PARTNER

INDUSTRIAL HYGIENE SERVICES

Wall Township Board of Education
1620 18th Avenue
Wall, New Jersey 07719

Date: July 16, 2020
Partner Project No. 20-284933.1

Prepared for:
Wall Township Board of Education
1620 18th Avenue
Wall, NJ 07719

PARTNER
Engineering and Science, Inc.

July 16, 2020

Wall Township Board of Education
1620 18th Avenue
Wall, NJ 07719

Attn: Nicholas Moretta
Facilities Manager

Re: Mercury Investigation Services
Wall Township Board of Education
Wall Township, New Jersey 07719

Dear Mr. Moretta:

Attached is the report of Partner Engineering and Science, Inc.'s (Partner's) Mercury Investigation Services performed at Wall High School, Allenwood Elementary School, and West Belmar Elementary School.

Please feel free to contact me directly with any questions or comments regarding the scope, sequence, or fees as indicated at (732) 380-1700 ext. 1361.

Very truly yours,

Dan Bracey, GSP, CHMM
Project Manager
Industrial Hygiene and Health & Safety Services

TABLE OF CONTENTS

I. INTRODUCTION

At the request of Wall Board of Education (the "Client"), Partner Engineering and Science, Inc. (Partner) conducted a mercury investigation to assess airborne mercury levels in four different building areas following an inspection of the rubber-like polyurethane floors in the High School south gym on June 3, 2020. Based on the results of the June 3, 2020 investigation, the Client requested that Partner conduct additional sampling to determine mercury levels within the concrete slab and soil below the polyurethane floors in the south gym. Dan Bracey of Partner performed the investigation activities on June 30, 2020.

II. BACKGROUND AND REGULATORY INFORMATION

Partner conducted an initial mercury investigation on building on May 18, 2020. The initial investigation included bulk sampling of the rubber-polyurethane floors identified at Wall High School, Allenwood School, and West Belmar School. The results of the bulk sampling are found below. The results of the bulk sampling revealed mercury at all sampling locations collected at Wall High School. No other samples collected from Allenwood School or West Belmar School contained detectable concentrations of mercury at the lavatory's analytical detection limit. Partner's recommendations following the May 18th sampling event included conducting a representative number of full-day, breathing zone air samples be collected in the south gym of Wall High School and surrounding rooms for analysis of airborne mercury levels by an accredited laboratory using National Institute for Occupational Safety and Health (NIOSH) Method 6009.

On May 18, 2020 Partner collected seven (7) bulk samples of the rubber-like polyurethane floors in the High School, Allenwood School, and West Belmar School with the following results.

Facility	Location	Sample ID	Result (mg/kg)
Wall High School	South Gym – West	HS518-1	3.03
Wall High School	South Gym – North	HS518-2	6.63
Wall High School	South Gym – East	HS518-3	0.91
Allenwood School	Gym – Northeast (Office)	AE518-1	ND
Allenwood School	Gym – Southwest	AE518-2	ND
West Belmar School	Gym – Southwest	WB518-1	ND
West Belmar School	Gym – Northwest	WB518-2	ND

NOTES:
mg/kg = milligrams per kilograms
ND = indicates that the analyte was not detected at the reporting limit of 0.058 mg/kg

June 3, 2020 Sampling Event

On June 3, 2020 PARTNER collected air samples within the affected building areas for mercury analysis. Air sampling was conducted in the designated areas, including the High School south gym. The air samples were analyzed using NIOSH method 6009: Mercury. Direct-read measurements for mercury were also collected during the air sampling event utilizing a J505 Mercury Vapor Analyzer

Based upon the results of the air sampling, Partner determined that mercury vapor was not detected above the laboratories minimum detection limit (MDL) in any of the samples.

Facility	Location	Sample ID	Result (ug/m^3) 0.8 ug/m^3 *	OSHA PEL (ug/m^3)	Sampling Time (Minutes)
High School	Locker Room Hallway	WHS65-1	<0.70	100	427
High School	South gym - Northwest	WHS65-2	<0.72	100	417
High School	South gym - Southeast	WHS65-3	<0.71	100	422
High School	Supply Closet	WHS65-4	<0.73	100	413
High School	South Gym - Southwest	WHS65-5	<0.71	100	420

NOTES:
*New Jersey Department of Health (DOH) recommended level.

Partner collected real-time measurements for mercury vapor using a J505 Mercury Vapor Analyzer. The measurements yielded the following information:

Measurement Location	Time	Mercury (ug/m^3) 0.8 ug/m^3 *
South Gym - East	0908	0.03
South Gym West	0909	0.00
Supply Closet	0911	0.05
Locker Room Hallway	0915	0.00
Adjacent Hallway – South	0917	0.00
Cafeteria	0918	0.00
South Gym - East	1241	0.06
South Gym West	1243	0.01
Supply Closet	1244	0.05
Locker Room Hallway	1246	0.00
Adjacent Hallway – South	1248	0.00
Cafeteria	1250	0.00
South Gym - East	1519	0.03
South Gym West	1520	0.04
Supply Closet	1521	0.02
Locker Room Hallway	1523	0.00
Adjacent Hallway – South	1524	0.00
Cafeteria	1526	0.00

NOTES:
*New Jersey Department of Health (DOH) recommended level.

June 5, 2020 Sampling Event

Following the air sampling event, the Client requested Partner collect additional bulk samples of the polyurethane floors in the south gym. Partner returned to the High School on June 5, 2020 and collected three (3) additional bulk samples of the floor for analysis.

On June 5, 2020 Partner collected three (3) bulk samples of the rubber-like polyurethane floors in the High School with the following results.

Facility	Location	Sample ID	Result (mg/kg)
Wall High School	South Gym – Southeast	WHS65-1	43.6
Wall High School	South Gym – Southwest	WHS65-2	78.4
Wall High School	South Gym – Northeast	WHS65-3	3.61

NOTES:

mg/kg = milligrams per kilograms

Regulatory Information

Federal

The United States Occupational Safety and health Administration (OSHA) has established federal regulations for employee exposures to air contaminants that are published in Title 29, Code of Federal Regulations (CFR), Part 1910.1000. These standards set permissible exposure limits (PELs), most often as 8-hour time-weighted averages (TWAs), for a variety of chemical contaminants. OSHA has also adopted action levels for some regulated chemical and physical hazards. If the action levels are exceeded, the employer must institute specific programs to control exposures and to protect workers.

For a limited number of chemicals, OSHA has promulgated standards, called short-term exposure limits (STELs) that allow employee exposures above the TWA PEL for a defined period of time, usually 15 minutes. OSHA has also promulgated standards for some substances, called ceiling limits. The maximum peak exposures that OSHA has established for these chemicals, designated by a "C" preceding the concentration, must not be exceeded at any time during the work shift.

It is the goal of the sampling plan to collect an 8-hour sample. In this sampling event an 8-hour sample was not possible. As such, Partner assumed uniform exposure as a worst-case scenario for the un-sampled time period when calculating the 8-hour TWA. Samples were collected for over 7-hours.

When attempting to establish compliance with a promulgated standard such as a PEL, the air samples are traditionally collected on workers to represent personal air samples. In this case, as there is no practical way to collect personal air samples without a significant disruption to the schools operation, Partner opted to collect area air samples within the normal breathing range (approximately five feet above the floor).

The OSHA PEL for mercury is a ceiling limit of 0.1 milligrams per cubic meter of air (mg/m^3), which is currently enforced as an 8-hour time-weighted average. Other organizations suggest lower exposure levels. The National Institute for Occupational Safety and Health (NIOSH) recommends that exposures to mercury metal be limited to an average of 0.05 mg/m^3 over a 10-hour workday, in addition to a ceiling limit of 0.1 mg/m^3. The American Conference of Governmental Industrial Hygienists (ACGIH) recommends that metallic

mercury exposures be limited to an average of 0.025 mg/m^3 over an 8-hour workday. Whereas the OSHA standard is enforceable, the NIOSH and ACGIH values are recommendations.

New Jersey

As per the NJDOH guidance document titled "Evaluation and Management of Mercury-Containing Floors in New Jersey Schools: Guidance for School Districts and their Environmental Consultants", exposure limits such as those by OSHA should not apply to school exposures as they apply to workers and more protective limits are necessary because children are being exposed. The guidance suggests using a guidance maximum contaminant level of 0.8 µg/m3 for long term repeated 8-hour exposures for up to 180-days. Any detectable concentration of mercury vapor in the gym below this level would also require additional quarterly air sampling to determine if seasonal changes affect the mercury vapor concentration in the gym.

The guidance document "Evaluation and Management of Mercury-Containing Floors in New Jersey Schools: Guidance for School Districts and their Environmental Consultants can be found in the Appendix D of this report.

III. SAMPLING RESULTS

On June 30, 2020 Partner collected five (5) bulk samples of the concrete slab from the gymnasium at Wall High School. The bulk samples were then split into two (2) samples per core (i.e., top 2 inches and bottom 2 inches) to determine mercury concentrations throughout the depth of the slab. Additionally, Partner collected four (4) soil samples from below the concrete slab. Soil encountered during the sampling event consisted of coarse tan and brown sand with pebbles and minor silt.

Bulk samples of the concrete slab were collected to determine the absence or presence of mercury and soil samples were analyzed utilizing EPA method 7471B. Results of the concrete and soil sampling are provided below.

6/30/20 Soil Sampling			
Facility	Location	Sample ID	Result (ppm) 23ppm*
High School Gym	SE corner	WHS630-1	0.092
High School Gym	SW corner	WHS630-4	0.804
High School Gym	NE corner	WHS630-9	0.415
High School Gym	Center	WHS630-12	0.151
6/30/20 Concrete Core Sampling			
Facility	Location	Sample ID	Result (ppm)
High School Gym	**SE corner**	**WHS630-2 (0-2")**	**25.5**
High School Gym	SE corner	WHS630-3 (2.0-4.0")	7.89

High School Gym	SW corner	WHS630-5 (0-2")	12
High School Gym	SW corner	WHS630-6 (2.0-4.0")	5.08
High School Gym	NW corner	WHS630-7 (0-2")	4.17
High School Gym	NW corner	WHS630-8 (2.0-4.0")	3.37
High School Gym	NE corner	WHS630-10 (0-2")	18.5
High School Gym	NE corner	WHS630-11 (2.0-4.0")	0.254
High School Gym	Center	WHS630-13 (0-2")	11.8
High School Gym	Center	WHS630-14 (2.0-4.0")	16.3

NOTES:
** = NJDEP Residential Direct Contact Soil Remediation Standard (RDCSRS)*
***BOLD** = Exceeds applicable NJDEP RDCSRS*
ppm = parts per million

IV. CONCLUSIONS AND RECOMMENDATIONS

The results from the soil sampling in the High School Gym revealed levels of mercury below the most stringent New Jersey Department of Environmental Protection (NJDEP) Soil Remediation Standard (SRS), with the highest concentration of mercury detected at 0.804 parts per million (ppm). Based upon the sampling results, no additional investigation of the soils below the south gym is required at this time.

The concrete core sample results showed de minimis levels of mercury throughout the profile of the concrete slab with generally a higher quantity on the upper level and a lower quantity on the lower level of the profile. There are no current regulations that apply directly to the content of mercury in concrete; however, the sample collected from the upper 2 inches of the concrete slab located in the southeast corner of the gym revealed a mercury concentration that exceeds the NJDEP Residential Direct Contact Soil Remediation Standard (RDCSRS) for mercury of 23 parts per million (ppm).

Based upon the concrete sampling results, it is recommended that, in the event the Client desires to remove the polyurethane floor, at a minimum the upper 2 inches of the concrete slab be removed prior to a new floor being installed to prevent any mercury vapors from vaporizing into the gym.

If the client would like to take further action, Partner recommends installing a spray on vapor barrier that can be applied directly to the existing concrete slab surface in the gym after removing the upper portion of the concrete slab. If a vapor barrier is installed on top of the concrete slab, then actions should be taken to ensure the warranty for the new flooring system is not voided. This may involve pouring concrete on top of the vapor barrier to ensure the new flooring will bind to the concrete, per the specifications of the manufacturer of the new floor.

