

September 3, 2019

Mike Nickerson, CHMM Environmental/Safety Coordinator Central Bucks School District 320 West Swamp Road Doylestown, PA 18901

Lead in Drinking Water Sample Collection and Reporting Re: **Re-Sampling of Central Bucks School Drinking Water Fixtures Bucks County, Pennsylvania**

Dear Mr. Nickerson:

Langan Engineering and Environmental Services, Inc. (Langan) has prepared this summary to document the total lead analytical results to the drinking water re-sampling activities at specific schools. The results of the initial drinking water sampling activities documented that total lead was present in 16 of 1076 samples collected from drinking water fixtures at all schools at levels above the 15 micrograms per liter (ug/l) regulatory level. Also, select fixtures, where the initial results were between 10 – 15 ug/l were also re-sampled. In addition, several fixtures where the results were above the regulatory limit were decommissioned and removed from service. The re-sampling was conducted after the former fixtures were replaced with new fixtures. The table provided below summarizes the re-sampling location, number of samples and date of sampling.

School Location	Number of Fixtures Re- Sampled	Date Sampled
Kutz Elementary	2	8/16/2019
Cold Spring Elementary	1	8/16/2019
Groveland Elementary	1	8/16/2019
Buckingham Elementary	15	8/16/2019, 8/20/2019
Lenape Middle School	2	8/20/2019
Tohickon Middle School	1	8/20/2019
Unami Middle School	1	8/16/2019

The attached Appendices provide a summary of the initial results, the re-sampling results and the laboratory data packages.

P.O. Box 1569 Doylestown, PA 18901-0219 T: 215,491,6500 Shipping Address: Stone Manor Corporate Center 2700 Kelly Road, Suite 200

F: 215.491.6501 www.langan.com Warrington, PA

18976

Sincerely, Langan Engineering & Environmental Services, Inc.

John V. Musco

John V. Musco Associate

cc: R. Copenhaver, PG – Langan B. Lambing - Langan

List of Appendices Appendix A – Sampling Summary Table Appendix B – Lab Data Packages

NJ Certificate of Authorization No. 24GA27996400 \\langan.com\data\DYL\data4\200130401\Project Data\Record Data\Reports\Re-Sampling Data\Resampling Lead_Memo.docx

LANGAN

APPENDIX A

APPENDIX A Summary of Water Testing Analytical Results - Re-Sampling Event Total Lead Analysis

School Name	Sample name given by CBSD	Original Sample ID on Chain of Custody	Original Sample Date	Original Sample Result (ug/L)	Re-Sample ID	Resample date	Result
		custouy	Sumple Dute	(46/2)		Resumple date	nesure
Lenape	Rm 205	L205	6/6/2019	15.3	L205R	8/20/2019	1.8
Lenape	library office	L510B	6/6/2019	24.9	L510BR	8/20/2019	64.6
Kutz	nurses office	KNO	6/6/2019	16.2	KNOR	8/16/2019	1.4
Kutz	E4	KE4	6/6/2019	25.7	KE4R	8/16/2019	5.9
Unami	kitchen 2-bowl sink by office window	U333A	6/7/2019	37.4	U333AR	8/16/2019	1.2
Cold Spring	library work room	111	6/12/2019	15.2	111R	8/16/2019	3.1
Buckingham	Rm 3	В3	6/12/2019	449.0	B3RB	8/16/2019	143
Buckingham	Rm 4	B4A	6/12/2019	12.7	B4AR	8/16/2019	10.3
Buckingham	Rm 5	B5	6/12/2019	12.6	B5R	8/16/2019	60.9
Buckingham	Rm 8	B8B	6/12/2019	14.9	B8BR	8/16/2019	9.1
Buckingham	library	B23A	6/12/2019	31.8	B23AR	8/16/2019	35.5
Buckingham	Rm 51	B51	6/12/2019	34.6	B51R	8/16/2019	20.5
Buckingham	Rm 52	B52	6/12/2019	18.4	B52R	8/16/2019	22.3
Buckingham	Rm 53	B53	6/12/2019	13.7	B53R	8/16/2019	36.7
Buckingham	Rm 54	B54	6/12/2019	14.9	B54R	8/16/2019	30.1
Buckingham	Rm 55	B55	6/12/2019	14.7	B55R	8/16/2019	35.7
Buckingham	faculty room	B57	6/12/2019	31.7	B57R	8/16/2019	4.4
Buckingham	Kitchen 2-bowl under window	B58	6/12/2019	13.4	B58R	8/20/2019	16.1
Buckingham	nurses office	B2A	6/12/2019	52.1	B2AR	8/16/2019	4.9
Buckingham	nurses office	B2B	6/12/2019	14.6	B2BR	8/16/2019	15.3
Buckingham	Outdoor faucet	N/A	N/A	N/A	BOWF	8/20/2019	42.1
Groveland	Nurses treatment	V118B		19.4	V118BR	8/16/2019	12.5
Tohickon	nurses office	TNB		17.6	TNBR	8/20/2019	1.8

N/A

No Sample Collected

APPENDIX B

KUTZ



Pace Analytical Services, LLC 575 Broad Hollow Road Melville, NY 11747 (631)694-3040

August 28, 2019

Randy Copenhaver Langan Engineering 2700 Kelly Road, Suite 200 Warrington, PA 18976

RE: Project: CENTRAL BUCKS S.D. (KUTZ) Pace Project No.: 70101867

Dear Randy Copenhaver:

Enclosed are the analytical results for sample(s) received by the laboratory on August 17, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Joh Sh

John D. Stanton john.stanton@pacelabs.com (631)694-3040 Project Manager

Enclosures

cc: Bill Lambing, Langan Engineering





CERTIFICATIONS

Project: CENTRAL BUCKS S.D. (KUTZ)

Pace Project No.: 70101867

Long Island Certification IDs

575 Broad Hollow Rd, Melville, NY 11747 New York Certification #: 10478 Primary Accrediting Body New Jersey Certification #: NY158 Pennsylvania Certification #: 68-00350 Connecticut Certification #: PH-0435 Maryland Certification #: 208 Rhode Island Certification #: LAO00340 Massachusetts Certification #: M-NY026 New Hampshire Certification #: 2987



ANALYTICAL RESULTS

Project: CENTRAL BUCKS S.D. (KUTZ)

Sample: KNOR	Lab ID: 701	01867001	Collected: 08/16/1	9 09:29	Received: 08	/17/19 10:30	Matrix: Drinking	Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Met	hod: EPA 20	0.8					
Lead	1.4	ug/L	1.0	1		08/22/19 13:04	4 7439-92-1	
Sample: KE4R	Lab ID: 701	01867003	Collected: 08/16/1	9 09:32	Received: 08	/17/19 10:30	Matrix: Drinking	Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
	Analytical Metl	hod: EPA 20	0.8					
200.8 MET ICPMS Drinking Water	Analytical Met	100. 217(20						



QUALITY CONTROL DATA

Project: CENTRAL BUCK Pace Project No.: 70101867	S S.D. (KUTZ)						
QC Batch: 126856		Analysis Metho	od: E	EPA 200.8			
QC Batch Method: EPA 200.8		Analysis Desci	ription: 2	200.8 MET No P	rep Drinking Wa	ter	
Associated Lab Samples: 7010186	7001, 70101867003						
METHOD BLANK: 605654		Matrix: V	Vater				
Associated Lab Samples: 7010186	7001, 70101867003						
Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifier	s	
Lead	ug/L	<1.0	1.(08/22/19 12:4	40		
LABORATORY CONTROL SAMPLE:	605655						
Parameter	Units		CS esult	LCS % Rec	% Rec Limits	Qualifiers	
Lead	ug/L	50	52.1	104	85-115		
MATRIX SPIKE SAMPLE:	605658						
Demonstration	11-26-	70101863001	Spike	MS	MS	% Rec	0
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Lead	ug/L	143	8 4	147	99	70-130	D M1
MATRIX SPIKE SAMPLE:	605660						
	11-26-	70101863019	Spike	MS	MS	% Rec	0
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Lead	ug/L	30.1	4	34.0	97	70-130) M1
SAMPLE DUPLICATE: 605657		70101962004	Dur				
Parameter	Units	70101863001 Result	Dup Result	RPD	Qualifiers		
Lead	ug/L	143	145	5	1	_	
SAMPLE DUPLICATE: 605659							
		70101863019	Dup				
Parameter	Units	Result	Result	RPD	Qualifiers		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALIFIERS

Project: CENTRAL BUCKS S.D. (KUTZ)

Pace Project No.: 70101867

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:CENTRAL BUCKS S.D. (KUTZ)Pace Project No.:70101867

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
70101867001 70101867003	KNOR KE4R	EPA 200.8 EPA 200.8	126856 126856		

.867	t -			regulatory Agency	State / 1 ocation	PA			(N/ʎ) əu	nolrið IsubisəЯ	POI	F02	003	504									TIME SAMPLE CONDITIONS	N N N N N					oles er d ody	(N) 3160 3160 3160 3160
WO#:70101867			70101867			6110000	Requested Analysis Filtered (Y/N)					* HOLD		* HOLD									DATE	UNHICH DANHIU			- 15			DATE Signadi
CHAIN-OF-CUSTODY / Analytical Re The Chain-o Custody is a LEGAL DOCUMENT. All releva section c	14		E. Langan Engineering	Z/00 Nelly Koda, Suite 200		-		Preservatives		500.7 Metals (f HCI HCI HAOH HCI HAOA HCI	×	×	×	x									ACCEPTED BY / AFFILIATION	1 Milletter 1 Pa			-			
1-OF-CUSTODY n-o Custody is a LEGAl section c	Invcice Information:	Attention: R	Company Name:		Pace Project Manager:	Pace Profile #:			AT COLLECTIO	H SAMPLE TEMP / # OF CONTAINE Unpreserved H2SO4	929	930 1 1	932 1	932 1 1									DATE TIME	8/16/2019 (700				ID SIGNATURE	f SAMPLER:	CAMPIED.
CHAIR The Chair			ambing@langan.com		Contral Bucks School District (Kutz)			COLLECTED	START	TE TIME DATE	019 929 8/16/2019	319 930 8/16/2019	319 932 8/16/2019	319 932 8/16/2019									RELINQUISHED BY / AFFILIATION	Sand	D	1		SAMPLER NAME AND SIGNATURE	PRINT Name of SAMPLER:	SIGNATI DE of SAMDI ED.
Section B	Required Project Information:		Copy To: Bill Lambing - blambing@langan	Burchase Order #- 200120	iect Name: Central Ruck	Project #: 200130401		(ffel of a	14C	-	DW 8/16/2019	DW 8/16/2019	DW 8/16/2019	DW 8/16/2019	16								RELINQUISHED E	reil a						
			elly Road, Suite 200	er@landan com	2015-401-6501	RUSH			Drinking Water Water Waste Water Product SollSolid Oil			5											ADDITIONAL COMMENTS	O BE SAMPLED	0					
Pace Analytical Pace Analytical Section A	Required Client Information.		Address: 2700 K	Fmail: rconanhav		ted Du			S	Sam 4	1 KNOR	2 KNOR1	3 KE4R	4 KE4R1	S	9	7	8	5	10	11	12	•	YELLOW HIGHLIGHT TO BE SAMPLED	* HOLD UNTIL NOTIFIED		F	Page	7 c	of

Pace Analytical		Mana		W0#:70101867
	1	Name:		PM: JDS Due Date: 08/26/19 CLIENT: LAN-PA
	Xa	ngan		
Courier: 🕅 Fed Ex UPS 🗍 USPS [Client Comr	nercial [_]	Pace [D	Other
Tracking #: MOD 071	0023	yn		
Custody Seal on Cooler/Box Present:	Yes No			Yes No Temperature Blank Present: Yes
Packing Material Bubble Wrap	ubble Bags 🗋Zi	ploc []Nor	ne Dthe	Type of Ice: Wet Blue None
Thermometer Used: 191	Correc	tion Facto	r: + O	Samples on ice, cooling process has b
Cooler Temperature (°C): 73a	S Cooler	Femperatu	re Correc	cted (°C): $\underbrace{SY-O}_{}$ Date/Time 5035A kits placed in freez
Temp should be above freezing to 6.0°C				
USDA Regulated Soil (N/A, water s	ample)			Date and Initials of person examining contents: \mathbb{ZK}
Did samples originate in a quarantine zone with	nin the United States	s: AL, AR, C	A, FL, GA, I	ID, LA, MS, NC, Did samples orignate from a foreign source (ii
If Yes to either quest	ion, fill out a Re	gulated Se	oil Checki	list (F-LI-C-010) and include with SCUR/COC paperwork.
	-k.	□No		1.
Chain of Custody Present:	Z Yes			2.
Chain of Custody Filled Out:	ØYes ØY			3.
Chain of Custody Relinquished:	ØYes		□n/A	4
Sampler Name & Signature on COC:	□Yes			5.
Samples Arrived within Hold Time:	PYes			6.
Short Hold Time Analysis (<72hr):	□Yes	DNo DNo		7.
Rush Turn Around Time Requested:	Pres			8.
Sufficient Volume: (Triple volume provided for M				9.
Correct Containers Used:	Tres			
-Pace Containers Used:	• Pryes			10.
Containers Intact:	<u>∕</u> lYes		ØN/A	11. Note if sediment is visible in the dissolved container.
Filtered volume received for Dissolved tests	□Yes		Janut -	12.
Sample Labels match COC:	s WT OIL			
-Includes date/time/ID/Analysis Matrix All containers needing preservation have been c		□No	□n/A	13. HNO3 H2SO4 NaOH HCI
iv tozala	, Unres		Chart	
pH paper Lot # ACAOMO	be in			Sample #
All containers needing preservation are found to compliance with EPA recommendation?	~	-		
(HNO₃, H₂SO₄, HCI, NaOH>9 Sulfide,	Pres	□No	□n/A	
NAOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC, Oil and (Grease,			Initial when completed: Lot # of added preservative: Date/Time preserva
DRO/8015 (water). Per Method, VOA pH is checked after analysis				
	□Yes	□No	NIA	14.
Samples checked for dechlorination: KI starch test strips Lot #			/	
Residual chlorine strips Lot #				Positive for Res. Chlorine? Y N
Headspace in VOA Vials (>6mm);	□Yes	□No	(IN/A	15.
Trip Blank Present:	□Yes	□ No	ENIA	16.
Trip Blank Custody Seals Present	□Yes	□No	PINIA	
Pace Trip Blank Lot # (if applicable):				<u></u>
Client Notification/ Resolution:				Field Data Required? Y / N
Person Contacted:				Date/Time:
Comments/ Resolution:				
en an				

0.5

COLD SPRING



Pace Analytical Services, LLC 575 Broad Hollow Road Melville, NY 11747 (631)694-3040

August 28, 2019

Randy Copenhaver Langan Engineering 2700 Kelly Road, Suite 200 Warrington, PA 18976

RE: Project: CENTRAL BUCKS (COLD SPRING) Pace Project No.: 70101865

Dear Randy Copenhaver:

Enclosed are the analytical results for sample(s) received by the laboratory on August 17, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Joh Sh

John D. Stanton john.stanton@pacelabs.com (631)694-3040 Project Manager

Enclosures

cc: Bill Lambing, Langan Engineering





CERTIFICATIONS

Project: CENTRAL BUCKS (COLD SPRING)

Pace Project No.: 70101865

Long Island Certification IDs

575 Broad Hollow Rd, Melville, NY 11747 New York Certification #: 10478 Primary Accrediting Body New Jersey Certification #: NY158 Pennsylvania Certification #: 68-00350 Connecticut Certification #: PH-0435 Maryland Certification #: 208 Rhode Island Certification #: LAO00340 Massachusetts Certification #: M-NY026 New Hampshire Certification #: 2987



