate	yeu + Da		

VALIDATION FINDINGS WORKSHEET Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page:_	
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2nd Reviewer	We

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA)

Where: SSC = Spike concentration

SA = Spike added

RPD = I LCSC - LCSDC | * 2/(LCSC + LCSDC)

LCS/LCSD samples: 209

Compound	Ad	Spike Added (ルメノタ)		Spike Concentration () () ()		LCS Percent Recovery		LCSD Percent Recovery		L CS/L CSD RPD	
Part of the second	7	(3)		//	1 CICCILI	tecovery	1 ercent Recovery		Kru		
	LCS	I CSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated	
Phenol											
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol	 										
Acenaphthene									:		
Pentachlorophenol											
Pyrene											
PBDE04T	50	50	53	57.7	106	106	115	115	8	8	
1/ 209	250	250	54.4	(=7	22	22_	5	5/	79	80	
V									7		

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when repor	rtec
results do not agree within 10.0% of the recalculated results.	



Dilution Factor.

Df

%S

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:	
Reviewer:	4
2nd reviewer:_	W

METHOD: GC/MS SVOA (EPA SW 846 Method 8270D)

Percent solids, applicable to soil and solid matrices

	N/A N/A	Were all reported results recalculated and Were all recalculated results for detected t	verified for all level IV samples? arget compounds agree within 10.0% of the reported results?
Conc	entratio	$n = \frac{(A_{\bullet})(I_{\bullet})(V_{\bullet})(DF)(2.0)}{(A_{is})(RRF)(V_{\circ})(V_{\bullet})(\%S)}$	Example:
A _x	=	Area of the characteristic ion (EICP) for the compound to be measured	Sample I.D, \$\\\ \begin{align*} & \begin{align*}
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard	5.15 5.5.73
l ^s	=	Amount of internal standard added in nanograms (ng)	Conc. = (3 + 4 - 2)(1000)(0.21-3)(1)(1) $47106206 00754(1)(1)(1)$
V_{\circ}	=	Volume or weight of sample extract in milliliters (ml) or grams (g).	
V_{l}	=	Volume of extract injected in microliters (ul)	=1.92 USA
V_{t}	=	Volume of the concentrated extract in microliters (ul)	

	unt for GPC cleanup			
Sample ID	Compound	Reported Concentration (NS/C)	Calculated Concentration ()	Qualification
>				
				·

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: June 11, 2019

Parameters: Fipronil & Degradates

Validation Level: Level IV

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-008

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
B18-10022	56582	Sediment	07/18/18
B18-10076	56583	Sediment	07/18/18
B18-10077	56584	Sediment	07/18/18
B18-10113	56586	Sediment	07/18/18
B18-10024	56587	Sediment	07/19/18
B18-10114	56589	Sediment	07/19/18
B18-10115	56590	Sediment	07/19/18
B18-10116	56591	Sediment	07/19/18
B18-10076MS	56583MS	Sediment	07/18/18
B18-10076MSD	56583MSD	Sediment	07/18/18
B18-10076DUP	56583DUP	Sediment	07/18/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Fipronil and Degradates by Environmental Protection Agency (EPA) SW 846 Method 8270D-NCI

All sample results were subjected to Level IV data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to nonconformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

An autotune/perfluorotributylamine (PFTBA) tune was performed.

All ion abundance requirements were met.

III. Initial Calibration

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r²) was greater than or equal to 0.990.

Average relative response factors (RRF) for all compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
01/17/19	Fipronil desulfinyl Fipronil sulfide	28.52 31.68	B18-10022 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	UJ (all non-detects) UJ (all non-detects)	A

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	Fipronil desulfinyl	156 (50-150)	164 (50-150)	NA	-

Relative percent differences (RPD) were within QC limits.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples B18-10116 and B18-20116 were identified as field duplicates. No results were detected in any of the samples.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-008	Compound reported below the RL and above the MDL	J (all detects)	А

XIII. Target Compound Identifications

All target compound identifications were within validation criteria.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to continuing calibration %D and results reported below the RL and above the MDL, data were qualified as estimated in eight samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Fipronil & Degradates - Data Qualification Summary - SDG 1807003-008

Sample	Compound	Flag	A or P	Reason (Code)
B18-10022 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Fipronil desulfinyl Fipronil sulfide	UJ (all non-detects) UJ (all non-detects)	Α	Continuing calibration (%D) (CH)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Fipronil & Degradates - Laboratory Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Fipronil & Degradates - Field Blank Data Qualification Summary - SDG 1807003008

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45174A2d

SDG #: 1807003-008

Level IV

Laboratory: Physis Environmental Laboratories, Inc.

2nd Reviewer:

METHOD: GC/MS Fipronil & Degradates (EPA SW 846 Method 8270D-NCI)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	Auto tune +TEA
111.	Initial calibration/I®	A	y =, No 10 V - not available.
IV.	Continuing calibration	w	acv= 20/0
V.	Laboratory Blanks	\forall	/ -
VI.	Field blanks		
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	aw/A	
IX.	Laboratory control samples	\forall	205/6
X.	Field duplicates	NO	105/b b=8+B18-20116
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	A	
XIV.	System performance	A	
XV.	Overall assessment of data	\triangleleft	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10022	56582	Sediment	07/18/18
2	B18-10076	56583	Sediment	07/18/18
3 l	B18-10077	56584	Sediment	07/18/18
4 [B18-10113	56586	Sediment	07/18/18
5	B18-10024	56587	Sediment	07/19/18
6 1	B18-10114	56589	Sediment	07/19/18
7 1	B18-10115	56590	Sediment	07/19/18
8 1	B18-10116	56591	Sediment	07/19/18
9	B18-10076MS	56583MS	Sediment	07/18/18
10	B18-10076MSD	56583MSD	Sediment	07/18/18
11	B18-10076DUP	56583DUP	Sediment	07/18/18
12				
13				

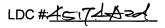
LDC #: 451748-31

VALIDATION FINDINGS CHECKLIST

Page: /of >
Reviewer: 2nd Reviewer: 1)/6

Method: Semivolatiles (EPA SW 846 Method 8270D)

Metriod. Serrivolatiles (EFA SVV 646 Metriod 6270D)	T _v			
Validation Area	Yes	<u>No</u>	<u>NA</u>	Findings/Comments
Technical holding times Were all technical holding times met?	 			
Was cooler temperature criteria met?	/			
II. GC/MS Instrument performance check				
auto tune Were the BFTPP performance results reviewed and found to be within the specified criteria?	/			
Were all samples analyzed within the 12 hour clock criteria?	*			c
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	(
Were all percent relative standard deviations (%RSD) ≤ 20% and relative response factors (RRF) within method criteria?				
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?				
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?				
Were all percent differences (%D) ≤ 30% or percent recoveries (%R) 70-130%?	2000			Proposition of the state of the
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?				
Were all percent differences (%D) \leq 20% and relative response factors (RRF) within method criteria?				
V Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?				
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?				
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.				
VI. Field blanks				
Were field blanks were identified in this SDG?			/	
Were target compounds detected in the field blanks?				
VII. Surrogate spikes	Erri.			
Were all surrogate percent recovery (%R) within QC limits?				
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis?				
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?				



VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: 9
2nd Reviewer: 16

Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates	S. P.			
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	/			
Was a MS/MSD analyzed every 20 samples of each matrix?				
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?				
IX Laboratory control samples	W. ()			
Was an LCS analyzed for this SDG?				
Was an LCS analyzed per analytical batch?				
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	/			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?		P		
Were target compounds detected in the field duplicates?			•	
XI Internal standards				
Were internal standard area counts within -50% to +100% of the associated calibration standard?				
Were retention times within ± 30 seconds of the associated calibration standard? XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	. /		0	7
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?				
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?				
Did compound spectra meet specified EPA "Functional Guidelines" criteria?				
Were chromatogram peaks verified and accounted for?				
XIV System performance				
System performance was found to be acceptable.				
XV: Overall assessment of data		i.		
Overall assessment of data was found to be acceptable.				