APPENDIX A

ALPHA ANALYTICAL

World Class Chemistry

www.alphalab.com

Lab Number: L2027760

Client: Partner Engineering & Science, I

ATTN: Dan Bracey

Project Name: WALL HIGH SCHOOL

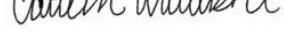
Project Number: 20-284933.1

ANALYTICAL DATA PACKAGE FOR THE
NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON NEW JERSEY 08625

Agency/Division:	**Bureau/Office:**
Project No: 20-284933.1	**Contract No:**
Laboratory: Alpha Analytical	**Laboratory Location:** Westborough, Ma.
	Laboratory Phone Number: (508) 898-9220
SDG No: L2027760	**NJDEP Certification #:** MA015/MA935
Date of First Sample Receipt: 07/01/2020	**Date of Last Sample Receipt:** 07/01/2020

Agency Sample Number	Laboratory Sample Number	Sample Location	Date/Time of Collection
WHS630-1	L2027760-01	WALL HIGH SCHOOL	06/30/2020 09:15
WHS630-2	L2027760-02	WALL HIGH SCHOOL	06/30/2020 09:20
WHS630-3	L2027760-03	WALL HIGH SCHOOL	06/30/2020 09:25
WHS630-4	L2027760-04	WALL HIGH SCHOOL	06/30/2020 10:00
WHS630-5	L2027760-05	WALL HIGH SCHOOL	06/30/2020 10:05
WHS630-6	L2027760-06	WALL HIGH SCHOOL	06/30/2020 10:10
WHS630-7	L2027760-07	WALL HIGH SCHOOL	06/30/2020 10:35
WHS630-8	L2027760-08	WALL HIGH SCHOOL	06/30/2020 10:40
WHS630-9	L2027760-09	WALL HIGH SCHOOL	06/30/2020 11:10
WHS630-10	L2027760-10	WALL HIGH SCHOOL	06/30/2020 11:15
WHS630-11	L2027760-11	WALL HIGH SCHOOL	06/30/2020 11:20
WHS630-12	L2027760-12	WALL HIGH SCHOOL	06/30/2020 11:45
WHS630-13	L2027760-13	WALL HIGH SCHOOL	06/30/2020 11:50
WHS630-14	L2027760-14	WALL HIGH SCHOOL	06/30/2020 11:55

I certify that this data package is in compliance with the terms and conditions of this contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on disk or electronically has been authorized by the laboratory director or his/her designee, as verified by the following signature.

Technical Director/Representative (Typed)	Caitlin Walukevich	07/09/20
Technical Director/Representative (Signature)		

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Chain of Custody

NEW JERSEY CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193

Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 2

Date Rec'd in Lab: 7/1/20

ALPHA Job #: L2027760

Client Information

Client: Partner Engineering + Science
Address: 611 Industrial Way W
Eatontown, NJ 07724
Phone: (908) 497-8904
Fax:
Email: dbracey@partnerpsi.com

Project Information

Project Name: Wall High School
Project Location: Wall, NJ
Project # 20-284933.1
(Use Project name as Project #) ☐
Project Manager: Dan Bracey
ALPHAQuote #:

Turn-Around Time

Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☒ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement

☐ SRS Residential/Non Residential
☐ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Billing Information

☒ Same as Client Info
PO #

Site Information

Is this site impacted by Petroleum? Yes ☐
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Mercury	Total Bottle
27760-01	WHS630 - 1	6/30/20	0915	S	DRB	X	
02	WHS630 - 2		0920	Concrete			
03	WHS630 - 3		0925	1			
04	WHS630 - 4		1000	S			
05	WHS630 - 5		1005	Concrete			
06	WHS630 - 6		1010				
07	WHS630 - 7		1035				
08	WHS630 - 8		1040	1			
09	WHS630 - 9		1110	S			
10	WHS630 - 10		1115	Concrete	1	2	

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	A
Preservative	A

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	7/1/20 0800	[signature]	7/1/20 09:25
[signature]	7/1/20 1635	[signature]	7/1/20 1640
[signature]	7/1/20 2115	[signature]	7/1/20 2115

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

NEW JERSEY CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 2 of 2

Date Rec'd in Lab: 7/1/20

ALPHA Job #: L2027760

Client Information
Client:
Address:
Phone:
Fax:
Email:

Project Information
Project Name: Wall High School
Project Location:
Project # 20-284933.7
(Use Project name as Project #) ☐
Project Manager:
ALPHAQuote #:

Turn-Around Time
Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ SRS Residential/Non Residential
☐ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Billing Information
☐ Same as Client Info
PO #

Site Information
Is this site impacted by Petroleum? Yes ☐
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
Please specify Metals or TAL.

ANALYSIS
Metals

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Total Bottle

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Metals	Sample Specific Comments
27760-11	WHS630-11	6/30/20	1120	concrete	DDO	X	
12	WHS630-12	"	1145	S	"	"	
13	WHS630-13	"	1150	concrete	"	"	
14	WHS630-14	"	1155	"	"	"	

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	A	
Preservative	A	

Relinquished By:	Date/Time	Received By:	Date/Time
	7/1/20 0900		7/1/20 09:25
	7/1/20 1635		7/1/20 1635
	7/1/20 2115		7/1/20 2115

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

ALPHA ANALYTICAL LABORATORIES, INC.
LOGIN CHAIN OF CUSTODY REPORT
Jul 09 2020, 01:33 pm

Login Number: L2027760
Account: PARTNER Partner Engineering & Science, Inc.Project: 20-284933.1
Received: 01JUL20 Due Date: 09JUL20

Sample #	Client ID	Mat	PR	Collected
L2027760-01	WHS630-1	3	S0	30JUN20 09:15
| NJ-RED Package Due Date: 07/09/20				
HG-T,NJ-RED,NJDEP,PREPT,TS				
L2027760-02	WHS630-2	4	S0	30JUN20 09:20
| Package Due Date: 07/09/20				
HG-T,PREPT,TS				
L2027760-03	WHS630-3	4	S0	30JUN20 09:25
| Package Due Date: 07/09/20				
HG-T,PREPT,TS				
L2027760-04	WHS630-4	3	S0	30JUN20 10:00
| Package Due Date: 07/09/20				
HG-T,PREPT,TS				
L2027760-05	WHS630-5	4	S0	30JUN20 10:05
| Package Due Date: 07/09/20				
HG-T,PREPT,TS				
L2027760-06	WHS630-6	4	S0	30JUN20 10:10
| Package Due Date: 07/09/20				
HG-T,PREPT,TS				
L2027760-07	WHS630-7	4	S0	30JUN20 10:35
| Package Due Date: 07/09/20				

ALPHA ANALYTICAL LABORATORIES, INC.
LOGIN CHAIN OF CUSTODY REPORT
Jul 09 2020, 01:33 pm

Login Number: L2027760

Account: PARTNER Partner Engineering & Science, Inc. Project: 20-284933.1

Received: 01JUL20 Due Date: 09JUL20

Sample #	Client ID	Mat	PR	Collected
HG-T,PREPT,TS				
L2027760-08	WHS630-8	4	S0	30JUN20 10:40
| Package Due Date: 07/09/20				
HG-T,PREPT,TS				
L2027760-09	WHS630-9	3	S0	30JUN20 11:10
| Package Due Date: 07/09/20				
HG-T,PREPT,TS				
L2027760-10	WHS630-10	4	S0	30JUN20 11:15
| Package Due Date: 07/09/20				
HG-T,PREPT,TS				
L2027760-11	WHS630-11	4	S0	30JUN20 11:20
| Package Due Date: 07/09/20				
HG-T,PREPT,TS				
L2027760-12	WHS630-12	3	S0	30JUN20 11:45
| Package Due Date: 07/09/20				
HG-T,PREPT,TS				
L2027760-13	WHS630-13	4	S0	30JUN20 11:50
| Package Due Date: 07/09/20				
HG-T,PREPT,TS				

ALPHA ANALYTICAL LABORATORIES, INC.
LOGIN CHAIN OF CUSTODY REPORT
Jul 09 2020, 01:33 pm

Login Number: L2027760
Account: PARTNER Partner Engineering & Science, Inc.Project: 20-284933.1
Received: 01JUL20 Due Date: 09JUL20

Sample #	Client ID	Mat	PR	Collected
L2027760-14	WHS630-14		4 S0	30JUN20 11:55

| Package Due Date: 07/09/20

HG-T,PREPT,TS

Logged By: Isaac Mensah

ALPHA ANALYTICAL LABORATORIES
Container Tracking Report

Container ID	Type	Status	Transaction Date	From Response	From Location	From Operator	To Response	To Location	To Operator
L2027760-01A	Glass-AM.06	INTACT	07-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY-MET4-S4	Rexford Bempong	A2-CUSTODY-MET1-S5	A2-CUSTODY-MET1-S5	Rexford Bempong
L2027760-01A	Glass-AM.06	INTACT	02-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY	Sam Oldrid	A2-CUSTODY-MET4-S4	A2-CUSTODY-MET4-S4	Sam Oldrid
L2027760-01A	Glass-AM.06	INTACT	02-JUL-20	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	A2-CUSTODY	A2-CUSTODY	Theodore Huddleson
L2027760-01A	Glass-AM.06	INTACT	02-JUL-20	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIEL	
L2027760-01A	Glass-AM.06	INTACT	01-JUL-20		CUSTODY	Alana Riggs	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs
L2027760-01A	Glass-AM.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-01B	Plastic-A-TS	INTACT	02-JUL-20		LOGIN	Romany Ibrahim	RETURN WALK-IN CUSTODY	RETURN WALK-IN CUSTODY	Romany Ibrahim
L2027760-01B	Plastic-A-TS	INTACT	01-JUL-20		CUSTODY	Alana Riggs	LOGIN	LOGIN	Alana Riggs
L2027760-01B	Plastic-A-TS	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-02A	SGlass-A.06	INTACT	07-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY-MET4-S4	Rexford Bempong	A2-CUSTODY-MET1-S5	A2-CUSTODY-MET1-S5	Rexford Bempong
L2027760-02A	SGlass-A.06	INTACT	02-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY	Sam Oldrid	A2-CUSTODY-MET4-S4	A2-CUSTODY-MET4-S4	Sam Oldrid
L2027760-02A	SGlass-A.06	INTACT	02-JUL-20	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	A2-CUSTODY	A2-CUSTODY	Theodore Huddleson
L2027760-02A	SGlass-A.06	INTACT	02-JUL-20	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIEL	
L2027760-02A	SGlass-A.06	INTACT	01-JUL-20		CUSTODY	Alana Riggs	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs
L2027760-02A	SGlass-A.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-02B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	RETURN WALK-IN CUSTODY	Brittney Kelley	W12-S3-D CUSTODY	W12-S3-D CUSTODY	Brittney Kelley
L2027760-02B	Glass-A.120	INTACT	02-JUL-20		LOGIN	Romany Ibrahim	RETURN WALK-IN CUSTODY	RETURN WALK-IN CUSTODY	Romany Ibrahim
L2027760-02B	Glass-A.120	INTACT	02-JUL-20		W12-S3-C CUSTODY	Romany Ibrahim	LOGIN	LOGIN	Romany Ibrahim
L2027760-02B	Glass-A.120	INTACT	01-JUL-20	CUSTODY	CUSTODY	Tristan Riggs	W12-S3-C CUSTODY	W12-S3-C CUSTODY	Tristan Riggs
L2027760-02B	Glass-A.120	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-03A	SGlass-A.06	INTACT	07-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY-MET4-S4	Rexford Bempong	A2-CUSTODY-MET1-S5	A2-CUSTODY-MET1-S5	Rexford Bempong
L2027760-03A	SGlass-A.06	INTACT	02-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY	Sam Oldrid	A2-CUSTODY-MET4-S4	A2-CUSTODY-MET4-S4	Sam Oldrid
L2027760-03A	SGlass-A.06	INTACT	02-JUL-20	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	A2-CUSTODY	A2-CUSTODY	Theodore Huddleson
L2027760-03A	SGlass-A.06	INTACT	02-JUL-20	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIEL	
L2027760-03A	SGlass-A.06	INTACT	01-JUL-20		CUSTODY	Alana Riggs	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs

Container ID	Type	Status	Transaction Date	From Response	From Location	From Operator	To Response	To Location	To Operator
L2027760-03A	SGlass-A.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-03B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	RETURN WALK-IN	CUSTODY Brittney Kelley	W12-S3-D CUSTODY	W12-S3-D CUSTODY	Brittney Kelley
L2027760-03B	Glass-A.120	INTACT	02-JUL-20		LOGIN	Romany Ibrahim	RETURN WALK-IN CUSTODY	RETURN WALK-IN CUSTODY	Romany Ibrahim
L2027760-03B	Glass-A.120	INTACT	02-JUL-20		W12-S3-C CUSTODY	Romany Ibrahim	LOGIN	LOGIN	Romany Ibrahim
L2027760-03B	Glass-A.120	INTACT	01-JUL-20	CUSTODY	CUSTODY	Tristan Riggs	W12-S3-C CUSTODY	W12-S3-C CUSTODY	Tristan Riggs
L2027760-03B	Glass-A.120	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-04A	SGlass-A.06	INTACT	07-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY-MET4-S4	Rexford Bempong	A2-CUSTODY-MET1-S5	A2-CUSTODY-MET1-S5	Rexford Bempong
L2027760-04A	SGlass-A.06	INTACT	02-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY	Sam Oldrid	A2-CUSTODY-MET4-S4	A2-CUSTODY-MET4-S4	Sam Oldrid
L2027760-04A	SGlass-A.06	INTACT	02-JUL-20	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	A2-CUSTODY	A2-CUSTODY	Theodore Huddleson
L2027760-04A	SGlass-A.06	INTACT	02-JUL-20	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFI	
L2027760-04A	SGlass-A.06	INTACT	01-JUL-20		CUSTODY	Alana Riggs	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs
L2027760-04A	SGlass-A.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-04B	Glass-A.06	INTACT	02-JUL-20	CUSTODY	RETURN WALK-IN	CUSTODY Brittney Kelley	W12-S3-D CUSTODY	W12-S3-D CUSTODY	Brittney Kelley
L2027760-04B	Glass-A.06	INTACT	02-JUL-20		LOGIN	Romany Ibrahim	RETURN WALK-IN CUSTODY	RETURN WALK-IN CUSTODY	Romany Ibrahim
L2027760-04B	Glass-A.06	INTACT	02-JUL-20		W12-S3-C CUSTODY	Romany Ibrahim	LOGIN	LOGIN	Romany Ibrahim
L2027760-04B	Glass-A.06	INTACT	02-JUL-20	CUSTODY	CUSTODY	Tristan Riggs	W12-S3-C CUSTODY	W12-S3-C CUSTODY	Tristan Riggs
L2027760-04B	Glass-A.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-05A	SGlass-A.06	INTACT	07-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY-MET4-S4	Rexford Bempong	A2-CUSTODY-MET1-S5	A2-CUSTODY-MET1-S5	Rexford Bempong
L2027760-05A	SGlass-A.06	INTACT	02-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY	Sam Oldrid	A2-CUSTODY-MET4-S4	A2-CUSTODY-MET4-S4	Sam Oldrid
L2027760-05A	SGlass-A.06	INTACT	02-JUL-20	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	A2-CUSTODY	A2-CUSTODY	Theodore Huddleson
L2027760-05A	SGlass-A.06	INTACT	02-JUL-20	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFI	
L2027760-05A	SGlass-A.06	INTACT	01-JUL-20		CUSTODY	Alana Riggs	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs
L2027760-05A	SGlass-A.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-05B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	RETURN WALK-IN	CUSTODY Brittney Kelley	W12-S3-D CUSTODY	W12-S3-D CUSTODY	Brittney Kelley
L2027760-05B	Glass-A.120	INTACT	02-JUL-20		LOGIN	Romany Ibrahim	RETURN WALK-IN CUSTODY	RETURN WALK-IN CUSTODY	Romany Ibrahim

Container ID	Type	Status	Transaction Date	From Response	From Location	From Operator	To Response	To Location	To Operator
L2027760-05B	Glass-A.120	INTACT	02-JUL-20		W12-S3-C CUSTODY	Romany Ibrahim	LOGIN	LOGIN	Romany Ibrahim
L2027760-05B	Glass-A.120	INTACT	01-JUL-20	CUSTODY	CUSTODY	Tristan Riggs	W12-S3-C CUSTODY	W12-S3-C CUSTODY	Tristan Riggs
L2027760-05B	Glass-A.120	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-06A	SGlass-A.06	INTACT	07-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY-MET4-S4	Rexford Bempong	A2-CUSTODY-MET1-S5	A2-CUSTODY-MET1-S5	Rexford Bempong
L2027760-06A	SGlass-A.06	INTACT	02-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY	Sam Oldrid	A2-CUSTODY-MET4-S4	A2-CUSTODY-MET4-S4	Sam Oldrid
L2027760-06A	SGlass-A.06	INTACT	02-JUL-20	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	A2-CUSTODY	A2-CUSTODY	Theodore Huddleson
L2027760-06A	SGlass-A.06	INTACT	02-JUL-20	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFI	
L2027760-06A	SGlass-A.06	INTACT	01-JUL-20		CUSTODY	Alana Riggs	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs
L2027760-06A	SGlass-A.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-06B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	RETURN WALK-IN CUSTODY	Brittney Kelley	W12-S3-D CUSTODY	W12-S3-D CUSTODY	Brittney Kelley
L2027760-06B	Glass-A.120	INTACT	02-JUL-20		LOGIN	Romany Ibrahim	RETURN WALK-IN CUSTODY	RETURN WALK-IN CUSTODY	Romany Ibrahim
L2027760-06B	Glass-A.120	INTACT	02-JUL-20		W10-S3-C CUSTODY	Romany Ibrahim	LOGIN	LOGIN	Romany Ibrahim
L2027760-06B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	CUSTODY	Tristan Riggs	W10-S3-C CUSTODY	W10-S3-C CUSTODY	Tristan Riggs
L2027760-06B	Glass-A.120	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-07A	SGlass-A.06	INTACT	07-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY-MET4-S4	Rexford Bempong	A2-CUSTODY-MET1-S5	A2-CUSTODY-MET1-S5	Rexford Bempong
L2027760-07A	SGlass-A.06	INTACT	02-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY	Sam Oldrid	A2-CUSTODY-MET4-S4	A2-CUSTODY-MET4-S4	Sam Oldrid
L2027760-07A	SGlass-A.06	INTACT	02-JUL-20	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	A2-CUSTODY	A2-CUSTODY	Theodore Huddleson
L2027760-07A	SGlass-A.06	INTACT	02-JUL-20	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFI	
L2027760-07A	SGlass-A.06	INTACT	01-JUL-20		CUSTODY	Alana Riggs	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs
L2027760-07A	SGlass-A.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-07B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	RETURN WALK-IN CUSTODY	Brittney Kelley	W12-S3-D CUSTODY	W12-S3-D CUSTODY	Brittney Kelley
L2027760-07B	Glass-A.120	INTACT	02-JUL-20		LOGIN	Romany Ibrahim	RETURN WALK-IN CUSTODY	RETURN WALK-IN CUSTODY	Romany Ibrahim
L2027760-07B	Glass-A.120	INTACT	02-JUL-20		W10-S3-B CUSTODY	Romany Ibrahim	LOGIN	LOGIN	Romany Ibrahim
L2027760-07B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	CUSTODY	Tristan Riggs	W10-S3-B CUSTODY	W10-S3-B CUSTODY	Tristan Riggs
L2027760-07B	Glass-A.120	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah

Container ID	Type	Status	Transaction Date	From Response	From Location	From Operator	To Response	To Location	To Operator
L2027760-08A	SGlass-A.06	INTACT	07-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY-MET4-S4	Rexford Bempong	A2-CUSTODY-MET1-S5	A2-CUSTODY-MET1-S5	Rexford Bempong
L2027760-08A	SGlass-A.06	INTACT	02-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY	Sam Oldrid	A2-CUSTODY-MET4-S4	A2-CUSTODY-MET4-S4	Sam Oldrid
L2027760-08A	SGlass-A.06	INTACT	02-JUL-20	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	A2-CUSTODY	A2-CUSTODY	Theodore Huddleson
L2027760-08A	SGlass-A.06	INTACT	02-JUL-20	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFI	
L2027760-08A	SGlass-A.06	INTACT	01-JUL-20		CUSTODY	Alana Riggs	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs
L2027760-08A	SGlass-A.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-08B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	RETURN WALK-IN CUSTODY	Brittney Kelley	W12-S3-D CUSTODY	W12-S3-D CUSTODY	Brittney Kelley
L2027760-08B	Glass-A.120	INTACT	02-JUL-20		LOGIN	Romany Ibrahim	RETURN WALK-IN CUSTODY	RETURN WALK-IN CUSTODY	Romany Ibrahim
L2027760-08B	Glass-A.120	INTACT	02-JUL-20		W9-S3-D CUSTODY	Romany Ibrahim	LOGIN	LOGIN	Romany Ibrahim
L2027760-08B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	CUSTODY	Tristan Riggs	W9-S3-D CUSTODY	W9-S3-D CUSTODY	Tristan Riggs
L2027760-08B	Glass-A.120	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-09A	SGlass-A.06	INTACT	07-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY-MET4-S4	Rexford Bempong	A2-CUSTODY-MET1-S5	A2-CUSTODY-MET1-S5	Rexford Bempong
L2027760-09A	SGlass-A.06	INTACT	02-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY	Sam Oldrid	A2-CUSTODY-MET4-S4	A2-CUSTODY-MET4-S4	Sam Oldrid
L2027760-09A	SGlass-A.06	INTACT	02-JUL-20	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	A2-CUSTODY	A2-CUSTODY	Theodore Huddleson
L2027760-09A	SGlass-A.06	INTACT	02-JUL-20	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFI	
L2027760-09A	SGlass-A.06	INTACT	01-JUL-20		CUSTODY	Alana Riggs	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs
L2027760-09A	SGlass-A.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-09B	Glass-A.06	INTACT	02-JUL-20	CUSTODY	RETURN WALK-IN CUSTODY	Brittney Kelley	W12-S3-D CUSTODY	W12-S3-D CUSTODY	Brittney Kelley
L2027760-09B	Glass-A.06	INTACT	02-JUL-20		LOGIN	Romany Ibrahim	RETURN WALK-IN CUSTODY	RETURN WALK-IN CUSTODY	Romany Ibrahim
L2027760-09B	Glass-A.06	INTACT	02-JUL-20		W12-S3-C CUSTODY	Romany Ibrahim	LOGIN	LOGIN	Romany Ibrahim
L2027760-09B	Glass-A.06	INTACT	01-JUL-20	CUSTODY	CUSTODY	Tristan Riggs	W12-S3-C CUSTODY	W12-S3-C CUSTODY	Tristan Riggs
L2027760-09B	Glass-A.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-10A	SGlass-A.06	INTACT	07-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY-MET4-S4	Rexford Bempong	A2-CUSTODY-MET1-S5	A2-CUSTODY-MET1-S5	Rexford Bempong
L2027760-10A	SGlass-A.06	INTACT	02-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY	Sam Oldrid	A2-CUSTODY-MET4-S4	A2-CUSTODY-MET4-S4	Sam Oldrid
L2027760-10A	SGlass-A.06	INTACT	02-JUL-20	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	A2-CUSTODY	A2-CUSTODY	Theodore Huddleson