ANALYTICAL RESULTS

Project: CENTRAL BUCKS (COLD SPRING)

Pace Project No.: 70101865

Sample: 111R	Lab ID: 7	0101865001	Collected: 08/16/1	9 09:02	Received: 08	3/17/19 10:30	Matrix: Drinking	Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical M	ethod: EPA 200	.8					
Lead	3.1	ug/L	1.0	1		08/22/19 13:0	3 7439-92-1	



QUALITY CONTROL DATA

•	CENTRAL BUCK 70101865	S (COLD SPRING)							
QC Batch:	126856		Analysis Me	thod:	EPA	200.8			
QC Batch Method:	EPA 200.8		Analysis De	scription:	200.	8 MET No P	rep Drinking V	Vater	
Associated Lab Samp	oles: 7010186	5001							
METHOD BLANK: 6	605654		Matrix	Water					
Associated Lab Samp	oles: 7010186	5001							
Parame	eter	Units	Blank Result	Reportino Limit	g	Analyzed	Qualit	iers	
Lead		ug/L	<1.0		1.0 (08/22/19 12:	40		
LABORATORY CONT	ROL SAMPLE:	605655							
Parame	eter	Units	Spike Conc.	LCS Result		CS Rec	% Rec Limits	Qualifiers	
Lead		ug/L	50	52.1		104	85-115		
MATRIX SPIKE SAMI	PLE:	605658							
			70101863001	•		MS	MS	% Rec	
Parame	eter	Units	Result	Conc.		Result	% Rec	Limits	Qualifiers
Lead		ug/L	1	43	4	147	ç	99 70-1	30 M1
MATRIX SPIKE SAMI	PLE:	605660							
_			70101863019	•		MS	MS	% Rec	A 11/1
Parame	eter	Units	Result	Conc.		Result	% Rec	Limits	Qualifiers
Lead		ug/L	30	D.1	4	34.0	ç	97 70-1	30 M1
SAMPLE DUPLICATE	: 605657		70404000004	D					
Parame	eter	Units	70101863001 Result	Dup Result		RPD	Qualifier	S	
Lead		ug/L	143		145		1		
SAMPLE DUPLICATE	E: 605659								
-		11.2	70101863019	Dup		000	0 ""	_	
Parame	eter	Units	Result	Result		RPD	Qualifier	S	
Lead		ug/L	30.1	2	29.9		1		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALIFIERS

Project: CENTRAL BUCKS (COLD SPRING)

Pace Project No.: 70101865

DEFINITIONS

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J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

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NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

 Project:
 CENTRAL BUCKS (COLD SPRING)

 Pace Project No.:
 70101865

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
70101865001		EPA 200.8	126856		

~	Pace Analytical				U F	CHAIN-OF-CUSTODY / Analytical Request The Chair-of-Custody is a LEGAL DOCUMENT. All relevant fields	-of-Cust	CUS ody is	a LEG		Anal	ytic:	al R	eque vant fie	SS	MO	WO#:70101865	70	10	18	65			
Section A Required C	tient Information:	Section B Required Project Information:	Inform	ation:			Invoi	Section C Invoice Information:	C mation:															
Company: Address:	Langan Engineering 2200 Kally Bood Suite 200	Report To: Ran Conv To: Bill	Idy Cop	Randy Copenhaver	accord@			Atter	Attention: Rai	Ē.	Randy Copenhaver	laver				FOF	0186							
naton.			Lamour		Jelangan	IIIOD.		Address:	ess:	2700 K	2700 Kellv Road. Suite 200	ad. Suite	200							Redu	Regulatory Agency	encv		
2	er@langan.com	Purchase Order #:		200130401-400-001	00-001			Pace	Pace Quote:			See Langan-Pace MSA	gan-Pad	ce MSA						- Ross		6		
Thone:	Fax: 2015-491-6501	Project Name: Cel	Centra	Central Bucks School District (Cold Spring)	nool Distric	ct (Cold Sp	ring)	Pace	Project	au		ohn.star	nton@p;	john.stanton@pacelabs.com,	com,					Sta	State / Location	ion		
csien	KUSH	roject #. 200130	101					Lac	race Prome #.		/983				Dorno	ctod An-	Domostad Analusis Eiltarad (V/N)	Itarad (V	INI		PA			
			(amo		COLLECTED	TED				Prese	Preservatives	S	N/A	N/J	anbay	Sted All			(v)					
	SAMPLE ID Sufficient Product Sufficient Marker Marker Water Vester Marker Marke	CODE DW VT SL SL OL	02=3 8AA9=9)	START		ENC		and the second se		-		3	7 120T								(N/4) 80		•	
	One Character per box. Wipe (A-Z, 0-9 / , -) Other Sample Ids must be unique Tissue	성 유 은 당 지 O DE	39YT 3J9MAS	DATE	TIME	DATE	TIME	# OF CONTAINE	H52O4 Nubreserved	80NH	N ⁹ OH HCI	Methanol Na2S2O3	Other	200. 7 Metals (F						inold loubiced	Residual Chlori			
1	111R	MD		8/16/2019	902 8/	8/16/2019	902	-		×				×			-						00	
11	111R1	DW		8/16/2019	903 8/	8/16/2019	903	-		×				*	* HOLD								50	2
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	ADDITIONAL COMMENTS	REL	INQUIS	RELINQUISHED BY / AFFILIATION	FILIATION		DATE		TIME		1	CCEPTE	ED BY L	ACCEPTED BY LAFFILIATION	5		DATE	щ	TIME		SAMP	SAMPLE CONDITIONS	SNOI	
N HIG	/ELLOW HIGHLIGHT TO BE SAMPLED	7	sida	(Zom	g		8/16/2019	-	002		les 1	K	1	Pa	10	1	SN7	MAN	103	R	384	\prec	-	
UNT	* HOLD UNTIL NOTIFIED				5				-	1		_									-			
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Page		ĸ		0	AMPLER	SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER	D SIGNAT	URE												С	uo p			
7 of 8					SIGN	SIGNATURE of SAMPLER:	SAMPLEF	Li I						0	DATE Signed:	ned:				I. GMP in	seceiver 8	Paled baled V/V)	ismples (V/N) (V/N)	tact (N\Y
3														-						T	ICC	€ S	s	J