VALIDATION FINDINGS WORKSHEET Continuing Calibration

Page: / of / Reviewer: 2nd Reviewer: 30/4

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?

Y(N) N/A

Were percent differences (%D) ≤20 % and relative response factors (RRF) within the method criteria?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤20.0%)	Finding RRF (Limit)	Associated Samples	Qualifications
	117/9	FLPSTOCK	**	28,52 31.68		1,3-8 (ND)	Qualifications
			7	3.00			
		* Fipronil D ** Fipronil =	esulfinyl				
		** Fiprouil =	sulfide				
		-					
						<u> </u>	
						 	



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:	_of
Reviewer:	9
nd Reviewer:	Me

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

Y IN		MS/MSD ID Compound (%R) and the relative		MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
Ħ					(Control		Qualifications
\vdash	10/11	*	156 (50-150)	164 (90-150)	()	= (ND)	Wots A CHIL
\vdash	· · · · · · · · · · · · · · · · · · ·		()	()	()		/ /
			()	()	()		
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		* Fipranil	Desulfiny)	()	()		
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VALIDATION FINDINGS WORKSHEET Initial Calibration Calculation Verification

Page:	<u>/</u> of /
Reviewwe:	\neg
2nd Reviewer:	Ne

Method: GC/MS (EPA SW 846 Method 8270D-NCI)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
1/16/2019	Fipronil	1	0.025	0.0114707
		2	0.050	0.0236117
		3	0.10	0.0433337
		4	0.25	0.1145072
		5	0.50	0.2378694

Linear through the origin

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	0.47097803	0.471000
Correlation Coefficient	0.999790	0.99900
Coefficient of Determination (r^2)	0.999579	



VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

	Page:_	of	
	Reviewer:	6	
nd	Reviewer:	<i>√</i> (

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF $RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF RRF = continuing calibration RRF

 A_x = Area of compound,

A_{is} = Area of associated internal standard Cis = Concentration of internal standard

 $C_x = Concentration of compound,$

					Reported	Recalculated	Reported	Recalculated
#_	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	RRF (CC)	RRF (CC)	%D	%D
1	= Hosacy	VIT/19	Phenol (1st internal standard) FIPTON i	500	498,22	498-0	ARO	04
		7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)			-		
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3	1		Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					

Comments: _	Refer to Co	ontinuing (Calibration find	<u>lings works</u>	<u>heet for list</u>	of qualificati	ons and	<u>associated</u>	samples	when reporte	<u>d results do n</u>	<u>iot agree within</u>	10.0% of the
recalculated	results.												
													

LUU #. 12117470

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates Results Verification

Page:_	Lof /
Reviewer:	1
2nd Reviewer:	3/6

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative	Percent Difference (RPD) of the matrix s	spike and matrix spike duplicate we	ere recalculated for the compounds i	dentified below
using the following calculation:		•	•	

% Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked sample concentration SA = Spike added

SC = Sample concentation

RPD = I MSC - MSC I * 2/(MSC + MSDC)

MSC = Matrix spike concentration

MSDC = Matrix spike duplicate concentration

MS/MSD samples: ____

Compound	Add	ike ded (A)	Sample Concentration (() (()	Spiked : Concer (ルラ	ntration	Matrix Percent F			Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
164	MS	MSD		MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated	
Phenol												
N-Nitroso-di-n-propylamine												
4-Chloro-3-methylphenol												
Acenaphthene						ļ						
Pentachlorophenol												
Pyrene												
Fiproni	104	103	ND	146	144	H0	40	140	140	D		
				[

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when	<u>n reported results do not agree within 10.0%</u>
of the recalculated results.	

LUU #.47/14

VALIDATION FINDINGS WORKSHEET <u>Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification</u>

Page:_	/of /
Reviewer:_	-Q_
2nd Reviewer:	W/

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA)

Where: SSC = Spike concentration

SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC)

LCS/LCSD samples: 20904-BSI/BS>

Compound	Sp Ad (<i>US</i>)	oike ded ()	Conce	oike ntration	Percent I	CS Recovery	LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS) LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol										
Pyrene										
Fibroni	500	500	600	608	121	120	122	122	2	
										1

Comments: Refer to Laboratory Control Sample/Laboratory	Control Sample Duplicates fin	dings worksheet for list of qualit	fications and associated samp	ples when reported
results do not agree within 10.0% of the recalculated results.				
	. *			

LDC#: 457 TAP

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:_	of
Reviewer:_	9
2nd reviewer:_	SV

METHOD: GC/MS SVOA (EPA SW 846 Method 8270D)

Percent solids, applicable to soil and solid matrices

/	<u> </u>	N	N/A
	Y	Ν	N/A

%S

only.

Were all reported results recalculated and verified for all level IV samples?

Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Conc	entrati	on = $(A_{\circ})(I_{\circ})(V_{\circ})(DF)(2.0)$ $(A_{is})(RRF)(V_{\circ})(V_{i})(\%S)$	Example:
A _x	=	Area of the characteristic ion (EICP) for the compound to be measured	Sample I.D. NO, Fipvoni
A _{is}	=	Area of the characteristic ion (EICP) for the specific internal standard	•
l _s	=	Amount of internal standard added in nanograms (ng)	Conc. = $(163 - 9308)$ (1800) $(1$
V _o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).	(57778169)(047)()
V _i	=	Volume of extract injected in microliters (ul)	=600.0 NS/2
V _t	=	Volume of the concentrated extract in microliters (ul)	7,9
Df	=	Dilution Factor.	

2.0	= Factor of 2 to accou	nt for GPC cleanup			
#	Sample ID	Compound	Reported Concentration	Calculated Concentration ()	Qualification
	20904-35/	Fibren:	600		
1,					
					*

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: June 11, 2019

Parameters: Synthetic Pyrethroid Pesticides

Validation Level: Level IV

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-008

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10022	56582	Sediment	07/18/18
B18-10076	56583	Sediment	07/18/18
B18-10077	56584	Sediment	07/18/18
B18-10113	56586	Sediment	07/18/18
B18-10024	56587	Sediment	07/19/18
B18-10114	56589	Sediment	07/19/18
B18-10115	56590	Sediment	07/19/18
B18-10116	56591	Sediment	07/19/18
B18-10076MS	56583MS	Sediment	07/18/18
B18-10076MSD	56583MSD	Sediment	07/18/18
B18-10076DUP	56583DUP	Sediment	07/18/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Synthetic Pyrethroid Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D-MRM

All sample results were subjected to Level IV evaluation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered as not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

An autotune was performed.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r²) was greater than or equal to 0.990.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
01/21/19	Cyhalothrin, total lambda Cyfluthrin Fluvalinate	48 26 31	All samples in SDG 1807003-008	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	А

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Standard	Compound	%D	Associated Samples	Flag	A or P
01/22/19	ccv	Allethrin Prallethrin Bifenthrin Cyhalothrin, total lambda Permethrin, cis- Permethrin, trans- Cyfluthrin	31 26 25 33 22 21 23	B18-10022 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	J (all detects) UJ (all non-detects)	Α

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogate Spikes

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	Cyhalothrin, total lambda	169 (50-150)	165 (50-150)	NA	-
B18-10076MS/MSD (B18-10076)	Deltamethrin/Tralomethrin Prallethrin	37 (50-150) 38 (50-150)	44 (50-150) 38 (50-150)	UJ (all non-detects) UJ (all non-detects)	Α

Relative percent differences (RPD) were within QC limits.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076DUP (B18-10076)	Danitol (Fenpropathrin)	26 (≤25)	J (all detects)	А

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits with the following exceptions:

Sample	Internal Standards	Area (Limits)	Affected Compound	Flag	A or P
B18-10077	2,2',5,5'-Tetrabromobiphenyl	163158 (163431-653724)	All compounds	NA	_
B18-10115	2,2',5,5'-Tetrabromobiphenyl	153574 (163431-653724)	All compounds	J (all detects)	Р
B18-10116	2,2',5,5'-Tetrabromobiphenyl	139160 (163431-653724)	All compounds	NA	-

XII. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-008	Compound reported below the RL and above the MDL	J (all detects)	А

XIII. Target Compound Identifications

All target compound identifications were within validation criteria.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to ICV %D, continuing calibration %D, MS/MSD %R, DUP RPD, internal standards area, and results reported below the RL and above the MDL, data were qualified as estimated in eight samples.