Container ID	Type	Status	Transaction Date	From Response	Location	To Operator	Response	Location	Operator
L2027760-10A	SGlass-A.06	INTACT	02-JUL-20	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs
L2027760-10A	SGlass-A.06	INTACT	01-JUL-20		CUSTODY	Alana Riggs	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs
L2027760-10A	SGlass-A.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-10B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	RETURN WALK-IN CUSTODY	Brittney Kelley	W12-S3-D CUSTODY	W12-S3-D CUSTODY	Brittney Kelley
L2027760-10B	Glass-A.120	INTACT	02-JUL-20		LOGIN	Romany Ibrahim	RETURN WALK-IN CUSTODY	RETURN WALK-IN CUSTODY	Romany Ibrahim
L2027760-10B	Glass-A.120	INTACT	02-JUL-20		W10-S3-C CUSTODY	Romany Ibrahim	LOGIN	LOGIN	Romany Ibrahim
L2027760-10B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	CUSTODY	Tristan Riggs	W10-S3-C CUSTODY	W10-S3-C CUSTODY	Tristan Riggs
L2027760-10B	Glass-A.120	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-11A	SGlass-A.06	INTACT	07-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY-MET4-S4	Rexford Bempong	A2-CUSTODY-MET1-S5	A2-CUSTODY-MET1-S5	Rexford Bempong
L2027760-11A	SGlass-A.06	INTACT	02-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY	Sam Oldrid	A2-CUSTODY-MET4-S4	A2-CUSTODY-MET4-S4	Sam Oldrid
L2027760-11A	SGlass-A.06	INTACT	02-JUL-20	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	A2-CUSTODY	A2-CUSTODY	Theodore Huddleson
L2027760-11A	SGlass-A.06	INTACT	02-JUL-20	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs
L2027760-11A	SGlass-A.06	INTACT	01-JUL-20		CUSTODY	Alana Riggs	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs
L2027760-11A	SGlass-A.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-11B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	RETURN WALK-IN CUSTODY	Brittney Kelley	W12-S3-D CUSTODY	W12-S3-D CUSTODY	Brittney Kelley
L2027760-11B	Glass-A.120	INTACT	02-JUL-20		LOGIN	Romany Ibrahim	RETURN WALK-IN CUSTODY	RETURN WALK-IN CUSTODY	Romany Ibrahim
L2027760-11B	Glass-A.120	INTACT	02-JUL-20		W12-S3-C CUSTODY	Romany Ibrahim	LOGIN	LOGIN	Romany Ibrahim
L2027760-11B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	CUSTODY	Tristan Riggs	W12-S3-C CUSTODY	W12-S3-C CUSTODY	Tristan Riggs
L2027760-11B	Glass-A.120	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-12A	SGlass-A.06	INTACT	07-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY-MET4-S4	Rexford Bempong	A2-CUSTODY-MET1-S5	A2-CUSTODY-MET1-S5	Rexford Bempong
L2027760-12A	SGlass-A.06	INTACT	02-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY	Sam Oldrid	A2-CUSTODY-MET4-S4	A2-CUSTODY-MET4-S4	Sam Oldrid
L2027760-12A	SGlass-A.06	INTACT	02-JUL-20	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	A2-CUSTODY	A2-CUSTODY	Theodore Huddleson
L2027760-12A	SGlass-A.06	INTACT	02-JUL-20	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs
L2027760-12A	SGlass-A.06	INTACT	01-JUL-20		CUSTODY	Alana Riggs	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs
L2027760-12A	SGlass-A.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah

Container ID	Type	Status	Transaction Date	From Response	From Location	From Operator	To Response	To Location	To Operator
L2027760-12B	Glass-A.06	INTACT	02-JUL-20	CUSTODY	RETURN WALK-IN	CUSTODY Brittney Kelley	W12-S3-D CUSTODY	W12-S3-D CUSTODY	Brittney Kelley
L2027760-12B	Glass-A.06	INTACT	02-JUL-20		LOGIN	Romany Ibrahim	RETURN WALK-IN CUSTODY	RETURN WALK-IN CUSTODY	Romany Ibrahim
L2027760-12B	Glass-A.06	INTACT	02-JUL-20		W12-S3-C CUSTODY	Romany Ibrahim	LOGIN	LOGIN	Romany Ibrahim
L2027760-12B	Glass-A.06	INTACT	02-JUL-20	CUSTODY	CUSTODY	Tristan Riggs	W12-S3-C CUSTODY	W12-S3-C CUSTODY	Tristan Riggs
L2027760-12B	Glass-A.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-13A	SGlass-A.06	INTACT	07-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY-MET4-S4	Rexford Bempong	A2-CUSTODY-MET1-S5	A2-CUSTODY-MET1-S5	Rexford Bempong
L2027760-13A	SGlass-A.06	INTACT	02-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY	Sam Oldrid	A2-CUSTODY-MET4-S4	A2-CUSTODY-MET4-S4	Sam Oldrid
L2027760-13A	SGlass-A.06	INTACT	02-JUL-20	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	A2-CUSTODY	A2-CUSTODY	Theodore Huddleson
L2027760-13A	SGlass-A.06	INTACT	02-JUL-20	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	
L2027760-13A	SGlass-A.06	INTACT	01-JUL-20		CUSTODY	Alana Riggs	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs
L2027760-13A	SGlass-A.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-13B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	RETURN WALK-IN	CUSTODY Brittney Kelley	W12-S3-D CUSTODY	W12-S3-D CUSTODY	Brittney Kelley
L2027760-13B	Glass-A.120	INTACT	02-JUL-20		LOGIN	Romany Ibrahim	RETURN WALK-IN CUSTODY	RETURN WALK-IN CUSTODY	Romany Ibrahim
L2027760-13B	Glass-A.120	INTACT	02-JUL-20		W10-S3-C CUSTODY	Romany Ibrahim	LOGIN	LOGIN	Romany Ibrahim
L2027760-13B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	CUSTODY	Tristan Riggs	W10-S3-C CUSTODY	W10-S3-C CUSTODY	Tristan Riggs
L2027760-13B	Glass-A.120	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-14A	SGlass-A.06	INTACT	07-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY-MET4-S4	Rexford Bempong	A2-CUSTODY-MET1-S5	A2-CUSTODY-MET1-S5	Rexford Bempong
L2027760-14A	SGlass-A.06	INTACT	02-JUL-20	A2-CUSTODY-REFRIDGE	A2-CUSTODY	Sam Oldrid	A2-CUSTODY-MET4-S4	A2-CUSTODY-MET4-S4	Sam Oldrid
L2027760-14A	SGlass-A.06	INTACT	02-JUL-20	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	A2-CUSTODY	A2-CUSTODY	Theodore Huddleson
L2027760-14A	SGlass-A.06	INTACT	02-JUL-20	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs	TRANSIT COURIER	COOLER35-TRANSFER_TO_MANSFIELD	
L2027760-14A	SGlass-A.06	INTACT	01-JUL-20		CUSTODY	Alana Riggs	COOLER35-TRANSFER_TO_MANSFIELD	COOLER35-TRANSFER_TO_MANSFIELD	Alana Riggs
L2027760-14A	SGlass-A.06	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah
L2027760-14B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	RETURN WALK-IN	CUSTODY Brittney Kelley	W12-S3-D CUSTODY	W12-S3-D CUSTODY	Brittney Kelley
L2027760-14B	Glass-A.120	INTACT	02-JUL-20		LOGIN	Romany Ibrahim	RETURN WALK-IN CUSTODY	RETURN WALK-IN CUSTODY	Romany Ibrahim
L2027760-14B	Glass-A.120	INTACT	02-JUL-20		W10-S3-C CUSTODY	Romany Ibrahim	LOGIN	LOGIN	Romany Ibrahim

Container ID	Type	Status	Transaction Date	From Response	Location	To Operator	Response	Location	Operator
L2027760-14B	Glass-A.120	INTACT	02-JUL-20	CUSTODY	CUSTODY	Tristan Riggs	W10-S3-C CUSTODY	W10-S3-C CUSTODY	Tristan Riggs
L2027760-14B	Glass-A.120	INTACT	01-JUL-20	LOGIN	LOGIN	Isaac Mensah	CUSTODY	CUSTODY	Isaac Mensah

Methodology Review

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Laboratory Chronicle

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	*Custody Seal*
A	Absent

Container Information

Container ID	*Container Type*	*Cooler*	*Initial pH*	*Final pH*	*Temp deg C*	*Pres*	*Seal*	*Frozen Date/Time*	*Analysis(*)*
L2027760-01A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		HG-T(28)
L2027760-01B	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2027760-02A	Glass 60ml unpreserved split	A	NA		2.4	Y	Absent		HG-T(28)
L2027760-02B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2027760-03A	Glass 60ml unpreserved split	A	NA		2.4	Y	Absent		HG-T(28)
L2027760-03B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2027760-04A	Glass 60ml unpreserved split	A	NA		2.4	Y	Absent		HG-T(28)
L2027760-04B	Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2027760-05A	Glass 60ml unpreserved split	A	NA		2.4	Y	Absent		HG-T(28)
L2027760-05B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2027760-06A	Glass 60ml unpreserved split	A	NA		2.4	Y	Absent		HG-T(28)
L2027760-06B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2027760-07A	Glass 60ml unpreserved split	A	NA		2.4	Y	Absent		HG-T(28)
L2027760-07B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2027760-08A	Glass 60ml unpreserved split	A	NA		2.4	Y	Absent		HG-T(28)
L2027760-08B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2027760-09A	Glass 60ml unpreserved split	A	NA		2.4	Y	Absent		HG-T(28)
L2027760-09B	Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2027760-10A	Glass 60ml unpreserved split	A	NA		2.4	Y	Absent		HG-T(28)
L2027760-10B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2027760-11A	Glass 60ml unpreserved split	A	NA		2.4	Y	Absent		HG-T(28)
L2027760-11B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2027760-12A	Glass 60ml unpreserved split	A	NA		2.4	Y	Absent		HG-T(28)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2027760-12B	Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2027760-13A	Glass 60ml unpreserved split	A	NA		2.4	Y	Absent		HG-T(28)
L2027760-13B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2027760-14A	Glass 60ml unpreserved split	A	NA		2.4	Y	Absent		HG-T(28)
L2027760-14B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7)

*Values in parentheses indicate holding time in days

NJ DEP
Data of Known Quality Protocols Conformance/Non-Conformance Summary Questionnaire

NJ DEP Data of Known Quality Protocols
Conformance/Non-Conformance
Summary Questionnaire

1	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the NJDEP Data of Known Quality performance standards?	YES
1a	Were the method specified handling, preservation, and holding time requirements met?	YES
1b	EPH Method: Was the EPH Method conducted without significant modifications (see Section 11.3 of respective DKQ methods)?	N/A
2	Were all samples received by the laboratory in a condition consistent with that described on the associated chain-of-custody document(s)?	YES
3	Were all samples received at an appropriate temperature (4 ± 2° C)?	YES
4	Were all QA/QC performance criteria specified in the NJDEP DKQP standards achieved?	NO
5a	Were reporting limits specified or referenced on the chain-of-custody or communicated to the laboratory prior to sample receipt?	YES
5b	Were these reporting limits met?	YES
6	For each analytical method referenced in this laboratory report package, were results reported for all constituents identified in the method-specific analyte lists presented in the DKQP documents and/or site-specific QAPP?	YES
7	Are project-specific matrix spikes and/or laboratory duplicates included in this data set?	YES

Note: For all questions to which the response was "No" (with the exception of question #7), additional information must be provided in an attached narrative. If the answer to question #1, #1a or #1b is "No", the data package does not meet the requirements for "Data of Known Quality".

Conformance/Non-Conformance Summary

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

DKQP Related Narratives

Total Mercury

In reference to question 4:

The WG1389105-3 MS recovery, performed on L2027760-01, is outside the acceptance criteria for mercury (77%). A post digestion spike was performed and was within acceptance criteria.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Caitlin Wallukeit Report Date: 07/09/20

Title: Technical Director/Representative

Glossary

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: DU Report with 'J' Qualifiers

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

Report Format: DU Report with 'J' Qualifiers

Data Qualifiers

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Metals

Inorganic Data
(Mercury Analysis)

Sample Results Summary

Form 1
METALS

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-01	**Date Collected**	: 06/30/20 09:15
Client ID	: WHS630-1	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/07/20 22:47
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 1,7471B	**Analyst**	: EW
Lab File ID	: WG1389692.pdf	**Instrument ID**	: NIC1
Sample Amount	: 0.399g	**%Solids**	: 96
Digestion Method	: EPA 7471B	**Date Digested**	: 07/07/20

		mg/kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
7439-97-6	Mercury, Total	0.092	0.065	0.043	

Form 1
METALS

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-02	**Date Collected**	: 06/30/20 09:20
Client ID	: WHS630-2	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/08/20 08:40
Sample Matrix	: SOLID	**Dilution Factor**	: 10
Analytical Method	: 1,7471B	**Analyst**	: EW
Lab File ID	: WG1389692.pdf	**Instrument ID**	: NIC1
Sample Amount	: 0.398g	**%Solids**	: 97
Digestion Method	: EPA 7471B	**Date Digested**	: 07/07/20

		mg/kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
7439-97-6	Mercury, Total	25.5	0.650	0.424	