\sim		Sample	Condi	tion Upc	on Rec	cerpt
Pace Analytical					WO#	#:70101865
	Clien	t Name:				
	20	ingan			PM: J	
Courier: 🕅 Fed Ex UPS 🗍 USPS 🗍 🤇	Client Com	mercial 🗌	Pace D	ther	GLIEN	IT: LAN-PA
210020	うみろ	ND				
Tracking #: 11600101 Custody Seal on Cooler/Box Present:	Yes No	Seal	s intact:	Yes 🗌 No)	Temperature Blank Present: 🔲 Yes 🕅
Packing Material Bubble Wrap	le Bags	iploc []Nor	ne Dthe	er		Type of Ice: Wet Blue None
Thermometer Used: 19091	Corre	ction Facto	r: + (D)	.2		Samples on ice, cooling process has begun
77 5	Cooler	Temperatu	re Correc	ted (°C): 2	245	Date/Time 5035A kits placed in freezer
Cooler Temperature (°C): 207	2					
Temp should be above freezing to 6.0°C USDA Regulated Soil (🗌 N/A, water sam	ole)			Date and	Initials o	of person examining contents 7% SIT
USDA Regulated Soft (L) NA, water sam	he Lloited State	AL AR C	A. FL, GA, I			Did samples orignate from a foreign source (interna
						including Hawaii and Puerto Rico)?
If Yes to either question	i, fill out a R	egulated So	oil Checkl	ist (F-LI-C-0	10) and ir	nclude with SCUR/COC paperwork.
						COMMENTS:
Chain of Custody Present:	Pyes	□No		1.		
Chain of Custody Filled Out:	PYes	□No		2.		
Chain of Custody Relinquished:	ØYes	□No		3.		
Sampler Name & Signature on COC:	□Yes	DAVO	□n/A	4.		4
Samples Arrived within Hold Time:	PYes			5.		
Short Hold Time Analysis (<72hr):	□Yes	DINO		6.		
Rush Turn Around Time Requested:	Pres	□No		7.		
Sufficient Volume: (Triple volume provided for MS/f	ASD DYes	□No		8.	,	
Correct Containers Used:	Pres	□No		9.		
-Pace Containers Used:	Pres	□No		1.0		·
Containers Intact:	ØYes		C6.110	10.	to if and in	
iltered volume received for Dissolved tests	□Yes		DIN/A	12.	ne il sedim	ent is visible in the dissolved container.
Sample Labels match COC:	TYes	□No		12.		
	WT OIL			13.	HNO3	
Il containers needing preservation have been chec	Hes	□No	□n/A		11103	
H paper Lot # ACAOMOS				Sample #		
Il containers needing preservation are found to be ompliance with EPA recommendation?	in .		NUMBER CONTROLS OF			
HNO ₃ , H ₂ SO ₄ , HCl, NaOH>9 Sulfide,	Pres	□No	□N/A			
IAOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC, Oil and Grea	ase,			1-26-1-1		
RO/8015 (water). er Method, VOA pH is checked after analysis				Initial when c	ompieted.	Lot # of added preservative: Date/Time preservative a
	□Yes	□No		14.		L
amples checked for dechlorination:	Lites		Γ			
I starch test strips Lot # esidual chlorine strips Lot #				Pos	itive for Re	s. Chlorine? Y N
leadspace in VOA Vials (>6mm):	□Yes	□No	/ON/A	15.		
rip Blank Present:	□Yes	□No	ÉNIA	16.		
rip Blank Custody Seals Present	□Yes	□No	MINIA			
ace Trip Blank Lot # (if applicable):			T .			
lient Notification/ Resolution:				Field Data Re	equired?	Y / N
erson Contacted				Dat	e/Time:	
comments/ Resolution:					-	
						2

. .

GROVELAND



Pace Analytical Services, LLC 575 Broad Hollow Road Melville, NY 11747 (631)694-3040

August 28, 2019

Randy Copenhaver Langan Engineering 2700 Kelly Road, Suite 200 Warrington, PA 18976

RE: Project: CENTRAL BUCKS S.D. (GROVELAND) Pace Project No.: 70101864

Dear Randy Copenhaver:

Enclosed are the analytical results for sample(s) received by the laboratory on August 17, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Joh Sh

John D. Stanton john.stanton@pacelabs.com (631)694-3040 Project Manager

Enclosures

cc: Bill Lambing, Langan Engineering





CERTIFICATIONS

Project: CENTRAL BUCKS S.D. (GROVELAND)

Pace Project No.: 70101864

Long Island Certification IDs

575 Broad Hollow Rd, Melville, NY 11747 New York Certification #: 10478 Primary Accrediting Body New Jersey Certification #: NY158 Pennsylvania Certification #: 68-00350 Connecticut Certification #: PH-0435 Maryland Certification #: 208 Rhode Island Certification #: LAO00340 Massachusetts Certification #: M-NY026 New Hampshire Certification #: 2987



ANALYTICAL RESULTS

Project: CENTRAL BUCKS S.D. (GROVELAND)

Pace Project No.: 70101864

Sample: V118BR	Lab ID: 7	70101864001	Collected: 08/16/1	9 09:14	Received: 08	3/17/19 10:30	Matrix: Drinking Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual		
200.8 MET ICPMS Drinking Water	Analytical M	lethod: EPA 200	.8							
Lead	12.5	ug/L	1.0	1		08/22/19 13:0	02 7439-92-1			



QUALITY CONTROL DATA

Project: CENTRAL BUCK Pace Project No.: 70101864	S S.D. (GROVEL/	AND)					
QC Batch: 126856		Analysis Metho	d: E	PA 200.8			
QC Batch Method: EPA 200.8		Analysis Descri	ption: 2	00.8 MET No Pi	rep Drinking Wate	er	
Associated Lab Samples: 70101864	4001						
METHOD BLANK: 605654		Matrix: W	ater				
Associated Lab Samples: 70101864	4001						
Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers		
Lead	ug/L	<1.0	1.0	08/22/19 12:4	40		
LABORATORY CONTROL SAMPLE:	605655						
Parameter	Units	Spike LC Conc. Res		LCS % Rec	% Rec Limits C	ualifiers	
Lead	ug/L	50	52.1	104	85-115		
MATRIX SPIKE SAMPLE:	605658						
		70101863001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Lead	ug/L	143	4	147	99	70-130	0 M1
MATRIX SPIKE SAMPLE:	605660						
5		70101863019	Spike	MS	MS	% Rec	0
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Lead	ug/L	30.1	4	34.0	97	70-130	0 M1
SAMPLE DUPLICATE: 605657		70404000004	Dur				
Parameter	Units	70101863001 Result	Dup Result	RPD	Qualifiers		
Lead	ug/L	143	145	;	1		
SAMPLE DUPLICATE: 605659							
SAMPLE DUPLICATE: 605659 Parameter	Units	70101863019 Result	Dup Result	RPD	Qualifiers		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, LLC.



QUALIFIERS

Project: CENTRAL BUCKS S.D. (GROVELAND)

Pace Project No.: 70101864

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:CENTRAL BUCKS S.D. (GROVELAND)Pace Project No.:70101864

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
70101864001	V118BR	EPA 200.8	126856		

WO#:70101864				Regulatory Agency	State / I ocation	PA			(N/X) əu	Residual Chlori	601	28											SAMPLE CONDITIONS	BXUW S			uo p	TEMP in TEMP i
7010							(N/A) P																TIME	11/30				Τ
: #0/			0101864				Requested Analysis Filtered (Y/N																DATE	8/1/19				
			71		e MSA celahs com		Requested A			P) sisi9M 7.00S	×	X * HOLD										_	EFILIATION	(hau)				DATE Signed:
CHAIN-OF-CUSTODY / Analytical Request [The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields m		Randy Copenhaver	angan Engineering	2700 Kelly Road, Suite 200	See Langan-Pace MSA er: inhn stanton@nacelahs.com			Preservatives	Test	Wailyses Other Machanna MaOH MaOH HCI													ACCEPTED BY / AFFILIATION	14301				
USTODY /	Section C Invoice Information:		Nar	1	Pace Quote: Pace Project Manager:	Pace Profile #: 79				HNO3 Unpreserved H OF CONTAINER	1 X	1 X									7		TIME	1700		_	IRE	
N-OF-C in-of-Custo	S				(and)	1		N		H M A 9MPLE TEMP A	914	915									-		DATE	8/16/2019			ND SIGNATU	of SAMPLER:
CHAI The Cha	t Information:	Randy Copenhaver	Bill Lambing - blambing@langan.com		 200130401-400-001 Central Bucks School District (Groveland) 	401				SAMPLE TYPE DATE DATE	/ 8/16/2019 914 8/16/2019	/ 8/16/2019 915 8/16/2019											RELINQUISHED BY / AFFILIATION	Sell Dend)		SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER:	SIGNATURE of SAMPLER:
	Section B Required Project Information:	Report To: Rar			Project Name:	Project #: 200130401		CODE	ors ™ w⊤ vv vv		MQ	DW			-	2							REI					
Pace Analytical .	Section A Reouired Client Information:	Langan Engineering	2700 Keily Road, Suite 200	Warrington, PA 18976	rcopennaver@langan.com 215-491-6500 Fex.2015-491-6501	RUSH		MATRIX	SAMPLE ID OI	One Character per box. Wipe (A-Z, 0-9 /, -) Air Sample Ids must be unique Tissue	V118BR	V118BR1											ADDITIONAL COMMENTS	FLLOW HIGHLIGHT TO BE SAMPLED	* HOLD UNTIL NOTIFIED		D.	
~	Section A Required C	Company:	Address:	the last	Phone: IC	Requested Due Date:				ITEM #	1	2	3	4	2	9	7	∞	6	10	11	12		YELLOW HI	* HOLD UNT	F	Page 7	' of 8