The quality control criteria reviewed, as discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J/UJ) are usable for limited purposes only. Based upon the data validation, all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Synthetic Pyrethroid Pesticides - Data Qualification Summary - SDG 1807003-008

Sample	Compound	Flag	A or P	Reason (Code)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Cyhalothrin, total lambda Cyfluthrin Fluvalinate	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	А	Initial calibration verification (%D) (LV)
B18-10022 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Allethrin Prallethrin Bifenthrin Cyhalothrin, total lambda Permethrin, cis- Permethrin, trans- Cyfluthrin	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D) (CH)
B18-10076	Deltamethrin/Tralomethrin Prallethrin	UJ (all non-detects) UJ (all non-detects)	Α	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10076	Danitol (Fenpropathrin)	J (all detects)	Α	Duplicate sample analysis (RPD) (HD)
B18-10115	All compounds	J (all detects)	Р	Internal standards (area) (*XI)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Laboratory Blank Data Qualification Summary SDG 1807003-008

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Synthetic Pyrethroid Pesticides - Field Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 45174A2e

SDG #: 1807003-008

Level IV

Laboratory: Physis Environmental Laboratories, Inc.

Reviewer: 2nd Reviewer

METHOD: GC/MS Synthetic Pyrethroid Pesticides (EPA SW 846 Method 8270D-MRM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	1	
11.	GC/MS Instrument performance check	A	Antofunl
111.	Initial calibration/ICV	* Ku	γ3, 1er=3070
IV.	Continuing calibration	W	ac√ ≤ 2070
V.	Laboratory Blanks	A	/
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates / 544	WKW	
IX.	Laboratory control samples	₩.	105/0
X.	Field duplicates	ND	B=8+B18-2016
XI.	Internal standards	w/	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	A	
XIV.	System performance	\forall	
XV.	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate

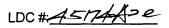
FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10022	56582	Sediment	07/18/18
2	B18-10076	56583	Sediment	07/18/18
3	B18-10077	56584	Sediment	07/18/18
4	B18-10113	56586	Sediment	07/18/18
5	B18-10024	56587	Sediment	07/19/18
6	B18-10114	56589	Sediment	07/19/18
7	B18-10115	56590	Sediment	07/19/18
8	B18-10116	56591	Sediment	07/19/18
9	B18-10076MS	56583MS	Sediment	07/18/18
10	B18-10076MSD	56583MSD	Sediment	07/18/18
11	B18-10076DUP	56583DUP	Sediment	07/18/18
12				
13_				



VALIDATION FINDINGS CHECKLIST

Page: / of Z Reviewer: 9 2nd Reviewer: 76

Method: Semivolatiles (EPA SW 846 Method 8270D)

Method: Semivolatiles (EPA SW 846 Method 8270D)				
Validation Area	Yes	No	NA	Findings/Comments
Technical holding times				
Were all technical holding times met?				
Was cooler temperature criteria met?		and the second		
II. GC/MS Instrument performance check			Ī	T
Were the DFTPP performance results reviewed and found to be within the specified criteria?		<u></u>		
Were all samples analyzed within the 12 hour clock criteria?	Z			c
Illa: Initial calibration				and angelies of the state of th
Did the laboratory perform a 5 point calibration prior to sample analysis?				
Were all percent relative standard deviations (%RSD) ≤ 20% and relative response factors (RRF) within method criteria?				
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of \geq 0.990?				
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?				
Were all percent differences (%D) ≤ 30% or percent recoveries (%R) 70-130%?				
IV. Continuing calibration		(4)		
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?				
Were all percent differences (%D) \leq 20% and relative response factors (RRF) within method criteria?				
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?				
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?				
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.				
VI. Field blanks.				
Were field blanks were identified in this SDG?				
Were target compounds detected in the field blanks?				
VII. Surrogate spikes		Sec. at 1	- 10 m	
Were all surrogate percent recovery (%R) within QC limits?			\triangle	
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis?				
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?				



VALIDATION FINDINGS CHECKLIST

Page: of 2
Reviewer: 0
2nd Reviewer: 0

Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates	<u>-</u> 1			
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		*		
Was a MS/MSD analyzed every 20 samples of each matrix?	/			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?				
IX Laboratory control samples				
Was an LCS analyzed for this SDG?				;
Was an LCS analyzed per analytical batch?				
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?				
X. Field duplicates				And the second s
Were field duplicate pairs identified in this SDG?				
Were target compounds detected in the field duplicates?				
XI Internal standards				
Were internal standard area counts within -50% to +100% of the associated calibration standard?		/		
Were retention times within ± 30 seconds of the associated calibration standard?				
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?				
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?				
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?				
Did compound spectra meet specified EPA "Functional Guidelines" criteria?				
Were chromatogram peaks verified and accounted for?		KE STATE		
XIV System performance		1 Te 16		Andrew Control of the
System performance was found to be acceptable.				
XV. Overall assessment of data	/			
Overall assessment of data was found to be acceptable.				

VALIDATION FINDINGS WORKSHEET

METHOD: Pyrethroids

VIETHOD. Fyrethiolds		
A. Allethrin		
B. Bifenthrin		
C. Cyfluthrin	 	
D. Cyhalothrin, Total Lambda	 	
E. Cypermethrin		
F. Danitol (Fenpropathrin)		
G. Deltamethrin/Tralomethrin		
H. Esfenvalerate		
I. Fluvalinate		
J. Permethrin, cis-		
K. Permethrin, trans-		
L. Prallethrin		
M. Fenvalerate		
	`	



VALIDATION FINDINGS WORKSHEET Initial Calibration Verification

Page:_	
Reviewer:	PG
2nd Reviewer:	M

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

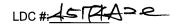
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was an initial calibration verification standard analyzed after each ICAL for each instrument?

(N N/A) Were all %D within the validation criteria of ≤30 %D?

	1 N/A V	T T	dation criteria of ≤30 %D ?			
#	Date_	Standard ID	Compound	Finding %D (Limit: <u>≤</u> 30.0%)	Associated Samples	Qualifications
	1/21/19	1eV	- D	1 × 8	AII CNB	JM/ \$ (2V)
	/ / /		e	26-26		771
			7	31		
			,			

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			<u> </u>		· ·	
iL	1	<u> </u>	1	<u> </u>	1	<u> </u>



Y (N N)/A

VALIDATION FINDINGS WORKSHEET <u>Continuing Calibration</u>

Page:_	of
Reviewer:	, 9
2nd Reviewer.	200

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?

Were percent differences (%D) ≤20 % and relative response factors (RRF) within the method criteria?

#	Date	Standard ID	Compound	Finding %D (Limit: <u><</u> 20.0%)	Finding RRF (Limit)	Associated Samples	Qualifications
	1/22/9	ac/	٨	31		1. 3-8 (duts+ND)	NW/A (KeH)
	/ / • •		2	26 25			707
			B	25			
			D	33			
			4	22			
ļ			K	2/	→ ^M ·····		
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<u></u>							
<u> </u>	1	<u> </u>			<u> </u>		



VALIDATION FINDINGS WORKSHEET <u>Matrix Spike/Matrix Spike Duplicates</u>

Page:	<u>/ of /</u>
Reviewer:	
2nd Reviewer:	n/c

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

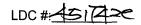
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Was a MS/MSD analyzed every 20 samples of each matrix?

YIN N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	9/10	7	169 (50-150)	165 (50-150)	()	2 (dots NO)	Jots/A(HM)
		4	3T (/)	44 (1)	()	e	NUXA (CM)
		4	38 (/)	38 ()	()		
	\mathcal{A}		()	()	()		
			()	()	()		
	11	F	()	()	26 (3 75)	2 (det3)	- Vots/A (#D)
		\	()	()	()		
	No.		()	()	()		'
			()	()	()		
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-			()	()	 		
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VALIDATION FINDINGS WORKSHEET Internal Standards

Page:_	<u>of</u>
Reviewer:	9
nd Reviewer.	. 17/6

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were all internal standard area counts within -50 to +100 of the associated calibration standard?