Form 1
METALS

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-03	**Date Collected**	: 06/30/20 09:25
Client ID	: WHS630-3	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/08/20 07:56
Sample Matrix	: SOLID	**Dilution Factor**	: 5
Analytical Method	: 1,7471B	**Analyst**	: EW
Lab File ID	: WG1389692.pdf	**Instrument ID**	: NIC1
Sample Amount	: 0.399g	**%Solids**	: 96
Digestion Method	: EPA 7471B	**Date Digested**	: 07/07/20

		mg/kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
7439-97-6	Mercury, Total	7.89	0.325	0.212	

Form 1
METALS

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-04	**Date Collected**	: 06/30/20 10:00
Client ID	: WHS630-4	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/07/20 23:12
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 1,7471B	**Analyst**	: EW
Lab File ID	: WG1389692.pdf	**Instrument ID**	: NIC1
Sample Amount	: 0.394g	**%Solids**	: 98
Digestion Method	: EPA 7471B	**Date Digested**	: 07/07/20

		mg/kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
7439-97-6	Mercury, Total	0.804	0.065	0.042	

Form 1
METALS

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-05	**Date Collected**	: 06/30/20 10:05
Client ID	: WHS630-5	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/08/20 07:59
Sample Matrix	: SOLID	**Dilution Factor**	: 5
Analytical Method	: 1,7471B	**Analyst**	: EW
Lab File ID	: WG1389692.pdf	**Instrument ID**	: NIC1
Sample Amount	: 0.398g	**%Solids**	: 99
Digestion Method	: EPA 7471B	**Date Digested**	: 07/07/20

		mg/kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
7439-97-6	Mercury, Total	12.0	0.317	0.207	

Form 1
METALS

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-06	**Date Collected**	: 06/30/20 10:10
Client ID	: WHS630-6	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/08/20 08:03
Sample Matrix	: SOLID	**Dilution Factor**	: 5
Analytical Method	: 1,7471B	**Analyst**	: EW
Lab File ID	: WG1389692.pdf	**Instrument ID**	: NIC1
Sample Amount	: 0.397g	**%Solids**	: 99
Digestion Method	: EPA 7471B	**Date Digested**	: 07/07/20

		mg/kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
7439-97-6	Mercury, Total	5.08	0.318	0.208	

Form 1
METALS

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-07	**Date Collected**	: 06/30/20 10:35
Client ID	: WHS630-7	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/08/20 08:06
Sample Matrix	: SOLID	**Dilution Factor**	: 5
Analytical Method	: 1,7471B	**Analyst**	: EW
Lab File ID	: WG1389692.pdf	**Instrument ID**	: NIC1
Sample Amount	: 0.397g	**%Solids**	: 99
Digestion Method	: EPA 7471B	**Date Digested**	: 07/07/20

		mg/kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
7439-97-6	Mercury, Total	4.17	0.318	0.208	

Form 1
METALS

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-08	**Date Collected**	: 06/30/20 10:40
Client ID	: WHS630-8	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/08/20 08:09
Sample Matrix	: SOLID	**Dilution Factor**	: 5
Analytical Method	: 1,7471B	**Analyst**	: EW
Lab File ID	: WG1389692.pdf	**Instrument ID**	: NIC1
Sample Amount	: 0.395g	**%Solids**	: 99
Digestion Method	: EPA 7471B	**Date Digested**	: 07/07/20

		mg/kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
7439-97-6	Mercury, Total	3.37	0.320	0.208	

Form 1
METALS

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-09	**Date Collected**	: 06/30/20 11:10
Client ID	: WHS630-9	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/07/20 23:47
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 1,7471B	**Analyst**	: EW
Lab File ID	: WG1389692.pdf	**Instrument ID**	: NIC1
Sample Amount	: 0.398g	**%Solids**	: 99
Digestion Method	: EPA 7471B	**Date Digested**	: 07/07/20

		mg/kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
7439-97-6	Mercury, Total	0.415	0.064	0.041	

Form 1
METALS

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-10	**Date Collected**	: 06/30/20 11:15
Client ID	: WHS630-10	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/08/20 08:43
Sample Matrix	: SOLID	**Dilution Factor**	: 10
Analytical Method	: 1,7471B	**Analyst**	: EW
Lab File ID	: WG1389692.pdf	**Instrument ID**	: NIC1
Sample Amount	: 0.399g	**%Solids**	: 97
Digestion Method	: EPA 7471B	**Date Digested**	: 07/07/20

		mg/kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
7439-97-6	Mercury, Total	18.5	0.649	0.423	

Form 1
METALS

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-11	**Date Collected**	: 06/30/20 11:20
Client ID	: WHS630-11	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/07/20 23:57
Sample Matrix	: SOLID	**Dilution Factor**	: 1
Analytical Method	: 1,7471B	**Analyst**	: EW
Lab File ID	: WG1389692.pdf	**Instrument ID**	: NIC1
Sample Amount	: 0.399g	**%Solids**	: 97
Digestion Method	: EPA 7471B	**Date Digested**	: 07/07/20

		mg/kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
7439-97-6	Mercury, Total	0.254	0.064	0.042	

Form 1
METALS

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-12	**Date Collected**	: 06/30/20 11:45
Client ID	: WHS630-12	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/08/20 00:00
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 1,7471B	**Analyst**	: EW
Lab File ID	: WG1389692.pdf	**Instrument ID**	: NIC1
Sample Amount	: 0.396g	**%Solids**	: 98
Digestion Method	: EPA 7471B	**Date Digested**	: 07/07/20

		mg/kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
7439-97-6	Mercury, Total	0.151	0.065	0.042	

Form 1
METALS

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-13	**Date Collected**	: 06/30/20 11:50
Client ID	: WHS630-13	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/08/20 08:19
Sample Matrix	: SOLID	**Dilution Factor**	: 5
Analytical Method	: 1,7471B	**Analyst**	: EW
Lab File ID	: WG1389692.pdf	**Instrument ID**	: NIC1
Sample Amount	: 0.398g	**%Solids**	: 96
Digestion Method	: EPA 7471B	**Date Digested**	: 07/07/20

		mg/kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
7439-97-6	Mercury, Total	11.8	0.327	0.213	

Form 1
METALS

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-14	**Date Collected**	: 06/30/20 11:55
Client ID	: WHS630-14	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/08/20 08:46
Sample Matrix	: SOLID	**Dilution Factor**	: 10
Analytical Method	: 1,7471B	**Analyst**	: EW
Lab File ID	: WG1389692.pdf	**Instrument ID**	: NIC1
Sample Amount	: 0.399g	**%Solids**	: 96
Digestion Method	: EPA 7471B	**Date Digested**	: 07/07/20

		mg/kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
7439-97-6	Mercury, Total	16.3	0.652	0.425	

Form 1
METALS

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: WG1389105-1	**Date Collected**	: NA
Client ID	: WG1389105-1BLANK	**Date Received**	: NA
Sample Location	:	**Date Analyzed**	: 07/07/20 22:33
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 1,7471B	**Analyst**	: EW
Lab File ID	: WG1389692.pdf	**Instrument ID**	: NIC1
Sample Amount	: 0.3g	**%Solids**	: NA
Digestion Method	: EPA 7471B	**Date Digested**	: 07/07/20

		mg/kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
7439-97-6	Mercury, Total	ND	0.083	0.054	U

Form 1
METALS

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: WG1389105-4	**Date Collected**	: 06/30/20 09:15
Client ID	: WHS630-1DUP	**Date Received**	: 07/01/20
Sample Location	:	**Date Analyzed**	: 07/07/20 22:53
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 1,7471B	**Analyst**	: EW
Lab File ID	: WG1389692.pdf	**Instrument ID**	: NIC1
Sample Amount	: 0.399g	**%Solids**	: 96
Digestion Method	: EPA 7471B	**Date Digested**	: 07/07/20

		mg/kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
7439-97-6	Mercury, Total	0.054	0.065	0.043	J

Blank Results Summary

Form 3
Blanks

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Instrument ID	: NIC1		

		Initial Calibration Blank		Continuing Calibration Blank(s)						Preparation Blank	
Lab ID	:	R1331042-2		R1331042-4		R1331042-6		R1331042-8		WG1389105-1	
Date Analyzed	:	07/07/20 20:21		07/07/20 21:18		07/07/20 21:58		07/07/20 22:40		07/07/20 22:33	
Parameter		mg/l	Q	mg/l	Q	mg/l	Q	mg/l	Q	mg/kg	Q
Mercury		0.000326	U	0.000326	U	0.000326	U	0.000326	U	0.054	U

Form 3
Blanks

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Instrument ID	: NIC1		

	Initial Calibration Blank		Continuing Calibration Blank(s)						Preparation Blank	
Lab ID :			R1331042-10		R1331042-12		R1331042-14			
Date Analyzed :			07/07/20 23:31		07/08/20 00:26		07/08/20 01:05			
Parameter	mg/l	Q	mg/l	Q	mg/l	Q	mg/l	Q		Q
Mercury			0.000326	U	0.000326	U	0.000326	U		

Form 3
Blanks

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Instrument ID	: NIC1		

		Initial Calibration Blank		Continuing Calibration Blank(s)						Preparation Blank	
Lab ID	:			R1331042-16		R1331042-18		R1331042-19			
Date Analyzed	:			07/08/20 01:45		07/08/20 02:24		07/08/20 07:04			
Parameter		mg/l	Q	mg/l	Q	mg/l	Q	mg/l	Q		Q
Mercury				0.000326	U	0.0101	J	0.000326	U		

Form 3
Blanks

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Instrument ID	: NIC1		

	Initial Calibration Blank		Continuing Calibration Blank(s)						Preparation Blank	
Lab ID :			R1331042-21		R1331042-23		R1331042-25			
Date Analyzed :			07/08/20 07:43		07/08/20 08:36		07/08/20 08:53			
Parameter	mg/l	Q	mg/l	Q	mg/l	Q	mg/l	Q		Q
Mercury			0.000326	U	0.000326	U	0.000326	U		

Calibration Summary

Form 2A
Initial and Continuing Calibration Verification

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Instrument ID	: NIC1	**Units**	: mg/l

	Initial Calibration			Continuing Calibration(s)						
Lab ID :	R1331042-1			R1331042-3			R1331042-5		R1331042-7	
Date Analyzed :	07/07/20 20:18			07/07/20 21:15			07/07/20 21:55		07/07/20 22:37	
Parameter	**True**	**Found**	**%R**	**True**	**Found**	**%R**	**Found**	**%R**	**Found**	**%R**
Mercury	0.00300	0.0029	97	0.0100	0.0101	101	0.0101	101	0.0101	101

Acceptance Criteria:

ICV:	95-105%	(Methods 200.7, 245.1)
	90-110%	(Methods 200.8, 6010, 6020, 7470, 7471, 7474)
	85-115%	(Method 1631)
CCV:	90-110%	(Methods 200.7, 245.1, 6010, 6020, 7474)
	85-115%	(Methods 200.8, 1631)
	80-120%	(Methods 7470, 7471)

Form 2A
Initial and Continuing Calibration Verification

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Instrument ID	: NIC1	**Units**	: mg/l

	Initial Calibration			Continuing Calibration(s)						
Lab ID :				R1331042-9			R1331042-11		R1331042-13	
Date Analyzed :				07/07/20 23:28			07/08/20 00:22		07/08/20 01:02	
Parameter	**True**	**Found**	**%R**	**True**	**Found**	**%R**	**Found**	**%R**	**Found**	**%R**
Mercury				0.0100	0.0101	101	0.0101	101	0.00990	99

Acceptance Criteria:

ICV:	**95-105%**	**(Methods 200.7, 245.1)**
	90-110%	**(Methods 200.8, 6010, 6020, 7470, 7471, 7474)**
	85-115%	**(Method 1631)**
CCV:	**90-110%**	**(Methods 200.7, 245.1, 6010, 6020, 7474)**
	85-115%	**(Methods 200.8, 1631)**
	80-120%	**(Methods 7470, 7471)**

Form 2A
Initial and Continuing Calibration Verification

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Instrument ID	: NIC1	**Units**	: mg/l

	Initial Calibration			Continuing Calibration(s)						
Lab ID :				R1331042-15			R1331042-17		R1331042-20	
Date Analyzed :				07/08/20 01:41			07/08/20 02:21		07/08/20 07:40	
Parameter	**True**	**Found**	**%R**	**True**	**Found**	**%R**	**Found**	**%R**	**Found**	**%R**
Mercury				0.0100	0.0101	102	0.0102	102	0.00970	97

Acceptance Criteria:

ICV:	**95-105%**	**(Methods 200.7, 245.1)**
	90-110%	**(Methods 200.8, 6010, 6020, 7470, 7471, 7474)**
	85-115%	**(Method 1631)**
CCV:	**90-110%**	**(Methods 200.7, 245.1, 6010, 6020, 7474)**
	85-115%	**(Methods 200.8, 1631)**
	80-120%	**(Methods 7470, 7471)**

Form 2A
Initial and Continuing Calibration Verification

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Instrument ID	: NIC1	**Units**	: mg/l

	Initial Calibration			Continuing Calibration(s)						
Lab ID :				R1331042-22			R1331042-24			
Date Analyzed :				07/08/20 08:33			07/08/20 08:49			
Parameter	**True**	**Found**	**%R**	**True**	**Found**	**%R**	**Found**	**%R**	**Found**	**%R**
Mercury				0.0100	0.00970	97	0.00970	97		

Acceptance Criteria:

ICV:	**95-105%**	**(Methods 200.7, 245.1)**
	90-110%	**(Methods 200.8, 6010, 6020, 7470, 7471, 7474)**
	85-115%	**(Method 1631)**
CCV:	**90-110%**	**(Methods 200.7, 245.1, 6010, 6020, 7474)**
	85-115%	**(Methods 200.8, 1631)**
	80-120%	**(Methods 7470, 7471)**

Spike Sample Results

Form 5a
Matrix Spike

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Client Sample ID	: WHS630-1	**Matrix**	: SOIL
Lab Sample ID	: L2027760-01		
Matrix Spike	: WG1389105-3	**MS Analysis Date**	: 07/07/20 22:50
Matrix Spike Dup	:	**MSD Analysis Date**	:

		Matrix Spike Sample				Matrix Spike Duplicate					
Parameter	**Sample Conc. (mg/kg)**	**Spike Added (mg/kg)**	**Spike Conc. (mg/kg)**	**%R**		**Spike Added (mg/kg)**	**Spike Conc. (mg/kg)**	**%R**	**RPD**	**Recovery Limits**	**RPD Limit**
Mercury, Total	0.092	0.131	0.193	77	Q					80-120	20

Duplicate Sample Results Summary

Form 6
Lab Duplicates

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Client Sample ID	: WHS630-1	**Matrix**	: SOIL
Lab Sample ID	: L2027760-01	**Analysis Date**	: 07/07/20 22:47
Dup Sample ID	: WG1389105-4	**DUP Analysis Date**	: 07/07/20 22:53

Parameter	Sample Concentration (mg/kg)	Duplicate Concentration (mg/kg)	RPD	RPD Limit
Mercury, Total	0.092	0.054J	NC	20

LCS Sample Results Summary

Form 7
Laboratory Control Sample

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Client Sample ID	: NA	**Matrix**	: SOIL
Lab Sample ID	: WG1389105-2	**LCS Analysis Date**	: 07/07/20 22:43
Dup Sample ID	:	**LCSD Analysis Date**	:

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	**True (mg/kg)**	**Found (mg/kg)**	**%R**	**True (mg/kg)**	**Found (mg/kg)**	**%R**	**RPD**	**Recovery Limits**	**RPD Limit**
Mercury, Total	**20.5**	**21.7**	**106.**					**60-140**	**20**

Run Logs

Form 13
Analysis Run Log

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Instrument ID	: NIC1	**Analysis Method**	: 1,7471B
Start Date	: 07/07/20 20:18	**End Date**	: 07/08/20 08:53

Sample Number	Dilution Factor	Analysis Time	Mercury, Total
R1331042-1 ICV	1	20:18:03	X
R1331042-2 ICB	1	20:21:21	X
R1331042-3 CCV	1	21:15:36	X
R1331042-4 CCB	1	21:18:54	X
R1331042-5 CCV	1	21:55:15	X
R1331042-6 CCB	1	21:58:33	X
WG1389105-1 BLANK	1	22:33:52	X
R1331042-7 CCV	1	22:37:10	X
R1331042-8 CCB	1	22:40:28	X
WG1389105-2 LCS	5	22:43:46	X
L2027760-01	1	22:47:03	X
WG1389105-3 MS	1	22:50:21	X
WG1389105-4 DUP	1	22:53:39	X
L2027760-04	1	23:12:45	X
R1331042-9 CCV	1	23:28:33	X
R1331042-10 CCB	1	23:31:51	X
L2027760-09	1	23:47:37	X
L2027760-11	1	23:57:08	X
L2027760-12	1	00:00:26	X
R1331042-11 CCV	1	00:22:49	X
R1331042-12 CCB	1	00:26:06	X
R1331042-13 CCV	1	01:02:21	X
R1331042-14 CCB	1	01:05:41	X
R1331042-15 CCV	1	01:41:59	X
R1331042-16 CCB	1	01:45:18	X
R1331042-17 CCV	1	02:21:40	X
R1331042-18 CCB	1	02:24:58	X

Form 13
Analysis Run Log

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Instrument ID	: NIC1	**Analysis Method**	: 1,7471B
Start Date	: 07/07/20 20:18	**End Date**	: 07/08/20 08:53

Sample Number	Dilution Factor	Analysis Time	Mercury, Total
R1331042-19 CCB	1	07:04:06	X
R1331042-20 CCV	1	07:40:25	X
R1331042-21 CCB	1	07:43:43	X
L2027760-03	5	07:56:33	X
L2027760-05	5	07:59:51	X
L2027760-06	5	08:03:09	X
L2027760-07	5	08:06:27	X
L2027760-08	5	08:09:45	X
L2027760-13	5	08:19:19	X
R1331042-22 CCV	1	08:33:26	X
R1331042-23 CCB	1	08:36:43	X
L2027760-02	10	08:40:01	X
L2027760-10	10	08:43:19	X
L2027760-14	10	08:46:38	X
R1331042-24 CCV	1	08:49:56	X
R1331042-25 CCB	1	08:53:14	X

Digestion Logs
Mercury

Form 12
Preparation Log

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Matrix	: SOIL	**Prep Method**	: EPA 7471B

Sample Number	Preparation Date	Weight (gram)	Volume (mL)
L2027760-01	07/07/20 10:30	0.40	-
L2027760-02	07/07/20 10:30	0.40	-
L2027760-03	07/07/20 10:30	0.40	-
L2027760-04	07/07/20 10:30	0.39	-
L2027760-05	07/07/20 10:30	0.40	-
L2027760-06	07/07/20 10:30	0.40	-
L2027760-07	07/07/20 10:30	0.40	-
L2027760-08	07/07/20 10:30	0.40	-
L2027760-09	07/07/20 10:30	0.40	-
L2027760-10	07/07/20 10:30	0.40	-
L2027760-11	07/07/20 10:30	0.40	-
L2027760-12	07/07/20 10:30	0.40	-
L2027760-13	07/07/20 10:30	0.40	-
L2027760-14	07/07/20 10:30	0.40	-
WG1389105-1	07/07/20 10:30	0.30	-
WG1389105-2	07/07/20 10:30	0.16	-
WG1389105-3	07/07/20 10:30	0.40	-
WG1389105-4	07/07/20 10:30	0.40	-

Wet Chemistry

Total Solids / Percent Moisture Analysis

Results Summary

Form 1
WETCHEM

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-01	**Date Collected**	: 06/30/20 09:15
Client ID	: WHS630-1	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/02/20 13:26
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1388521.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 96
Digestion Method	:	**Date Digested**	:

			%		
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	**Solids, Total**	**95.9**	**0.100**	**NA**	

Form 1
WETCHEM

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-02	**Date Collected**	: 06/30/20 09:20
Client ID	: WHS630-2	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/02/20 10:21
Sample Matrix	: SOLID	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1388395.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 97
Digestion Method	:	**Date Digested**	:

CAS NO.	Parameter	% Results	% RL	% MDL	Qualifier
NONE	Solids, Total	96.7	0.100	NA	

Form 1
WETCHEM

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-03	**Date Collected**	: 06/30/20 09:25
Client ID	: WHS630-3	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/02/20 10:21
Sample Matrix	: SOLID	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1388395.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 96
Digestion Method	:	**Date Digested**	:

CAS NO.	Parameter	% Results	% RL	% MDL	Qualifier
NONE	Solids, Total	96.3	0.100	NA	

Form 1
WETCHEM

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-04	**Date Collected**	: 06/30/20 10:00
Client ID	: WHS630-4	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/02/20 10:21
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1388395.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 98
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	**Solids, Total**	**98.0**	**0.100**	**NA**	

Form 1
WETCHEM

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-05	**Date Collected**	: 06/30/20 10:05
Client ID	: WHS630-5	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/02/20 10:21
Sample Matrix	: SOLID	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1388395.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 99
Digestion Method	:	**Date Digested**	:

CAS NO.	Parameter	% Results	% RL	% MDL	Qualifier
NONE	Solids, Total	99.1	0.100	NA	

Form 1
WETCHEM

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-06	**Date Collected**	: 06/30/20 10:10
Client ID	: WHS630-6	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/02/20 10:21
Sample Matrix	: SOLID	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1388395.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 99
Digestion Method	:	**Date Digested**	:

CAS NO.	Parameter	% Results	% RL	% MDL	Qualifier
NONE	Solids, Total	98.9	0.100	NA	

Form 1
WETCHEM

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-07	**Date Collected**	: 06/30/20 10:35
Client ID	: WHS630-7	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/02/20 10:21
Sample Matrix	: SOLID	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1388395.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 99
Digestion Method	:	**Date Digested**	:

CAS NO.	Parameter	% Results	% RL	% MDL	Qualifier
NONE	Solids, Total	98.9	0.100	NA	

Form 1
WETCHEM

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-08	**Date Collected**	: 06/30/20 10:40
Client ID	: WHS630-8	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/02/20 10:21
Sample Matrix	: SOLID	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1388395.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 99
Digestion Method	:	**Date Digested**	:

CAS NO.	Parameter	% Results	% RL	% MDL	Qualifier
NONE	Solids, Total	99.0	0.100	NA	

Form 1
WETCHEM

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-09	**Date Collected**	: 06/30/20 11:10
Client ID	: WHS630-9	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/02/20 10:21
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1388395.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 99
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	**Solids, Total**	**98.8**	**0.100**	**NA**	

Form 1
WETCHEM

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-10	**Date Collected**	: 06/30/20 11:15
Client ID	: WHS630-10	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/02/20 10:21
Sample Matrix	: SOLID	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1388395.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 97
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	**Solids, Total**	**96.6**	**0.100**	**NA**	

Form 1
WETCHEM

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-11	**Date Collected**	: 06/30/20 11:20
Client ID	: WHS630-11	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/02/20 10:21
Sample Matrix	: SOLID	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1388395.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 97
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	**Solids, Total**	**97.3**	**0.100**	**NA**	

Form 1
WETCHEM

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-12	**Date Collected**	: 06/30/20 11:45
Client ID	: WHS630-12	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/02/20 10:21
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1388395.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 98
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	**Solids, Total**	**97.6**	**0.100**	**NA**	

Form 1
WETCHEM

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-13	**Date Collected**	: 06/30/20 11:50
Client ID	: WHS630-13	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/02/20 10:21
Sample Matrix	: SOLID	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1388395.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 96
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	**Solids, Total**	**96.0**	**0.100**	**NA**	

Form 1
WETCHEM

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: L2027760-14	**Date Collected**	: 06/30/20 11:55
Client ID	: WHS630-14	**Date Received**	: 07/01/20
Sample Location	: WALL, NJ	**Date Analyzed**	: 07/02/20 10:21
Sample Matrix	: SOLID	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1388395.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 96
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	**Solids, Total**	**96.1**	**0.100**	**NA**	

Form 1
WETCHEM

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Lab ID	: WG1388395-1	**Date Collected**	: 06/30/20 09:20
Client ID	: WHS630-2DUP	**Date Received**	: 07/01/20
Sample Location	:	**Date Analyzed**	: 07/02/20 10:21
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1388395.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 97
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	**Solids, Total**	**96.2**	**0.100**	**NA**	