	S	ample (Condi	tion 🍯	W0# .	70101864	
Pace Analytical					WU# .		
Langting a constant	Client	t Name:			PM: JDS	Due Date: 08/26/19	
	20	naon			CLIENT:	LAN-PA	
Courier: 🕅 Fed Ex UPS 🗍 USPS 🗍 C			ace D	ther			
Courier: A Fed Ex UPS USPS U	ション	16					
Tracking #: 1600/60 Custody Seal on Cooler/Box Present:	Yes No			Yes 🗌	No	Temperature Blank Present: Yes 🕅	10
Packing Material Bubble Wrap	le Bags 🛛 Z	iploc Non	e Dthe	er 🔿		Type of Ice: Wet Blue None)	
Thermometer Used: 11091	Correc	ction Factor	:+D	of.		Samples on ice, cooling process has begun	
Cooler Temperature (°C): 2308	Cooler	Temperatur	e Correc	ted (°C):	541	Date/Time 5035A kits placed in freezer	
Temp should be above freezing to 6.0°C							
USDA Regulated Soil (N/A, water samp	ole)			Date a	and Initials o	f person examining contents 77 817/	rg
Did samples originate in a quarantine zone within th	ne United State					Did samples orignate from a fordign source (internat including Hawaii and Puerto Rico)? [] Yes[] No	
NM, NY, OK, OR, SC, TN, TX, or VA (check map)? If Yes to either question	, fill out a Re	egulated So	il Checkl	list (F-LI-(C-010) and in	clude with SCUR/COC paperwork.	
						COMMENTS:	
Chain of Custody Present:	AYes	□No		1.			
Chain of Custody Filled Out:	ØYes	□No		2.			
Chain of Custody Relinquished:	ØYes	□No		3.			
Sampler Name & Signature on COC:	□Yes	Delo	□N/A	4.		۰	
Samples Arrived within Hold Time:	Pres	□No		5.			
Short Hold Time Analysis (<72hr):	Yes	DINO		6.			
Rush Turn Around Time Requested:	Pres	□No		7.			
Sufficient Volume: (Triple volume provided for MS/N	ISD Wes	□No	÷	8.	······,		
Correct Containers Used:	Pres	□No		9.			
-Pace Containers Used:	Pyres	□No					
Containers Intact:	ØYes	□No		10.			
Filtered volume received for Dissolved lests	□Yes	□No	ØN/A	11.	Note if sedime	ent is visible in the dissolved container.	
Sample Labels match COC:	TYes	□No		12.			
-Includes date/time/ID/Analysis Matrix S	WT OIL						
All containers needing preservation have been check	Vies	□No		13.	□ HNO3	□ H₂SO₄ □ NaOH □ HCI	
pH paper Lot # HCX03103				Sample #	1		
All containers needing preservation are found to be in	n .			Sample #			
compliance with EPA recommendation? (HNO₃, H₂SO₄, HCI, NaOH>9 Sulfide,	Tyes	□No					
NAOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC, Oil and Grea	se						
DRO/8015 (water). Per Method, VOA pH is checked after analysis				Initial wh	en completed:	Lot # of added preservative: Date/Time preservative ad	Ided
		□No		14.			
Samples checked for dechlorination:	□Yes		Prat				
KI starch test strips Lot # Residual chlorine strips Lot #					Positive for Res), Chlorine? Y N	
Headspace in VOA Vials (>6mm):	□Yes	0No	ANIA	15.			_
Trip Blank Present:	□Yes	□No	ÉNIA	16.			
Trip Blank Custody Seals Present	□Yes	DNo	ØN/A				
Pace Trip Blank Lot # (if applicable):			/				
Client Notification/ Resolution:				Field Dat	a Required?	Y / N	
Person Contacted:					Date/Time:		
Comments/ Resolution:							
						-	
					6		
				NEW COLOR OF COLOR DISTANCE		Page 8 of 8	

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No. of Concession, Name

Phalipitai Inde

BUCKINGHAM



Pace Analytical Services, LLC 575 Broad Hollow Road Melville, NY 11747 (631)694-3040

August 28, 2019

Randy Copenhaver Langan Engineering 2700 Kelly Road, Suite 200 Warrington, PA 18976

RE: Project: CENTRAL BUCKS S.D.(BUCKINGHAM) Pace Project No.: 70101863

Dear Randy Copenhaver:

Enclosed are the analytical results for sample(s) received by the laboratory on August 17, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Joh Sh

John D. Stanton john.stanton@pacelabs.com (631)694-3040 Project Manager

Enclosures

cc: Bill Lambing, Langan Engineering





CERTIFICATIONS

Project: CENTRAL BUCKS S.D.(BUCKINGHAM)

Pace Project No.: 70101863

Long Island Certification IDs

575 Broad Hollow Rd, Melville, NY 11747 New York Certification #: 10478 Primary Accrediting Body New Jersey Certification #: NY158 Pennsylvania Certification #: 68-00350 Connecticut Certification #: PH-0435 Maryland Certification #: 208 Rhode Island Certification #: LAO00340 Massachusetts Certification #: M-NY026 New Hampshire Certification #: 2987



ANALYTICAL RESULTS

Project: CENTRAL BUCKS S.D.(BUCKINGHAM)

Sample: B3RB	Lab ID:	70101863001	Collected: 08/16/	19 08:17	Received:	08/17/19 10:30	Matrix: Drinkin	g Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical	Method: EPA 20	00.8					
Lead	14	3 ug/L	1.0	1		08/22/19 12:4	1 7439-92-1	M1
Sample: B4AR	Lab ID:	70101863004	Collected: 08/16/	19 08:21	Received:	08/17/19 10:30	Matrix: Drinkin	g Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical	Method: EPA 20	00.8					
Lead	10.	3 ug/L	1.0	1		08/22/19 12:4	5 7439-92-1	
Sample: B5R	Lab ID:	70101863007	Collected: 08/16/	19 08:27	Received:	08/17/19 10:30	Matrix: Drinkin	g Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical	Method: EPA 20	00.8					
Lead	60.	9 ug/L	1.0	1		08/22/19 12:4	6 7439-92-1	
Sample: B8BR	Lab ID:	70101863009	Collected: 08/16/	19 08:30	Received:	08/17/19 10:30	Matrix: Drinkin	g Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical	Method: EPA 20	00.8					
Lead	9.	1 ug/L	1.0	1		08/22/19 12:4	7 7439-92-1	
Sample: B23AR	Lab ID:	70101863011	Collected: 08/16/	19 08:32	Received:	08/17/19 10:30	Matrix: Drinkin	g Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical	Method: EPA 20	00.8					
Lead	35.	5 ug/L	1.0	1		08/22/19 12:4	8 7439-92-1	
Sample: B51R	Lab ID:	70101863013	Collected: 08/16/	19 08:36	Received:	08/17/19 10:30	Matrix: Drinkin	g Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical	Method: EPA 20	00.8					



ANALYTICAL RESULTS

Project: CENTRAL BUCKS S.D.(BUCKINGHAM)