Y N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

H	/ '' `		and internal otalida	ids within +/- 30 seconds of the reter	taon arres of the associated callbi	ation standard:
#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications (X#)
		3 (NO)	*	163158(163431-653	(24)	1000 1 (all
<u> </u>					, and the second	W Lots
ļ		T (dot3+ND)	*	1535741		
<u> </u>		5	•	1		
 		8 (ND)	*	139160 (─
			· · · · · · · · · · · · · · · · · · ·			
-						
 						
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ь	<u> </u>	<u></u>		<u> </u>	_ 	<u></u>

(DCB) = 1,4-Dichlorobenzene-d4

(NPT) = Naphthalene-d8 (ANT) = Acenaphthene-d10 (PHN) = Phenanthrene-d10

(CRY) = Chrysene-d12 (PRY) = Perylene-d12 * 2,2',5,5'- Tetrabromobitheny



Validation Findings Worksheet Initial Calibration Calculation Verification

Page: ____ of ____ Reviewer: _____ 2nd Reviewer: _____

Method: GCMS (EPA SW 846 Method 8270D-MRM)

				(Y)	(X)	(X^2)
Date	Channel/Instrument	Compound	Level	Response	Conc.	Conc.
1/21/2019	Pyr	Bifenthrin	111	0.1073254	25.000	625.00
			2	0.2767741	50.000	2500.00
			3	0.6477293	100.000	10000.00
			4	2.1673268	250.000	62500.00
			5	5.7435513	500.000	250000.00
			6	12.558465	1000.000	1000000.00

Regression Outpo	ut		Reported
Constant	c =	0.0000	0
Std Err of Y Est			
R Squared		0.9982465	0.9971
Degrees of Freedom			
	B =	A =	B=
X Coefficient(s)	8.89490E-03	3.7329E-06	0.008895
Std Err of Coef.			<u>A=</u>
			3.73E-06
Correlation Coefficient		0.999123	
Coefficient of Determination (r^2)	r^ 2	0.998247	1

VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

	Page:_	of
	Reviewer:	7
2nd	Reviewer:	376

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF $RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF

RRF = continuing calibration RRF

 A_x = Area of compound,

A_{is} = Area of associated internal standard

 $C_x = Concentration of compound,$ C_{is} = Concentration of internal standard

					Reported	Recalculated	<u> </u>	
					керопеа	Recalculated	Reported	Recalculated
		Calibration	Compound (Reference Internal	Average RRF	RRF	RRF	%D	%D
#	Standard ID	Date	Standard)	(initial)	(CC)	(CC)		
1	æV	1/20/19	Phonol (1st internal standard)	500	625.89	623.87	25	75.2
		(11-54)	Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					·
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)	<u></u>				
3			Phenol (1st internal standard)					·
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
		,	Benzo(a)pyrene (6th internal standard)					

Comments:	Refer to	Continuing	Calibration find	<u>dings workshe</u>	et for list	of qualifica	tions and	associated	samples	when reported	results do no	ot agree within	10.0% of the
recalculated	results.												

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VALIDATION FINDINGS WORKSHEET <u>Matrix Spike/Matrix Spike Duplicates Results Verification</u>

Page:_	of
Reviewer:	4
2nd Reviewer:	W

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA

Where:

SSC = Spiked sample concentration

SC = Sample concentation

RPD = I MSC - MSC I * 2/(MSC + MSDC)

MSC = Matrix spike concentration

SA = Spike added

MSDC = Matrix spike duplicate concentration

MS/MSD samples:

Compound	Spike Added				Spiked Sample Concentration		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
de de de de de de de de de de de de de d	MS	MSD		Ms	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated	
Phenol												
N-Nitroso-di-n-propylamine												
4-Chloro-3-methylphenol												
Acenaphthene												
Pentachlorophenol												
Pyrene												
B	104	(03)	6.47	148	MT	136	136	136	136	0	0	

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported resu	its do not agree within 10.0%
of the recalculated results.	

VALIDATION FINDINGS WORKSHEET Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page:_	of
Reviewer:_	4
2nd Reviewer:	14

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA)

Where: SSC = Spike concentration

SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC)

LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 20904 -BS/

Compound	Sp Ad (W 2	oike ded > (R)	Conce	oike entration 5/9)		CS Recovery	L C.			LCSD PD
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol				ļ						
Pyrene										
B	500	500	467	40	93	93	94	ad		

Comments: Refer to Laboratory Control Sample/Laboratory	Control Sample Duplicates	findings worksheet for list	of qualifications and as	ssociated samples wh	en reported
results do not agree within 10.0% of the recalculated results					
	. +				



only.

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:_	_/_of_/
Reviewer:	9
2nd reviewer:	Ne

METHOD: GC/MS SVOA (EPA SW 846 Method 8270D)

$\int Y$	N	N/A
双	N	N/A

Were all reported results recalculated and verified for all level IV samples?

Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Conce	entratio	on = $\frac{(A_{\bullet})(I_{\circ})(V_{\bullet})(DF)(2.0)}{(A_{i_{\circ}})(RRF)(V_{\circ})(V_{i})(\%S)}$	Example:
A _x	=	Area of the characteristic ion (EICP) for the compound to be measured	Sample I.D:
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard	271, 73 (64768
l ^s	=	Amount of internal standard added in nanograms (ng)	Conc. = +(0.0088/15+) (0.008895)-(4×(3,73-06)(5-2073)
V _o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).	= 31.76959 × 0.2123
V _i	=	Volume of extract injected in microliters (ul)	= 31.67 1 × 0.3127
V_t	=	Volume of the concentrated extract in microliters (ul)	
Df	=	Dilution Factor.	c The wal
%S	=	Percent solids, applicable to soil and solid matrices	= 6.T45 ns/a

2.0	= Factor of 2 to acco	unt for GPC cleanup			
#	Sample ID	Compound	Reported Concentrati (VS/9)	Calculated on Concentration	Qualification
	2	R		8	
			· · · · · · · · · · · · · · · · · · ·		
\\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\					
				·	
	l				
					

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2018 Regional Harbor Monitoring Program

LDC Report Date:

June 11, 2019

Parameters:

Chlorinated Pesticides

Validation Level:

Level IV

Laboratory:

Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-008

	Laboratory Sample		Collection	
Sample Identification	Identification	Matrix	Date	
B18-10022	56582	Sediment	07/18/18	
B18-10076	56583	Sediment	07/18/18	
B18-10077	56584	Sediment	07/18/18	
B18-10113	56586	Sediment	07/18/18	
B18-10024	56587	Sediment	07/19/18	
B18-10114	56589	Sediment	07/19/18	
B18-10115	56590	Sediment	07/19/18	
B18-10116	56591	Sediment	07/19/18	
B18-10076MS	56583MS	Sediment	07/18/18	
B18-10076MSD	56583MSD	Sediment	07/18/18	
B18-10076DUP	56583DUP	Sediment	07/18/18	

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chlorinated Pesticides by Environmental Protection Agency (EPA) SW 846 Method 8270D and 8270D-NCI

All sample results were subjected to Level IV data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at the required frequency.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

For compounds where average calibration factors were utilized, percent relative standard deviations (%RSD) were less than or equal to 20.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r²) were greater than or equal to 0.990 with the following exceptions:

Date	Compound	r²	Associated Samples	Flag	A or P
01/28/19	4,4'-DDD	0.988	B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	J (all detects) UJ (all non-detects)	А

Retention time windows were established as required by the method.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Standard	Compound	%D	Associated Samples	Flag	A or P
01/30/19	ccv	Dicofol Perthane Endrin aldehyde	68 24 24	B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	А

Retention times of all compounds in the calibration standards were within the established retention time windows.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	Endosulfan I Endosulfan II Endrin aldehyde	19 (50-150) 23 (50-150) 11 (50-150)	16 (50-150) 20 (50-150) 8 (50-150)	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A
B18-10076MS/MSD (B18-10076)	Methoxychlor Perthane	157 (50-150) 154 (50-150)	160 (50-150) 152 (50-150)	NA	-

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	Endrin aldehyde	32 (≤25)	NA	-

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
20904-BS1/BS2 (All samples in SDG 1807003-008)	Endosulfan I	3 (70-130)	3 (70-130)	R (all non-detects)	Р
20904-BS1/BS2 (All samples in SDG 1807003-008)	Endosulfan II Endrin aldehyde	21 (70-130) 10 (70-130)	22 (70-130) 29 (70-130)	UJ (all non-detects) UJ (all non-detects)	Р
20904-BS1/BS2 (All samples in SDG 1807003-008)	Methoxychlor Perthane	142 (70-130) 131 (70-130)	144 (70-130) 135 (70-130)	NA	-

Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits.