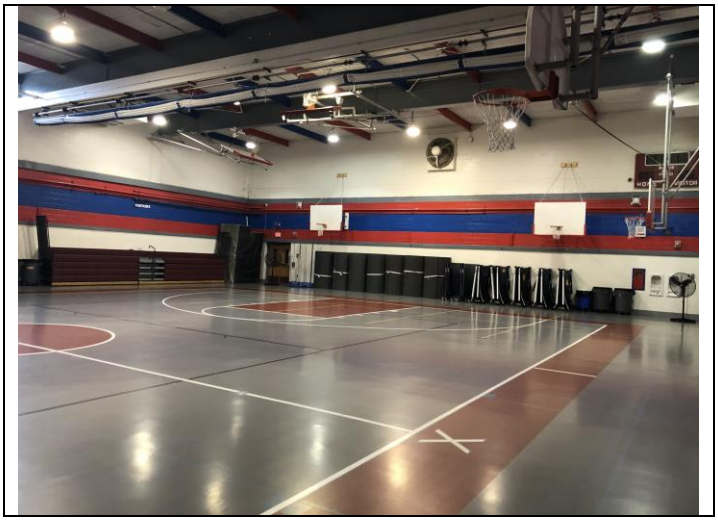
Duplicate Sample Results Summary

Form 6
Lab Duplicates

Client	: Partner Engineering & Science, Inc.	**Lab Number**	: L2027760
Project Name	: WALL HIGH SCHOOL	**Project Number**	: 20-284933.1
Client Sample ID	: WHS630-2	**Matrix**	: SOLID
Lab Sample ID	: L2027760-02	**Analysis Date**	: 07/02/20 10:21
Dup Sample ID	: WG1388395-1	**DUP Analysis Date**	: 07/02/20 10:21

Parameter	Sample Concentration (%)	Duplicate Concentration (%)	RPD	RPD Limit
Solids, Total	96.7	96.2	1	20

APPENDIX B



1. View of Wall High School – South Gym

2. View of WHS630-1 sample area.

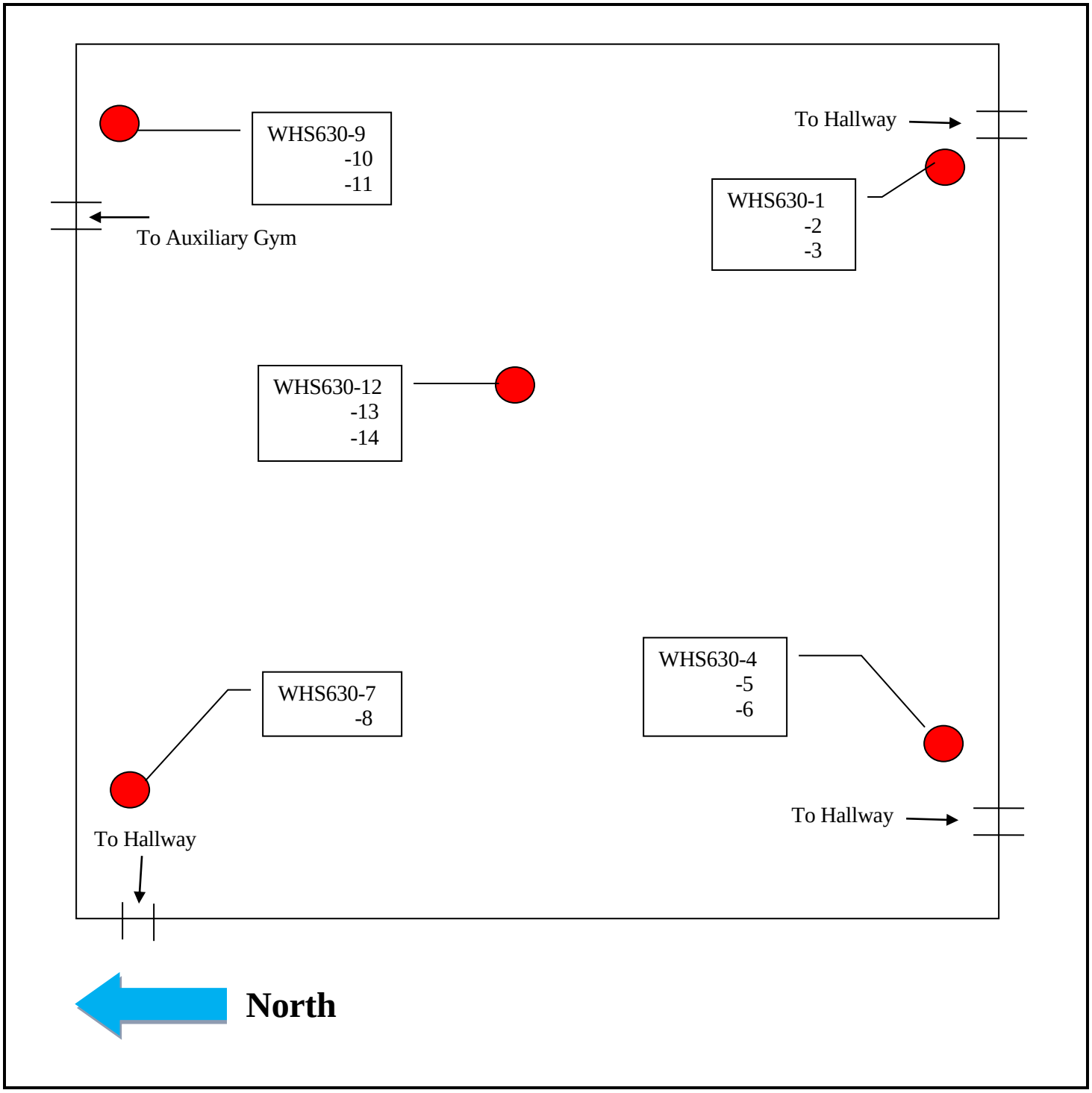
3. View of WHS630-13 sample area

4. View of WHS630-4 sample area

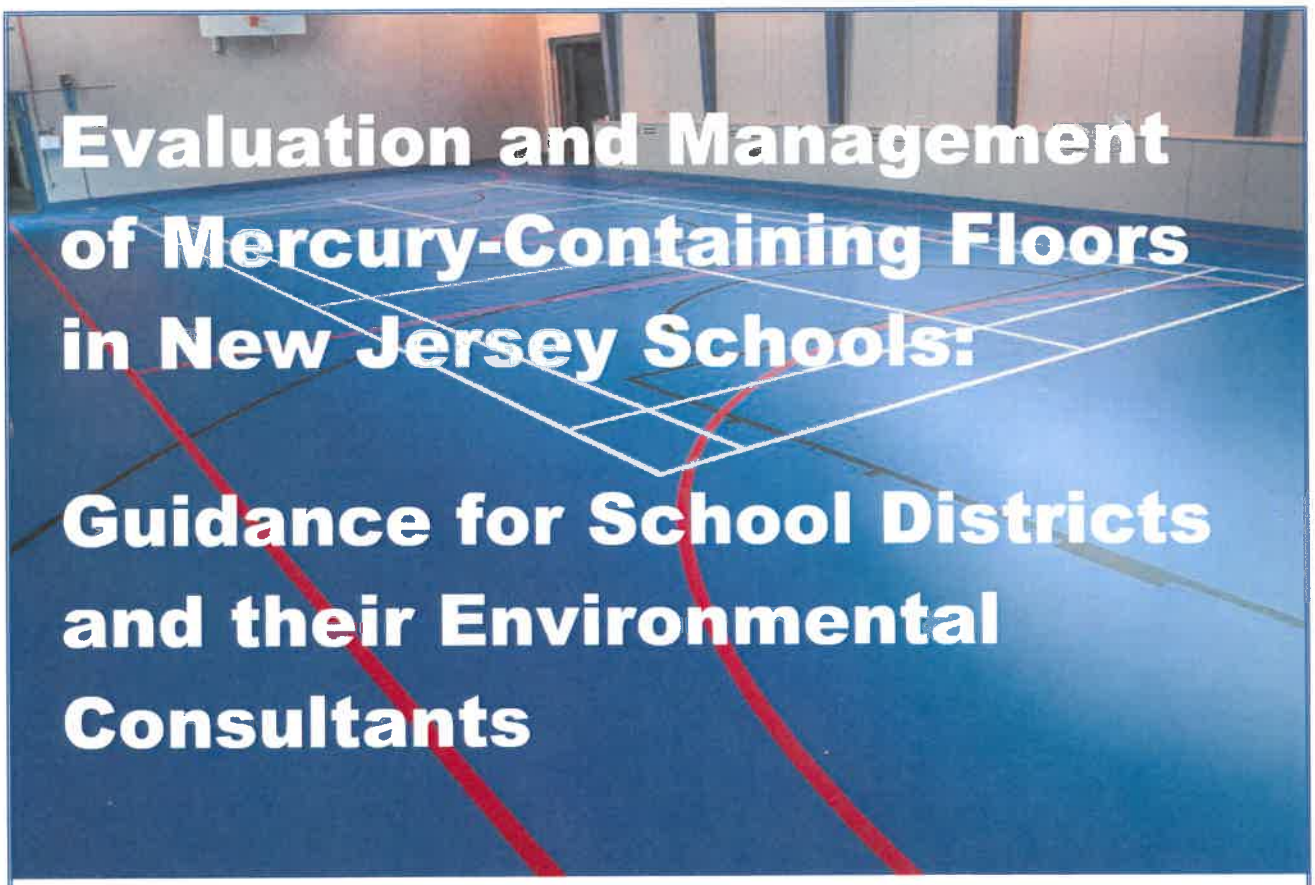
5. View of WHS630-7 sample area

5. View of WHS630-10 sample area.

APPENDIX C


WHS630-9
-10
-11
To Auxiliary Gym
To Hallway
WHS630-1
-2
-3
WHS630-12
-13
-14
WHS630-4
-5
-6
WHS630-7
-8
To Hallway
To Hallway
North

APPENDIX D



Evaluation and Management of Mercury-Containing Floors in New Jersey Schools:

Guidance for School Districts and their Environmental Consultants

February 6, 2020

Health Consultation
prepared by:

New Jersey Department of Health
Environmental and Occupational Health Surveillance Program

Table of Contents

Purpose

This guidance document provides a systematic approach for school districts and their environmental consultants to evaluate whether installed mercury-containing flooring systems emit mercury vapors in excess of New Jersey Department of Health's (NJDOH) recommended maximum contaminant level of 0.8 micrograms per cubic meter ($\mu g/m^3$) of air.

Introduction

In the 1960s, a number of companies began manufacturing and installing a thin layer of synthetic, polyurethane flooring on top of concrete sub-floors, to provide a resilient and rubberlike surface (ATSDR 2010; ATSDR 2006a; ATSDR 2006b). Typically, liquid polyurethane was poured directly over concrete sub-floors, and in some cases over a rubberized shock-absorbing cushion material. Certain formulations of polyurethane incorporated mercury catalysts, such as phenylmercuric acetate (PMA), to produce a solid, seamless rubber-like floor. Depending on the required thickness of the floor, multiple pours of polyurethane were often employed. The concentration of mercury in such polyurethane flooring systems are reported to contain between 0.1 and 0.2 percent total mercury (Bush 2011; ATSDR 2006a; Reiner 2005).

Mercury-containing polyurethane floors were widely installed in school gymnasiums across the United States until being reportedly discontinued amid concerns over their emissions of elemental mercury vapor (NEWMOA 2010). It is to be noted that depending on the type and brand of polyurethane flooring, these floors may have been installed even as late as in 2005 or 2006 (Washington Township, New Jersey 2019; Bush 2011).

The following list of manufacturers are consistently referenced as having produced polyurethane products known to contain PMA in their formulation (Garrison, 2019). It is important to recognize this list is not an all-inclusive list. It is believed other manufacturers may also have included mercury catalysts in their polyurethane flooring systems.

- 3M under the name of Tartan® floors and Tartan® track
- American Biltrite Rubber Co. Inc.
- Amtico Rubber Flooring
- Athletic Polymer Systems (APS)
- Chemothane
- Crossfields Products (DexOTex)
- Mondo Rubber
- Pitzer Inc.
- Pulastic Systems
- Robbins Sport Surfaces - Chemturf
- Selby Battersby & Company Surfacing Systems

- Sportan Surfaces, Inc.
- Whittaker Synthetic Surfaces

Studies have shown that some of these flooring systems emit mercury vapor into the indoor air, leading to a concern about mercury exposures in schools. It is not known how many of these floors currently exist, whether they are still being installed, or what schools have them (ATSDR 2004; ATSDR 2006a; ATSDR 2006b; ATSDR 2010; Bush 2011; Garrison 2019).