Sample: B52R	Lab ID:	70101863015	Collected: 08/16/	19 08:34	Received:	08/17/19 10:30	Matrix: Drinkin	g Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical	Method: EPA 20	00.8					
Lead	22.3	3 ug/L	1.0	1		08/22/19 12:5	51 7439-92-1	
Sample: B53R	Lab ID:	70101863017	Collected: 08/16/	19 08:40	Received:	08/17/19 10:30	Matrix: Drinkin	g Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical	Method: EPA 20	00.8					
Lead	36.	7 ug/L	1.0	1		08/22/19 12:5	52 7439-92-1	
Sample: B54R	Lab ID:	70101863019	Collected: 08/16/	19 08:38	Received:	08/17/19 10:30	Matrix: Drinkin	g Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical	Method: EPA 20	00.8					
Lead	30.	1 ug/L	1.0	1		08/22/19 12:5	53 7439-92-1	M1
Sample: B55R	Lab ID:	70101863021	Collected: 08/16/	19 08:42	Received:	08/17/19 10:30	Matrix: Drinkin	g Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical	Method: EPA 20	00.8					
Lead	35.	7 ug/L	1.0	1		08/22/19 12:5	56 7439-92-1	
Sample: B57R	Lab ID:	70101863023	Collected: 08/16/	19 08:43	Received:	08/17/19 10:30	Matrix: Drinkin	g Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical	Method: EPA 20	00.8					
Lead	4.4	4 ug/L	1.0	1		08/22/19 12:5	57 7439-92-1	
Sample: B2AR	Lab ID:	70101863024	Collected: 08/16/	19 08:45	Received:	08/17/19 10:30	Matrix: Drinkin	g Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical	Method: EPA 20	00.8					
Lead	4.9	9 ug/L	1.0	1		00/22/10 12:5	58 7439-92-1	



ANALYTICAL RESULTS

Project: CENTRAL BUCKS S.D.(BUCKINGHAM)

Pace Project No.: 70101863

Sample: B2BR	Lab ID: 70	101863026	Collected: 08/16/	19 08:48	Received: 0	8/17/19 10:30	Matrix: Drinking Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
200.8 MET ICPMS Drinking Water	Analytical Me	ethod: EPA 200.	8						
Lead	15.3	ug/L	1.0	1		08/22/19 12:5	59 7439-92-1		



QUALITY CONTROL DATA

•	CENTRAL BUCH 70101863	KS S.D.(BUCKINGH/	AM)					
QC Batch:	126856		Analysis Metho	od:	EPA 200.8			
QC Batch Method:	EPA 200.8		Analysis Descr	iption:	200.8 MET No	Prep Drinking	Water	
Associated Lab Sam		3001, 70101863004 3017, 70101863019					70101863015,	
METHOD BLANK:	605654		Matrix: W	/ater				
Associated Lab Sam		3001, 70101863004 3017, 70101863019			, 70101863024,		70101863015,	
Paramo	eter	Units	Result	Limit	Analyze	d Qual	fiers	
Lead		ug/L	<1.0	1	1.0 08/22/19 12	2:40		
LABORATORY CON	TROL SAMPLE:	605655						
Paramo	eter	Units	•	CS sult	LCS % Rec	% Rec Limits	Qualifiers	
Lead		ug/L	50	52.1	104	85-115		
MATRIX SPIKE SAM	IPLE:	605658						
Param	otor	Units	70101863001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
_ead		ug/L	143					 30 M1
MATRIX SPIKE SAM	IPI F [.]	605660						
Param		Units	70101863019 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Lead		ug/L	30.1	4	4 34.0)	97 70-13	80 M1
	E: 605657							
Parame	eter	Units	70101863001 Result	Dup Result	RPD	Qualifie	ſS	
Lead		ug/L	143	1	45	1		
	E: 605659							
Parame	eter	Units	70101863019 Result	Dup Result	RPD	Qualifie	ſS	
Lead		ug/L	30.1	29	9.9	1		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALIFIERS

Project: CENTRAL BUCKS S.D.(BUCKINGHAM)

Pace Project No.: 70101863

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

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PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CENTRAL BUCKS S.D.(BUCKINGHAM)

Pace Project No.: 70101863

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
70101863001	B3RB	EPA 200.8	126856		
70101863004	B4AR	EPA 200.8	126856		
70101863007	B5R	EPA 200.8	126856		
70101863009	B8BR	EPA 200.8	126856		
70101863011	B23AR	EPA 200.8	126856		
70101863013	B51R	EPA 200.8	126856		
70101863015	B52R	EPA 200.8	126856		
70101863017	B53R	EPA 200.8	126856		
70101863019	B54R	EPA 200.8	126856		
70101863021	B55R	EPA 200.8	126856		
70101863023	B57R	EPA 200.8	126856		
70101863024	B2AR	EPA 200.8	126856		
70101863026	B2BR	EPA 200.8	126856		

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CHAIN-OF-CUSTODY / Analytical Request Document

Page 9 of 12

Samples Intact (Y/N)

Custody Sealed (Y/N)

Received on (Y/N)

TEMP in C

DATE Signed:

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: SIGNATURE of SAMPLER:

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CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

	2 Of 3		Regulatory Agency		State / Location	PA					06	Dit	SIQ	õ16	017	OIS.	CIG	020	(R)	600	680	034	SAMPLE CONDITIONS	YUN N	-			uc	səle st q	Rece Custo Custo Coole (Y/N) Custo Coole (Y/N) Custo Custo Coole (Y/N)
	Page:		Regul		Stat		(NI)		(N/A) əu	Residual Chlori						-							TIME	1,30 23					O ni c	TEMI
			-			_	Requested Analysis Filtered (Y/N)		2 2 8														DATE	MULL		-				
				e MSA	ice abs.com,		Requested A		And in case of the local division of the loc	F) eleisM 7.002	×	X *HOLD	×	X *HOLD		X *HOLD	×	X *HOLD	×	X *HOLD	×	×	(FELLATION)	Haller						DATE Signed:
	Randy Conenhaver	gan Engineering	2700 Kelly Road, Suite 200	See Langan-Pace MSA	john.stanton@pace.abs.com,	9		Preservatives	Test	HOBN NaOUSS203 Methanol Tehto SezylsnA													ACCEPTED BY / AFFILIATION	WHI .						
on C	_	Nar	Address: 2700 Kel	Pace Quote:	an	Pace Profile #: 7983		Preser		HCI HNO3 H52O⊄ ∩ubtesetveq	×	×	×	×	×	×	×	×	×	×	×	×	TIME	100/						
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		gan.com			strict (Buckingham)			COLLECTED	END	DATE	8/16/2019	8/16/2019	8/16/2019	8/16/2019	8/16/2019	8/16/2019	8/16/2019	8/16/2019	8/16/2019	8/16/2019	8/16/2019	8/16/2019	NO					ER NAME ANI	PRINT Name of SAMPLER:	SIGNATURE of SAMPLER:
	n: Wer	Bill Lambing - blambing@langar		200130401-400-001	Central Bucks School District			COLL	START	TE	019 836	019 837	019 834	019 835	019 840	019 841	019 838	019 838	2019 842	019 842	019 843	019 845	RELINQUISHED BY / AFFILIATION	Venly	7			SAMPL	ł	<u>w</u>
	pject Information: Bandy Conenhaver	II Lambing - b			Central Bu	80401	-			MATRIX CODE	DW 8/16/2019	2W 8/16/2019	WC 8/16/2019	WC 8/16/2019	8/16/2019	ELINQUISHED	Buil													
Section B	Required Project Information: Report To: Pandy Consubave			Purchase Order #:	Project Name:	Project #: 200* 30401	ŀ	CODE	N N N N N N N N N	AR AR TS	0	0	0	0	0	0	<u>م</u>		0		0		œ.							
	Required Client Information: R Company: Lange Environment	ite 200		rcopenhaver@langan.com	1-6500 Fax 2015-491-6501	RUSH		MATRIX		One Character per box. Wipe (A-Z, 0-9 / , -) Other Sample Ids must be unique Tissue	X	R1	Υ	R1	X	R1	×	R1	×	R1	œ	R	ADDITIONAL COMMENTS	ELLOW, HIGHLIGHT TO BE SAMPLED	NOTIFIED					
Section A	Required Clie Company:	Address		Enail: rcop	Prone:	Requested Due Date:	ŀ			# WƏLI	1 B51R	2 B51R1	3 B52R	4 B52R1	5 B53R	6 B53R1	7 B54R	8 B54R1	9 B55R	10 B55R1	11 B57R	12 B2AR		HEIN HICH	* HOLD UNTIL NOTIFIED		Pa	ge 1	0 of	12