X. Field Duplicates

Samples B18-10116 and B18-20116 were identified as field duplicates. No results were detected in any of the samples.

XI. Compound Quantitation

All compound quantitations met validation criteria.

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-008	Compound reported below the RL and above the MDL	J (all detects)	А

XII. Target Compound Identification

All target compound identifications met validation criteria.

XIII. System Performance

The system performance was acceptable.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to LCS/LCSD %R, data were rejected in eight samples.

Due to initial calibration r², continuing calibration %D, MS/MSD %R, LCS/LCSD %R, and results reported below the RL and above the MDL, data were qualified as estimated in eight samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Data Qualification Summary - SDG 1807003-008

Sample	Compound	Flag	A or P	Reason (Code)
B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	4,4'-DDD	J (all detects) UJ (all non-detects)	А	Initial calibration (r²) (BC)
B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Dicofol	UJ (all non-detects)	А	Continuing calibration (%D) (LC)
B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Perthane Endrin aldehyde	UJ (all non-detects) UJ (all non-detects)	А	Continuing calibration (%D) (CH)
B18-10076	Endosulfan II Endrin aldehyde	UJ (all non-detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R) (LM)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Endosulfan I	R (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Endosulfan II Endrin aldehyde	UJ (all non-detects) UJ (all non-detects)	Р	Laboratory control samples (%R) (LL)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

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VALIDATION COMPLETENESS WORKSHEET

SDG #: 1807003-008

Level IV

Laboratory: Physis Environmental Laboratories, Inc.

METHOD: GC/MS Chlorinated Pesticides (EPA SW 846 Method 8270D/870D NCI)

Reviewer 2nd Reviewer

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	·
II.	GC/MS Instrument performance check	A	
111.	Initial calibration/ICV	W/A	750 < 20/0. Y2 12/5 3/2
IV.	Continuing calibration	w	ec1=20/0
V.	Laboratory Blanks	A	-
VI.	Field blanks	\wedge	
VII.	Surrogate spikes	1	
VIII.	Matrix spike/Matrix spike duplicates	WA	
IX.	Laboratory control samples	WA	LCS/O. CRM
X.	Field duplicates	ND	LC9/0. CRM >=8+B18-2016
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	A	
XIV.	System performance	Ä	
XV.	Overall assessment of data	\square	

Note:

A = Acceptable

SW = See worksheet

N = Not provided/applicable

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank

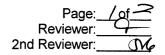
EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10022	56582	Sediment	07/18/18
2	B18-10076	56583	Sediment	07/18/18
3	B18-10077	56584	Sediment	07/18/18
4	B18-10113	56586	Sediment	07/18/18
5	B18-10024	56587	Sediment	07/19/18
6	B18-10114	56589	Sediment	07/19/18
7	B18-10115	56590	Sediment	07/19/18
8	B18-10116	56591	Sediment	07/19/18
9	B18-10076MS	56583MS	Sediment	07/18/18
10	B18-10076MSD	56583MSD	Sediment	07/18/18
11	B18-10076DUP	56583DUP	Sediment	07/18/18
12				
13				



VALIDATION FINDINGS CHECKLIST



Method: Semivolatiles (EPA SW 846 Method 8270D)

Method: Semivolatiles (EPA SW 846 Method 8270D)	I	Ι	Ī	
Validation Area	Yes	No	<u>NA</u>	Findings/Comments
1. Technical holding times			S (SAN)	
Were all technical holding times met?				
Was cooler temperature criteria met? II. GC/MS Instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?				
Were all samples analyzed within the 12 hour clock criteria?	X			
Illa, Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) ≤ 20% and relative response factors (RRF) within method criteria?				
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	0			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	/			
Were all percent differences (%D) ≤ 30% or percent recoveries (%R) 70-130%?				
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?				
Were all percent differences (%D) \leq 20% and relative response factors (RRF) within method criteria?				
V. Laboratory Blanks				The state of the s
Was a laboratory blank associated with every sample in this SDG?	/			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?				
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.				
VI. Field blanks∍				
Were field blanks were identified in this SDG?				
Were target compounds detected in the field blanks?				
VII. Surrogate spikes				10 mm
Were all surrogate percent recovery (%R) within QC limits?				
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis?			/	
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			/	

VALIDATION FINDINGS CHECKLIST

Page: Of 2
Reviewer: Q
2nd Reviewer: W6

Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates		7		
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.				
Was a MS/MSD analyzed every 20 samples of each matrix?				
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?				
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	/			
Was an LCS analyzed per analytical batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?				
X. Field duplicates		en de La des		
Were field duplicate pairs identified in this SDG?				
Were target compounds detected in the field duplicates?				
XI. Internal standards				
Were internal standard area counts within -50% to +100% of the associated calibration standard?				
Were retention times within ± 30 seconds of the associated calibration standard? XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?				
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?				
XIII. Target compound identification		garat di Waliota		
Were relative retention times (RRT's) within \pm 0.06 RRT units of the standard?				
Did compound spectra meet specified EPA "Functional Guidelines" criteria?				
Were chromatogram peaks verified and accounted for?				
XIV. System performance				
System performance was found to be acceptable.				,
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.				

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticides

A. alpha-HCH	K. Endrin	U. Toxaphene	EE. 2,4'-DDT	OO. oxy-Chlordane
B. beta-HCH	L. Endosulfan II	V. Aroclor-1016	FF. Hexachlorobenzene	PP. cis-Nonachlor
C. delta-HCH	M. 4,4'-DDD	W. Aroclor-1221	GG. Chlordane	QQ. trans-Nonachlor
D. gamma-HCH	N. Endosulfan sulfate	X. Aroclor-1232	HH. Chlordane (Technical)	RR. cis-Chlordane
E. Heptachlor	O. 4,4'-DDT	Y. Aroclor-1242	II. p,p'-DDE	SS. trans-Chlordane
F. Aldrin	P. Methoxychlor	Z. Aroclor-1248	JJ. p,p'-DDD	TT. alpha-Endosulphan
G. Heptachlor epoxide	Q. Endrin ketone	AA. Aroclor-1254	KK. p,p'-DDT	UU. beta-Endosulphan
H. Endosulfan I	R. Endrin aldehyde	BB. Aroclor-1260	LL. o,p'-DDT	VV. Endosulphan Sulphate
1. Dieldrin	S. alpha-Chlordane	CC. 2,4'-DDD	MM. o,p'-DDE	WW. Mirex
J. 4,4'-DDE	T. gamma-Chlordane	DD. 2,4'-DDE	NN. o,p'-DDD	



VALIDATION FINDINGS WORKSHEET Initial Calibration

Page:_	
Reviewer:_	9
2nd Reviewer:	574

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Did the laboratory conduct an acceptable 5 point calibration prior to sample analysis?

Were percent relative standard deviations (%RSD) and relative response factors (RRI

Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?

Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation? < 0.990

/A Did the initial calibration meet the acceptance criteria?

N/A Were all %RSDs and RRFs within the validation criteria of ≤20 %RSD and ≥0.05 RRF?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤20.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	1/5/9	ICAZ	И	Y=0.988		3-8(ND) R	1)-1/MV/A (BC)
	/						



VALIDATION FINDINGS WORKSHEET Continuing Calibration

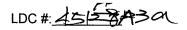
Reviewer 2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A". V N N/A Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?