This document provides guidance to school districts investigating the potential mercury vapors being emitted from these floors.

Steps for Assessment of Flooring

1. School districts should conduct a visual inspection to determine if poured-polyurethane floors (soft material in one contiguous piece that is clearly not wood or tile) have been installed in the school. If this type of flooring is identified in the school, a licensed indoor environmental consultant should be hired. A list of these consultants can be found on the Department's website at: https://www.nj.gov/health/ceohs/documents/childcare/conslt.pdf

2. Check if the manufacturer is noted in the list above and/or review the floor's Safety Data Sheet (SDS) for PMA. If the presence of PMA is confirmed, then skip step 3 below (as bulk sampling is not necessary to confirm the presence of mercury). It is not possible to rule out the potential presence of mercury based on the list above as other flooring system manufacturers and installers may have incorporated PMA in their polyurethane formulations. Further, the SDS may not be conclusive as the company might list the PMA ingredient as proprietary information.

3. If the record review was inconclusive, the district and its consultant may choose to collect a bulk sample of the flooring material to test for the presence of mercury. A bulk sampling plan overview is outlined below for the consultant to follow. The consultant will determine the timing between the bulk sampling and any indoor air sampling as these should not occur concurrently. The bulk sampling test may be informative in confirming there is no mercury present. The bulk sample must be analyzed by an American Industrial Hygiene Association (AIHA) accredited laboratory available at: https://www.aihaaccreditedlabs.org/

4. If the record review or bulk sampling confirmed the presence of mercury in the flooring, an appropriate air testing and monitoring program is warranted. A sampling plan overview is outlined below for your consultant to follow.

Sampling Plan Overview

A sampling plan that includes specific sampling and analytical methods is critical for evaluating mercury levels contained in synthetic flooring and the mercury levels in the indoor air. The district should hire and work with a licensed environmental consultant to understand the sampling plan before the plan is implemented. The consultant must provide sampling protocols, procedures, and an understanding of how to interpret the results to the district. The details for these procedures are provided in the sections below.

Bulk Sampling

The purpose of the bulk sampling is to determine if mercury is present in the flooring material and if indoor air monitoring is necessary. A sampling plan must be developed to ensure that the bulk samples are representative of the floor area(s) being evaluated. As noted above, the consultant will determine the timing between the bulk sampling and any indoor air sampling as these should not occur concurrently. The plan must include a diagram of the floor(s) showing the sampling locations and the laboratory results of the bulk samples. The environmental consultant should identify the rooms that contain the suspect flooring, coordinate the collection of bulk samples with school facilities staff, and execute the bulk sampling plan. The environmental consultant must ensure that all floor sampling locations are sealed and repaired after the bulk samples are collected.

Sampling Methods and Procedures

1. An appropriate size sample of the flooring material needs to be collected for analysis. The thickness of most poured polyurethane floors typically ranges from ¼-inch to 1-inch. Bulk samples of rubberized floor must represent the entire thickness/depth of the floor material. Sampling of only the surface or partial thickness of the floor must be avoided. Coring tools are commonly used to collect the bulk sample of the floor material. The environmental consultant must provide information on the bulk sample collection tools as well as the procedure to collect the sample from the entire thickness of the floor.

2. The recommended number of samples is: one floor sample from rooms that are less than 1,000 square feet, two samples from rooms 1,000 to 5,000 square feet, and three samples from rooms greater than 5,000 square feet. The sample locations should be selected, to the extent possible, in areas where the sample extraction is less likely to present a visual blemish (such as in room corners, in closets, behind doors, etc.)

Bulk samples of floor material must be analyzed using USEPA Method 7471B to determine the mercury content. An accredited laboratory should be contacted to ensure the proper amount of floor material is being collected. Typically, laboratories require 10 grams of floor material to analyze for mercury content.

If the floor contains mercury at any concentration, the NJDOH recommends sampling of the indoor air to evaluate the mercury vapor levels.

Indoor Air Sampling

The primary route of exposure to mercury vapor is through inhalation. Therefore, it is important to conduct air sampling to provide data which characterizes the mercury vapor levels in the indoor air.

General Requirements

- An indoor air sampling plan must be developed before any samples are collected. The sampling plan should ensure that air samples are taken from several locations to be representative of the floor area or room being evaluated. Samples should be collected at the breathing zone level, which is typically between three to five feet above the floor. Your consultant should include procedures for using a direct read instrument, the NIOSH 6009 method or both in the plan. See below for general sampling requirements using these methods. For all sampling plans, a diagram of the floor area or room showing the locations of the air samples must be developed. Sampling adjacent hallways and rooms should be included in the sampling plan. Ambient readings should be collected outside the facility to establish background levels.

Airborne mercury levels are affected by the operation of the Heating, Ventilation and Air Conditioning (HVAC) system. Given this relationship, the indoor air samples should be collected under typical HVAC operational conditions. Sampling under these conditions will represent the typical ventilation and temperature conditions under which the building is being maintained and occupied. The room temperature and typical operational settings of the HVAC system should be documented prior to collecting any air samples.

Field notes should include a visual inspection of the condition of the floor at locations where samples are collected, specifically noting if the floor surface is compromised in any manner.

Sampling Methods and Procedures

The following two widely used sampling and analytical methods are available for quantifying mercury levels in the indoor air.

1. Direct Reading Instruments:

- The Lumex RA-915M Mercury Vapor Analyzer (OhioLumex Co., Inc.,) or the Jerome J505 (AMETEK Arizona Instrument) can be used to measure mercury vapor concentrations in air. These direct read instruments are portable mercury

vapor analyzers that have very little cross-sensitivity to chemicals other than elemental mercury. These instruments have low detection limits (ranging from 0.002 micrograms per cubic meter ($\mu g/m^3$) to 0.05 $\mu g/m^3$) and can measure mercury vapor levels under a variety of sample collection protocols.

Sample Collection Procedures

- Ensure that the instrument has been properly calibrated according to the manufacture's recommended procedures. Calibration records must be retained to document that the instrument is functioning correctly.
- Temperature, humidity, and air pressure measurements must be collected during the sampling events.
- Direct read measurements should be taken in a predetermined pattern throughout the gym/room where the flooring material is located.
- Direct reading measurements should be taken at various heights above the floor.
- Readings collected at locations where the floor surface is compromised should be noted.

2. Industrial Hygiene Sampling:

- NIOSH Method 6009 - Analysis of Mercury in Air, is a common method for collecting airborne mercury vapors for laboratory analysis. Using this method, samples may be collected over customized periods of time to represent typical occupied conditions. The sample collection method includes a solid sorbent tube (Hopcalite sample collection media) which is connected to a properly calibrated sampling pump. Sampling pumps must be calibrated using a recognized primary standard to document the sampling flowrate. The NIOSH 6009 method should be consulted for the sample collection flowrates and detection limits.

Sample Collection Procedure

- To be representative of the gym/room, three to five samples should be collected. The number of samples within the gym/room may vary depending on the size of the room being evaluated. When determining the number of samples to be collected, the consultant should ensure that there are a sufficient number of samples to represent the gym/room and adjacent areas being evaluated.
- Temperature, humidity, and air pressure measurements must be collected during the sampling events.
- Samples should be collected at a height between three and five feet above the floor.
- The sampling time should be between six to eight hours to represent a typical day within the gym/room.
- Samples should be collected at a flowrate between 0.20 – 0.25 liters per minute (LPM)
- Collect between 90 and 100 liters of air to ensure that the lowest limit of detection (LOD) for the method is reached.

- Record the sampling information on a chain of custody form for submission to the accredited laboratory.
- Follow the quality control procedures outlined in the method for the submission of blank samples to the laboratory.
- Submit the samples to an accredited laboratory for analysis.

Risk Assessment

The primary exposure to mercury vapor is by inhalation. The NJDOH has adopted Standards for Indoor Environment Certification and for Licensure of Indoor Environmental Consultants (N.J.A.C. 8:50[1]). These regulations provide a risk assessment model that can be used to evaluate indoor air contaminants for school children and staff. This model is very conservative and adjusts for body weight, inhalation rate, and the amount of time spent in school for both children and staff. Based on the toxicological information and this regulated risk assessment model, the NJDOH has issued a guidance maximum contaminant level of 0.8 µg/m^3 for evaluating mercury in flooring. **This level is protective for children as young as three years old and is based on an exposure frequency of 8-hours per day for 180 days (NJDOH 2017).** The NJDOH acknowledges that there are other guidance levels for mercury vapors established by ATSDR, USEPA and other states, but there is no national standard (ATSDR 2004; 2006a; 2006b; 2010; Bush 2011; OEHHA; USEPA). The NJDOH guidance value is based on the exposure scenario in the risk model that is protective of preschool-aged children and a level at which adverse health effects are not likely to occur.

Evaluate and Mitigate Exposures

Based on the air sampling results, school districts may encounter the following scenarios:

Airborne mercury levels lower or equal to 0.8 µg/m^3

- Continue to use the gym/room under the occupied conditions that the samples were collected.
- Quarterly, seasonal sampling is recommended to ensure that the seasonal variability's impact on mercury concentrations is captured. Assessing the seasonal mercury level variation will ensure that the mercury indoor air level is always lower than 0.8 µg/m^3. Mercury vapor levels are related to temperature, so it is important to test during all seasons, especially during the heat of the summer.
- Maintain the room temperature and ventilation system to remain consistent with the operations at the time of sampling.

[1] https://www.nj.gov/health/ceohs/documents/eohap/njac_850_adoption.pdf

- If conditions of the flooring change, i.e., if there are cracks or other signs of deterioration or damage, resampling of mercury vapors in indoor air is necessary.
- Mercury vapor levels can be managed by active ventilation and temperature control of the room.

Airborne mercury levels above 0.8 µg/m³

- Work with the environmental consultant to develop a feasible plan to reduce the mercury vapor levels below 0.8 µg/m³. Mercury vapor levels can be reduced by active ventilation and temperature control of the room.
- Make adjustments to the HVAC system including increasing the ventilation/fresh air intake and/or lowering the temperature in the room. Verify (by retesting) that these adjustments have reduced mercury vapor levels to equal to or less than 0.8 µg/m³.
- If these adjustments are inadequate to maintain the levels to 0.8 µg/m³ or below, reduce the amount of time spent in the room to less than 8 hours per day or do not allow use of the room.
- If ventilation adjustments sufficiently reduce the levels to less than or equal to 0.8 µg/m³, monitor the indoor air at least quarterly to evaluate the mercury levels during other seasons.
- If ventilation adjustments do not sufficiently reduce the levels to less than or equal to 0.8 µg/m³, additional actions including removal of the flooring should be considered. Discussions with the environmental consultant will be needed to determine the appropriate course of action.

In addition, the gym floor should be cleaned using non-abrasive cleaning methods to avoid damaging the floor which could result in an increase in mercury emissions into the air.

Disposal of Floor Materials

If the flooring contains mercury and a decision is made to remove it, a determination needs to be made whether the material would be regulated as a hazardous waste for disposal. Contact the NJDEP's Bureau of Solid and Hazardous Waste[2] for information on the proper disposal of the flooring material. The Bureau of Solid and Hazardous Waste can be reached at (609) 633-1418 or (609) 984-0565.

For general questions, please contact the NJDOH - Consumer, Environmental, & Occupational Health Services at 609-826-4920.

[2] https://www.nj.gov/dep/enforcement/hw.html; https://www.nj.gov/dep/easyaccess/compenf.htm#hazwastecompenf

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Technical Resources

Analytical Methods for Mercury

- EPA 7471B Mercury in solid or semisolid waste (manual cold-vapor technique) https://www.epa.gov/sites/production/files/2015-07/documents/epa-7471b.pdf
- EPA TCLP Method 1311 SW-846 Test Method 1311: Toxicity Characteristic Leaching Procedure https://www.epa.gov/sites/production/files/2015-12/documents/1311.pdf
- NIOSH Method 6009 https://www.cdc.gov/niosh/docs/2003-154/pdfs/6009.pdf
- TCLP test https://www.epa.gov/sites/production/files/2015-12/documents/1311.pdf

Sources for Direct Reading Instruments for Mercury

- Lumex of Ohio, https://www.ohiolumex.com/mercury-analyzer-915m
- Arizona Instruments/Jerome, https://www.azic.com/jerome/j505/

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