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CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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		ering	2700 Kelly Road, Suite 200	See Langan-Pace MSA	john.stanton@pacelabs.com,					Methanol Other													ACCEPTED BY / AFFILIATION	N					
	nhaver	Langan Engineering	Road, Su	See L	john.s			tives		Na2S2O3													ACCEI	X)					
	Randy Conenhaver		0 Kelly F		ager:	7983		Preservatives		N ^g OH HCI																			
:uo		Nai	270	ote:	ect Man	file #:		P		HNO3 POSCH	×	×	×											V					
Section C ce Informati	Attention:	Company Name:	Address:	Pace Quote:	Pace Project Manager:	Pace Profile #:			ัรย	# OF CONTAINE	1	-	-										TIME	_					
Section C Invoice Information:	4		A	ш	ш	<u>u</u>		N	AT COLLECTION	AMPLE TEMP /													DATE	8/16/2019			NATURE	LER:	LER:
5					ingham)				END	TIME	846	848	849										DA	8/16/			NAME AND SIGNATURE	of SAMF	of SAMF
		n.com			Central Bucks School District (Buckingham)			CTED	Ш	DATE	8/16/2019	8/16/2019	8/16/2019		-								z					PRINT Name of SAMPLER:	SIGNATURE of SAMPLER:
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tion:	nhaver	Bill Lambing - blambing@langan		200130401-400-001	Bucks Sc				START	DATE	8/16/2019	8/16/2019	8/16/2019										RELINQUISHED BY / AFFILIATION	X					
Informa	Randy Conenhaver	Lambing		: 20	Central	401		(AMO))=C 8AAD=D)	SAMPLE TYPE		2											LINQUIS	Dig					
3 Project				Order #	ame:	200130				ADD XIATAM	DW	DW	DW										REI	10	1				
Section B Required Project Information:	Report To:	Copy To:		Purchase Order #:	Project Name: Cer	Project #:		CODE	og P v v P P v v v	AR OT TS											24								
				-		-		MATRIX	Drinking Water Water Product Soil/Solid Oil	vipe vir issue																			
Section A Required Client Information:	/: Lancan Encineering		Warrington, PA 18976	rcopenhaver@langan.com	215-491-6500 Fax 2015-491-6501	Requested Due Date: RUSH		2		W (A-Z, 0-9 / , -) 0 0 Sample Ids must be unique 1	B2AR1	B2BR	B2BR1										ADDITIONAL COMMENTS	YELLOW HIGHLIGHT TO BE SAMPLED	* HOLD UNTIL NOTIFIED				540
Section A Required	Company:	Address:	arringto	Email: 1	none:	equeste				# MƏTI	1	2	1	4	5	6	7	8	6	10	11	12		ELLOW	HOLD UI	Pa	ge 1′	1 of	12

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					WO#:70101863 PM: JDS Due Date: 08/26/19
	Sa	mple (Condit	tion Upo	WO#:/0101000
Pace Analytical					DW: JDS Due Date: 08/26/19
 Chirk terms (1 and a gos) 	Client	Vame:		F	CLIENT: LAN-PA
	da	Ban			ULILIU
Courier: 🗱 Fed Ex 🗍 UPS 🗍 USPS 🗍 Clie		ercial P	ace Di	ther	
Tracking #: 760 0760	1234	10			
Custody Seal on Cooler/Box Present: Y	es 🖉 No	Seals	; intact: [Yes 🗌 No	Temperature Blank Present: 🔲 Yes 🕅 No
Packing Materia	Bags Zipl		e Dthe	er 🔿	Type of Ice: Wet Blue None
Thermometer Used: 19091	Correcti	on Factor	+D	· +	Samples on ice, cooling process has begun
Cooler Temperature (°C): 2308	Cooler Te	emperatur	e Correc	ted (°C): 🧹	9.0 Date/Time 5035A kits placed in freezer
Temp should be above freezing to 6.0°C					10-
USDA Regulated Soil (🗌 N/A, water sample	e)			Date and Init	tials of person examining contents: 78 217/9
Did samples originate in a quarantine zone within the	United States:				Did samples orignate from a foreign source (internation including Hawaii and Puerto Rico)?
If Yes to either question, t	fill out a Reg	ulated So	il Checkl	ist (F-LI-C-010)	and include with SCUR/COC paperwork.
					COMMENTS:
Chain of Custody Present:	Yes	□No		1.	
Chain of Custody Filled Out:	Yes	□No		2.	
Chain of Custody Relinquished:	Yes	□No		3.	
Sampler Name & Signature on COC:	[]Yes	DINO	□n/A	4.	
Samples Arrived within Hold Time:	PYes	□No		5.	
Short Hold Time Analysis (<72hr):	[]Yes	DNo		6.	
Rush Turn Around Time Requested:	Dres	□No		7.	
Sufficient Volume: (Triple volume provided for MS/MS		□No	2	8.	
Correct Containers Used:	Tres	□No		9.	
-Pace Containers Used:	TYes			1.0	*
Containers Intact:	Yes		Chun	10. 11. Note il	f sediment is visible in the dissolved container.
Filtered volume received for Dissolved lests	□Yes		DIN/A	12.	sedment is visible in the dissolved container.
Sample Labels match COC:	TYes	□No		12.	
-Includes dateranterion margine	V OIL		CINUA	13. D HM	NO3 H2SO4 NaOH HCI
All containers needing preservation have been checke	U DYes	□No	□n/A		
oH paper Lot # MCAUTO,				Sample #	
All containers needing preservation are found to be in compliance with EPA recommendation?					
HNO ₃ , H ₂ SO ₄ , HCl, NaOH>9 Sulfide,	Yes	□No	□N/A		
VAOH>12 Cγanide) Exceptions: VOA, Coliform, TOC/DOC, Oil and Grease	в,			laitial when come	pleted: Lot # of added preservative: Date/Time preservative adde
PRO/8015 (water). Per Method, VOA pH is checked after analysis				Initial when comp	pieted. Lot # of added preservative: Dater time preservative add
	□Yes	□No		14.	
Samples checked for dechlorination: (Estarch test strips Lot #	Cires	0.10			
Residual chlorine strips Lot #				Positivo	e for Res. Chlorine? Y N
leadspace in VOA Vials (>6mm):	□Yes	0No	ON/A	15.	
rip Blank Present:	□Yes	□No	EIN/A	16.	
np Blank Custody Seals Present	□Yes	ΠNo	PIN/A		
Pace Trip Blank Lot # (if applicable)			· · ·		
Client Notification/ Resolution:				Field Data Requ	in an energy set in the set of th
Person Contacted:				Date/	Fime:
Comments/ Resolution:					
					6
					Page 12 of 12

F-LI-C-002-rev.02

UNAMI



Pace Analytical Services, LLC 575 Broad Hollow Road Melville, NY 11747 (631)694-3040

August 28, 2019

Randy Copenhaver Langan Engineering 2700 Kelly Road, Suite 200 Warrington, PA 18976

RE: Project: CENTRAL BUCKS S.D. (UNAMI) Pace Project No.: 70101866

Dear Randy Copenhaver:

Enclosed are the analytical results for sample(s) received by the laboratory on August 17, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Joh Sh

John D. Stanton john.stanton@pacelabs.com (631)694-3040 Project Manager

Enclosures

cc: Bill Lambing, Langan Engineering





CERTIFICATIONS

Project: CENTRAL BUCKS S.D. (UNAMI)

Pace Project No.: 70101866

Long Island Certification IDs

575 Broad Hollow Rd, Melville, NY 11747 New York Certification #: 10478 Primary Accrediting Body New Jersey Certification #: NY158 Pennsylvania Certification #: 68-00350 Connecticut Certification #: PH-0435 Maryland Certification #: 208 Rhode Island Certification #: LAO00340 Massachusetts Certification #: M-NY026 New Hampshire Certification #: 2987



ANALYTICAL RESULTS

Project: CENTRAL BUCKS S.D. (UNAMI)