Were percent differences (%D) ≤20 % and relative response factors (RRF) within the method criteria?

#	Date	Standard ID	Compound	Finding %D	Finding RRF (Limit)	Associated Samples	Qualifications
	130/19	æV	Dicofol Ferthane R	68		3-8.(NO)	1/4/A (2C)
	/		R	24			(Ha)
						 	
			5.0000 50 50 50 50				
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VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

	Page:_	of	1_
	Reviewer:	1	_
2nd	Reviewer:	Ď	1

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

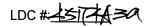
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

	Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?							
#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		+8/19/10	H	19 (50-150)	16 (50-150)	()	2 (NO)	JANA(M)
				≥3()	20(1)	()		
Ц			R	1 ()	8 ()	()		V
			P	157 (/)	160 ()	()		Lets/A(HM)
H		<u>P</u> {	rthane	154(V)	152(1)	()		V/
$\vdash \vdash$	-		R	()	()	32 (≼>≤)		16-15/A(HO)
\vdash				()	()	()		/
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	/ of /
Reviewer:	9
2nd Reviewer:	W

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A". Was a LCS required?

Y/N NVA Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		20904-551	H	3 (70-130)	3 (70-130)	()	AU (NO)	1/R/P (LL)
		-BS>	2	a] (,)	22 ()	()		1/USA
			Z	10 ()	29 ()	()		11/
			P	142 ()	H+ ()	()		blets (HL)
		₽¢	xthane	131 (V)	135 ()	()		
		· · · · · · · · · · · · · · · · · · ·		(′)	()	()		
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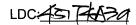
VALIDATION FINDINGS WORKSHEET Initial Calibration Calculation Verification

Method: GC/MS (EPA SW 846 Method 8270D)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
1/28/2019	BHC-gamma	1	0.025	0.0031155
		2	0.050	0.0069180
		3	0.100	0.0150108
		4	0.250	0.0437865
		5	0.500	0.0939866
		6	1.000	0.2007804

Linear through the origin

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	0.19662061	0.197000
Correlation Coefficient	0.999043	0.99900
Coefficient of Determination (r^2)	0.998088	



VALIDATION FINDINGS WORKSHEET Initial Calibration Calculation Verification

Method: GC/MS (EPA SW 846 Method 8270D)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
1/28/2019	4,4-DDE	1	0.025	0.0569137
		2	0.050	0.1194369
		3	0.100	0.2562122
		4	0.250	0.8413428
		5	0.500	1.7659578
		6	1.000	3.6680792

Linear through the origin

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	3.61671642	3.620000
Correlation Coefficient	0.999297	1.00000
Coefficient of Determination (r^2)	0.998595	



VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page:_	of/_
Reviewer:_	9
2nd Reviewer:	SVG

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF

Where: ave. RRF = initial calibration average RRF

 $RRF = (A_x)(C_{is})/(A_{is})(C_x)$

RRF = continuing calibration RRF

 A_x = Area of compound,

A_{is} = Area of associated internal standard

 $\hat{C_x}$ = Concentration of compound,

C_{is} = Concentration of internal standard

					Reported	Recalculated	Reported	Recalculated
#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	RRF (CC)	RRF (CC)	%D	%D
1	20V	1/30/19	Phenol (1st internal standard)	500	474.63	473.71	5	5.3
		/ /	Nephthalene (2nd internal standard)	500	491.0T	190.62	2	1.9
			Fluorene (3rd internal standard)			•		
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)			·		
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					

Comments:	Refer to Continuing	Calibration findings	worksneet for I	ist of qualifications	and associated	samples when	reported results	do not agree within	10.0% of the
recalculated	results.								



VALIDATION FINDINGS WORKSHEET Surrogate Results Verification

Page:_	/of_/_
Reviewer:	Q
2nd reviewer:	W6

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270D)

The percent recoveries	(%R)	of surrogates were	recalculated for the	compounds identified I	helow using the f	ollowing calculation:
The bercent recoveries	17051	DI SUITOUALES METE	riccalculated for the	compounds identified i	Delow using the i	Ulluwilla Calculation.

% Recovery: SF/SS * 100

Where: SF = Surrogate Found SS = Surrogate Spiked

Sample ID:_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene d5 PCR 030	1000	240.64	60	60	
2-Fluorobiphenyl		261.70	65	65	
Terphenyl-g14 / 198	,	324.37	81	8	
Phenol-95 TOUX	\bigvee	201.68	52	50	
2-Fluorophenol					
2,4/6-Tribromophenol					
2-Chlorophenol-d4					
/1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates Results Verification

Page:of_	
Reviewer:	
2nd Reviewer: 1	2

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries	(%R) and Relative P	ercent Difference (RP	D) of the matrix spike	and matrix spike duplicat	te were recalculated fo	r the compounds in	dentified below
using the following calcu	ılation:						

% Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked sample concentration

SC = Sample concentation

RPD = I MSC - MSC I * 2/(MSC + MSDC)

MSC = Matrix spike concentration

SA = Spike added

MSDC = Matrix spike duplicate concentration

MS/MSD samples: 9/10

Compound	Ad	oike ded	Sample Concentration ()(S)(g)	Spiked Concer	ntration	Matrix Percent i		Matrix Spike		MS/M	
	MS	MSD		MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol											
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene											
Pentachlorophenol											
Pyrene											
7	104	103	3.68	100	98.5	93	93	92	92)	1
Τ	V	d	5.32	116	111	106	106	103	103	3	*47

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for	or list of qualifications and associated samples when reported results do not agree within 10.0%
of the recalculated results.	



VALIDATION FINDINGS WORKSHEET Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page:_	
Reviewer:	9
nd Reviewer:	We

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA)

Where: SSC = Spike concentration

SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC)

LCS/LCSD samples: 20904-13

Compound		nike ded	Conce	oike entration		CS Recovery		SD Recovery		I CSD
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol										
Pyrene	,									
0	500	500	580	599	116	116	120	100	3	3
7	V	l L	454	429	85	85	86	86	1	
									,	

Comments: Refer to Laboratory Control Sample/Laboratory	Control Sample Duplicates	<u>s findings worksheet for list o</u>	<u>of qualifications and associat</u>	<u>ed samples when reported</u>
results do not agree within 10.0% of the recalculated results	S.			
	*			

LDC #45174-439

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:_	/_of/
Reviewer:	9
2nd reviewer:	W6

METHOD: GC/MS SVOA (EPA SW 846 Method 8270D)

Percent solids, applicable to soil and solid matrices

P	N	N/A
(Y/	N	N/A

%S

only.

Were all reported results recalculated and verified for all level IV samples?
Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Conce	ntratio	$n = (A_{s})(I_{s})(V_{t})(DF)(2.0)$ $(A_{ls})(RRF)(V_{o})(V_{t})(%S)$	Example:
A _x	=	Area of the characteristic ion (EICP) for the compound to be measured	Sample I.D.
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard	101
l _s	=	Amount of internal standard added in nanograms (ng)	Conc. = (34960) (1800) (0-2/2) (1)
V _o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).	6(36585 (3.63)
V_{l}	=	Volume of extract injected in microliters (ul)	= 3,50 NS/a
V_{t}	=	Volume of the concentrated extract in microliters (ul)	/)
Df	=	Dilution Factor.	

2.0	= Factor of 2 to accou	unt for GPC cleanup			
#	Sample ID	Compound	Reported Concentration (NS/9)	Calculated Concentration ()	Qualification
	>	5	3.58		
			· · · · · · · · · · · · · · · · · · ·		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2018 Regional Harbor Monitoring Program

LDC Report Date: June 11, 2019

Parameters: Polychlorinated Biphenyls as Congeners

Validation Level: Level IV

Laboratory: Physis Environmental Laboratories, Inc.

Sample Delivery Group (SDG): 1807003-008

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
B18-10022	56582	Sediment	07/18/18
B18-10076	56583	Sediment	07/18/18
B18-10077	56584	Sediment	07/18/18
B18-10113	56586	Sediment	07/18/18
B18-10024	56587	Sediment	07/19/18
B18-10114	56589	Sediment	07/19/18
B18-10115	56590	Sediment	07/19/18
B18-10116	56591	Sediment	07/19/18
B18-10076MS	56583MS	Sediment	07/18/18
B18-10076MSD	56583MSD	Sediment	07/18/18
B18-10076DUP	56583DUP	Sediment	07/18/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Final Quality Assurance Project Plan, Regional Harbor Monitoring Program, San Diego, California (August 2013) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) as Congeners by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level IV data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Qualification Code Reference

- BC The initial calibration (ICAL) curve did not meet method-specified criteria.
- CH High continuing calibration verification (CCV) recovery. Analytical results may be biased high.
- DL The analyte concentration was between the method detection limit (MDL) and the reporting limit (RL).
- FB The analyte was detected in the sample and its associated field blank and the concentration detected in the sample is less than five times the concentration detected in the blanks.
- H Holding time.
- HD Potential analytical imprecision.
- HL High LCS recovery. Analytical results may be biased high.
- HM High MS recovery. Analytical results may be biased high.
- HP High certified reference material (CRM) recovery. Analytical results may be biased high.
- HV High initial calibration verification (ICV) recovery. Analytical results may be biased high.
- LC Low CCV recovery. Analytical result may be biased low.
- LL Low LCS recovery. Analytical result may be biased low.
- LM Low MS recovery. Analytical result may be biased low.
- LP Low CRM recovery. Analytical result may be biased low.
- LS Low Surrogate recovery. Analytical results may be biased low.
- LV Low ICV recovery. Analytical result may be biased low.
- NC Calibration verification standard concentrations were outside the calibration range.
- NQ There is lack of QC for this analyte.
- RB The analyte was detected in the sample and its associated equipment blank and the concentration detected in the sample is less than five times the concentration detected in the blank.
- TD The dissolved metals concentration is significantly higher than the total metal concentration.
- *# Unusual problems found with the data. The number following the asterisk (*) will indicate the section in the validation report where a description of the problem can be found.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at the required frequency.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r²) was greater than or equal to 0.990 with the following exceptions:

Date	Compound	r²	Associated Samples	Flag	A or P
01/28/19	PCB-128	0.988	All samples in SDG 1807003-008	J (all detects) UJ (all non-detects)	А
	PCB-206	0.988	1007000 000	J (all detects) UJ (all non-detects)	

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076MS/MSD (B18-10076)	PCB-049	28 (≤25)	J (all detects)	A

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
B18-10076DUP (B18-10076)	PCB-031	26 (≤25)	J (all detects)	A

IX. Laboratory Control Samples/Certified Reference Materials

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

Certified reference materials (CRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

CRM ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
20905-CRM1 (SRM 1944)	PCB-105 PCB-118 PCB-128 PCB-156	40 (60-140) 53 (60-140) 40 (60-140) 40 (60-140)	All samples in SDG 18077003-008	J (all detects) UJ (all non-detects)	А

X. Field Duplicates

Samples B18-10116 and B18-20116 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concentra		
Compound	B18-10116	B18-20116	RPD
PCB-101	0.126	0.127	1
PCB-153	0.135	0.204	41
PCB-138	0.2U	0.224	Not calculable
PCB-149	0.2U	0.0987	Not calculable
PCB-206	0.25U	0.329	Not calculable
PCB-209	0.025U	1.05	Not calculable

XI. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the reporting limit (RL) and above the minimum detection limit (MDL) were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 1807003-008	Compound reported below the RL and above the MDL	J (all detects)	А

XII. Target Compound Identifications

All target compound identifications were within validation criteria.

XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to initial calibration r², MS/MSD RPD, DUP RPD, CRM %R, and results reported below the RL and above the MDL, data were qualified as estimated in eight samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

2018 Regional Harbor Monitoring Program Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG 1807003-008

Sample	Compound	Flag	A or P	Reason (Code)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	PCB-128 PCB-206	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	А	Initial calibration (r²) (BC)
B18-10076	PCB-049	J (all detects)	А	Matrix spike/Matrix spike duplicate (RPD) (HD)
B18-10076	PCB-031	J (all detects)	А	Duplicate sample analysis (RPD) (HD)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	PCB-105 PCB-118 PCB-128 PCB-156	J (all detects) UJ (all non-detects)	Α	Certified reference material (%R) (LP)
B18-10022 B18-10076 B18-10077 B18-10113 B18-10024 B18-10114 B18-10115 B18-10116	Compound reported below the RL and above the MDL	J (all detects)	A	Compound quantitation (DL)

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification
Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

2018 Regional Harbor Monitoring Program
Polychlorinated Biphenyls as Congeners - Field Blank Data Qualification
Summary - SDG 1807003-008

No Sample Data Qualified in this SDG

LDC #: 45174A3b

VALIDATION COMPLETENESS WORKSHEET

Level IV

SDG #: 1807003-008

Laboratory: Physis Environmental Laboratories, Inc.

Date: Lole Page: Lot Reviewer: 2nd Reviewer: M

METHOD: GC/MS PCB as Congeners (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	4	
III.	Initial calibration/ICV	WA	Y= 1@V=300
iV.	Continuing calibration	A	V = 30/0 $ C = 30/0$
V.	Laboratory Blanks	A	7
VI.	Field blanks	\wedge	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	WW	
IX.	Laboratory control samples	wisi	100 D. CRW D=8+B18-20116
X.	Field duplicates	Ans .	D=8+B18-2016
XI.	Internal standards	\triangleleft	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	\Rightarrow	
XIV.	System performance	\$	
XV.	Overall assessment of data	D	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank

OTHER:

	Client ID	Lab ID	Matrix	Date
1	B18-10022	56582	Sediment	07/18/18
2	B18-10076	56583	Sediment	07/18/18
3	B18-10077	56584	Sediment	07/18/18
4	B18-10113	56586	Sediment	07/18/18
5	B18-10024	56587	Sediment	07/19/18
6	B18-10114	56589	Sediment	07/19/18
7	B18-10115	56590	Sediment	07/19/18
8	B18-10116	56591	Sediment	07/19/18
9	B18-10076MS	56583MS	Sediment	07/18/18
10	B18-10076MSD	56583MSD	Sediment	07/18/18
11	B18-10076DUP	56583DUP	Sediment	07/18/18
12				
13				



VALIDATION FINDINGS CHECKLIST

Method: Semivolatiles (EPA SW 846 Method 8270D)

Method: Semivolatiles (EPA SW 846 Method 8270D)	l	<u> </u>	Ī	
Validation Area	Yes	No	NA	Findings/Comments
1. Technical holding times		ed ed	(4.) 	
Were all technical holding times met?				
Was cooler temperature criteria met?	<u> </u>	11000	1 - 12 - 12	
II. GC/MS Instrument performance check	<u> </u>	ille (y.)	is (1) I	
Were the DFTPP performance results reviewed and found to be within the specified criteria?				
V vere all samples analyzed within the 32 hour clock criteria?	4			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?				
Were all percent relative standard deviations (%RSD) ≤ 20% and relative response factors (RRF) within method criteria?				
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	0	/		
IIIb. Initial Calibration Verification	dead.			
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?				
Were all percent differences (%D) ≤ 30% or percent recoveries (%R) 70-130%?				
IV. Continuing calibration				The state of the s
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?				
Were all percent differences (%D) \leq 20% and relative response factors (RRF) within method criteria?				
V. Laboratory Blanks			100	
Was a laboratory blank associated with every sample in this SDG?				
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?				
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.				
VI. Field blanks				
Were field blanks were identified in this SDG?				
Were target compounds detected in the field blanks?			/	
VII. Surrogate spikes				
Were all surrogate percent recovery (%R) within QC limits?				
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis?				
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?				



VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: 9
2nd Reviewer: 16

Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.				
Was a MS/MSD analyzed every 20 samples of each matrix?				
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?				
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?				
Was an LCS analyzed per analytical batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?				
X. Field duplicates		and or		
Were field duplicate pairs identified in this SDG?		-		
Were target compounds detected in the field duplicates?				
XI. Internal standards				
Were internal standard area counts within -50% to +100% of the associated calibration standard?		•		
Were retention times within <u>+</u> 30 seconds of the associated calibration standard? XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?				
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?				
XIII. Target compound identification	1,			n resilient
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?				
Did compound spectra meet specified EPA "Functional Guidelines" criteria?				
Were chromatogram peaks verified and accounted for?				
XIV. System performance				
System performance was found to be acceptable.				
XV, Overall assessment of data				
Overall assessment of data was found to be acceptable.				

LDC #: 45174A3b

VALIDATION FINDINGS WORKSHEET Initial Calibration

Page:_	of
Reviewer:	`~
and Reviewer.	1

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Did the laboratory conduct an acceptable 5 point calibration prior to sample analysis?

Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?

Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation? ≤0.990

N N/A Did the initial calibration meet the acceptance criteria?

N/A Were all %RSDs and RRFs within the validation criteria of ≤20 %RSD and ≥0.05 RRF?

	17//	vveie all 70110DS allu 111	tes within the validation				
#	Date	Standard ID	Compound	Finding %RSD (Limit: <u><</u> 20.0%)	Finding RRF (Limit: <u>></u> 0.05)	Associated Samples	Qualifications
	1/28/19	ICAZ	\$CB 28	Y==0.988 0.988		All (dots+NA)	VM/A (BC)
			V 206	0.988			
<u></u>							
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			<u> </u>				
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VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:	<u></u>
Reviewer:	9
nd Reviewer	Ne

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

MN N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated

MS/MSD. Soil / Water.

V/N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	9/10	FCB049	()	() 28 (525)	2 (dots)	Slots/A(HD)
			()	()_ ()		
			()	() ()		
		708031	()	() 26(5)5	= (dets)	Llots/A(HD)
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VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: _	
Reviewer:	9
2nd Reviewer:	No

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Y(N)N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		20905-CRIUI	+CB105	40 (60-HO	()	()	All (dets+NO)	VUVALLE)
		(SM 1944)	118	53(1)	()	()		7 /
			128	40 ()	()	()		
			156	40 (V)	()	()		
				()	()	()		
				()	()	()		
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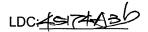
LDC #: 45174A3b

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page:_	<u>1</u> of <u>1</u>
Reviewer:_	9-
2nd reviewer:_	Ne

METHOD: GC/MS PCB (EPA SW 846 Method 8270D)

	Concentra		
Compound	8	B18-20116	RPD
PCB101	0.126	0.127	1
PCB153	0.135	0.204	41
PCB138	0.2U	0.224	NC
PCB149	0.2U	0.0987	NC
PCB206	0.25U	0.329	NC
PCB209	.025U	1.05	NC



VALIDATION FINDINGS WORKSHEET Initial Calibration Calculation Verification

Method: GC/MS (EPA SW 846 Method 8270D)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
1/28/2019	PCB 118	1	0.010	0.0055245
		2	0.025	0.0159508
		3	0.050	0.0393212
		4	0.075	0.0644777
		5	0.100	0.0971032
		6	0.200	0.2013904

Linear through the origin

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	0.97271542	0.973
Correlation Coefficient	0.997378	0.99800
Coefficient of Determination (r^2)	0.994762	



VALIDATION FINDINGS WORKSHEET Initial Calibration Calculation Verification

Page: of Reviewer: 2nd Reviewer:

Method: GC/MS (EPA SW 846 Method 8270D)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
1/28/2019	PCB180	1	0.010	0.0144717
		2	0.025	0.0389875
		3	0.050	0.0698737
		4	0.075	0.1220533
1		5	0.100	0.1599527
		6	0.200	0.3820543

Linear through the origin

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	1.80413283	1.800000
Correlation Coefficient	0.996085	0.99200
Coefficient of Determination (r^2)	0.992186	

VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page:_	/of/
Reviewer:	0
2nd Reviewer:	W

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF $RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF

RRF = continuing calibration RRF

 A_x = Area of compound,

A_{is} = Area of associated internal standard

 $C_{x} = Concentration of compound,$

Cis = Concentration of internal standard

					Reported	Recalculated	Reported	Recalculated
#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	RRF (CC)	RRF (CC)	%D	%D
1	acV		Phenol (1st internal standard)	100	a6.12	96.09	4	4
			Naphthalene (2nd internal standard)	100	29.97	89.97	10	10
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)			<i>,</i>		
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					

Comments:	Refer to Continuing	Calibration findir	ngs worksheet for	list of qualificat	ions and associate	ed samples when rep	<u>ported results do no</u>	ot agree within	<u>10.0% of the</u>
recalculated	results.								
									

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates Results Verification

	Page:_	of
	Reviewer:_	9-
2nd	Reviewer:	M

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated	for the compounds identified below
using the following calculation:	·

% Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked sample concentration SA = Spike added

SC = Sample concentation

RPD = I MSC - MSC I * 2/(MSC + MSDC)

MSC = Matrix spike concentration

MSDC = Matrix spike duplicate concentration

MS/MSD samples: ____

		ike ded	Sample Concentration	Spiked Sample Matrix Spike Concentration		Matrix Spike Duplicate		MS/MSD			
Compound	(115		(N5/a)	(NS)	(9)	Percent F	Recovery	Percent F	Recovery	RPD	
	MS	MSD		MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol								-			
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene					***						
Pentachlorophenol											
Pyrene											
XB IIX	104	10.3	9.49	18.3	20	85	85	102	102	18	18
1/180		1/	5.6T	15.4	15.2	94	a	93	a3	1	1. 1
V		¥				' /	,		,	1	

omments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.	<u>)%</u>
the recalculated results.	

VALIDATION FINDINGS WORKSHEET Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page:_	
Reviewer:_	4
2nd Reviewer:	W

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA)

Where: SSC = Spike concentration

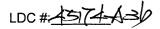
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC)

LCS/LCSD samples: 30904 - BS

Spike Spike LCS LCSD LCS/LCSD Added Concentration (NS/9) (U5/9) Compound **Percent Recovery** Percent Recovery **RPD** LCS LCSD LCS LCSD Reported Recalc Reported Recalc Reported Recalculated Phenol N-Nitroso-di-n-propylamine 4-Chloro-3-methylphenol Acenaphthene Pentachlorophenol Pyrene 52.7 105 104 105 50 562 59.0 18 80 12

Comments: Refer to Laboratory Control Sample/Laboratory	Control Sample Duplicates find	ings worksheet for list of qualific	ations and associated	samples when reported
results do not agree within 10.0% of the recalculated results				
	-			



VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:_	of
Reviewer:	Q.
2nd reviewer:	14

METHOD: GC/MS SVOA (EPA SW 846 Method 8270D)

Y	N	N/A
\mathbb{Y}	N	N/A

V,

Were all reported results recalculated and verified for all level IV samples?

Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Conce	ntratio	$n = (A_{s})(I_{s})(V_{s})(DF)(2.0)$ $(A_{ls})(RRF)(V_{o})(V_{l})(%S)$	Example:
A _x	=	Area of the characteristic ion (EICP) for the compound to be measured	Sample I.I
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard	
l _s	=	Amount of internal standard added in nanograms (ng)	Conc. = <u>((</u>
V_{o}	=	Volume or weight of sample extract in milliliters (ml) or grams (g).	≪0
V_{i}	=	Volume of extract injected in microliters (ul)	= 9

Volume of the concentrated extract in microliters (ul)

Df Dilution Factor.

%S Percent solids, applicable to soil and solid matrices only.

2.0 Factor of 2 to account for GPC cleanup

Sample I.D		
Conc. = (118-45 1000) (0.2123))()(

2679 (20 NO.913)(= 9.65 NS/g

#	Sample ID	Compound	Reported Concentration (AS/9)	Calculated Concentration ()	Qualification
	5	+CB 11 8	9.65		
			/		
					
<u> </u>		A CONTRACTOR OF THE CONTRACTOR			