Pace Project No.: 70101866

Sample: U333AR	Lab ID: 70	0101866001	Collected: 08/16/	19 09:46	Received: 08	8/17/19 10:30	Matrix: Drinking Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
200.8 MET ICPMS Drinking Water	Analytical M	ethod: EPA 200	.8						
Lead	1.2	ug/L	1.0	1		08/22/19 13:0	4 7439-92-1		



QUALITY CONTROL DATA

Project: CENTRAL BUCK Pace Project No.: 70101866	S S.D. (UNAMI)						
QC Batch: 126856		Analysis Meth	nod:	EPA 200.8			
QC Batch Method: EPA 200.8		Analysis Des		200.8 MET No P	rep Drinking Wat	er	
Associated Lab Samples: 7010186	6001						
METHOD BLANK: 605654		Matrix:	Water				
Associated Lab Samples: 7010186	6001						
Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers	6	
Lead	ug/L	<1.0	1.0	0 08/22/19 12:	40		
LABORATORY CONTROL SAMPLE:	605655						
Parameter	Units		LCS Result	LCS % Rec	% Rec Limits 0	Qualifiers	
Lead	ug/L	50	52.1	104	85-115		
MATRIX SPIKE SAMPLE:	605658						
Parameter	Units	70101863001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
						70-130	
_ead	ug/L	14	-5 4	147	99	70-130	
MATRIX SPIKE SAMPLE:	605660						
Parameter	Units	70101863019 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Lead	ug/L			34.0	97	70-130	
SAMPLE DUPLICATE: 605657		70101863001	Dup				
Parameter	Units	Result	Result	RPD	Qualifiers	_	
Lead	ug/L	143	14	5	1		
SAMPLE DUPLICATE: 605659							
Parameter	Units	70101863019 Result	Dup Result	RPD	Qualifiers		
Lead	ug/L		29.9		1	-	
-cau	ug/L	50.1	29.	3	1		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, LLC.



QUALIFIERS

Project: CENTRAL BUCKS S.D. (UNAMI)

Pace Project No.: 70101866

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:CENTRAL BUCKS S.D. (UNAMI)Pace Project No.:70101866

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
70101866001	U333AR	EPA 200.8	126856		

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-	1
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CHAIN-OF-CUSTODY / Analytical Requesting

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Section A Required	Section A Required Client Information:	Section B Required Project Information:	oject I.	Informatio	ï			Invoi	Section C ce Informa	Section C Invoice Information:	Ë																
Company:	v: Langan Engineering		Rand	Randy Copenhaver	aver				Atte	Attention:		Randy Copenhaver	penhav	/er													1
Address:	2700 Kelly Road, Suite 200	Copy To:	Bill Li	Bill Lambing - blambing@langan.com	lambing@	langan.cc	ш		Cor	npany	Company Name:	Lang	Langan Engineering	ineerin	Б												1
Narringt	Warrington, PA 18976								Add	Address:		2700 Kelly Road, Suite 200	/ Road,	, Suite	200				11 RG	G							
Email:	ngan.c	Purchase Order #:	*	20013	200130401-400-001	001			Pac	Pace Quote:	te:		Se	e Lang	an-Pa	See Langan-Pace MSA				1							
Daniaete	-none: 215-491-6500 rax 2015-491-6501 Demiserted Due Date: 2015-491-6501	Project Name: Ce	11204	Central Bucks School District (Unami)	cks Schoo	District	(Unami)		Lac a	Pace Project M	Pace Project Manager:	nager:		n.stant	d	john.stanton@pacelabs.com,	s.com,						Stat	State / Location	ion		
icophox.		1 10/001 #. 201							ă -		.# D	1303					Ren	instad	Analys	is Filter	Rennested Analysis Filtered (Y/N)	-		A			
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	MATRIX		ol of e	сомі	0	COLLECTED	ED		N		Р	Preservatives	atives	s	1/1	٨/٢	_		_		_	_					
	SAMPLE ID Solitishid Water Wat	Water DW WT ater WW SL OL	see valid code)=୦ ସ୍ୟସ୍ଟ୍ରର)	START	1	END								+30T									(1111) 211			
# MƏTI	One Character per box. Wipe (A-Z, 0-9 /, -) Air Sample Ids must be unique Tissue		MATRIX CODE		DATE	TIME	DATE	TIME	* OF CONTAINE	Dupreserved	HNO3 HSSO¢	HCI	Na2S2O3 NaOH	lonshtaM	Other	esevienA a) sleteM 7.002							Residual Chlori				
1	U333AR		MD	8/16/2019		946 8/1	8/16/2019	946	-		×		-			×										Q	
2	U333AR1		MQ				8/16/2019	946	-		×					×	* HOLD									UL	
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	ADDITIONAL COMMENTS		RELI	RELINQUISHED BY / AFFILIATION	BY / AFFIL	IATION		DATE		TIME			ACI	CEPTEI	BYII	ACCEPTED BY / AFFILIATION	NOL			DATE		TIME		SAMP	SAMPLE CONDITIONS	LIONS	
/ELLOW	ELLOW HIGHLIGHT TO BE SAMPLED		2	sil :	Lend	25		8/16/2019		1700	V		1	1			R	50	8	111	110	R	ñ	844	5	Ľ	0
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Page					SA	MPLER N	SAMPLER NAME AND SIGNATURE	SIGNAT	URE														:	uo			
7 of						PRINT	PRINT Name of SAMPLER:	SAMPLEF										·) ni 9N	bəviə:	N) bier ed tody V)	ubjez 1) Djer	u) st ubles
8						ANDIO											UAIE Signed:	igned:					19T	Rec Ice (Y/	(Y/Y Su Seal	Coc San	Intad //Y)

Pace Analytical					WO#:70	-01000	
Environ Constant	Clien	t Name:			CLIENT: LAN	Date: 08/26/19	
	XC	engan			CLIENT: LAN-F	Ϋ́Α	
Courier: 🕅 Fed Ex 🗍 UPS 🗍 USPS 🗍 Clic		mercial 🗌 F	Pace D	ther			
2100010	122	Nh					
Tracking #: 11600/60 Custody Seal on Cooler/Box Present: Y	es No			Yes No		ture Blank Present:	Yes ANO
Packing Materia Bubble Wrap Bubble	Bags 🛛 Z	liploc ∐Non	e Dthe			ce: Wet Blue None	
Thermometer Used: 1091	Corre	ction Facto	r: 7 ()	o the	710	on ice, cooling process has	
Cooler Temperature (°C): 2328	Cooler	Temperatu	re Correc		XY-U Date/Tim	e 5035A kits placed in fre	ezer
Temp should be above freezing to 6.0°C							81-14
USDA Regulated Soil (🗌 N/A, water sample	2)				nitials of person exa		all
Did samples originate in a quarantine zone within the NM, NY, OK, OR, SC, TN, TX, or VA (check map)?					including H	s orignate from a foreign source awaii and Puerto Rico)?	
NM, NY, OK, OR, SC, TN, TX, or VA (check map): If Yes to either question, f	ill out a Re	egulated So	I Check	1st (F-LI-C-010		DMMENTS:	
	d.	ΠNo		1.			
Chain of Custody Present:	/Yes			2.			
Chain of Custody Filled Out:	AYes			3.			
Chain of Custody Relinquished:	ØYes		□n/A	4.			
Sampler Name & Signature on COC:	□Yes			5.			
Samples Arrived within Hold Time:	PYes	DN0		6.			
Short Hold Time Analysis (<72hr):	OYes			7.			
Rush Turn Around Time Requested:	Pres			8.		· · · · · · · · · · · · · · · · · · ·	
Sufficient Volume: (Triple volume provided for MS/MS	D'Wes			9.	,		
Correct Containers Used:	Pres			5.			
-Pace Containers Used: •	Pres			10.			
Containers Intact:	D Yes		DIN/A		e if sediment is visible in the	a dissolved container	
Filtered volume received for Dissolved tests	□Yes		LINA	12.		le dissolved container.	
Sample Labels match COC:	A Yes	□No		12.			
-Includes date/time/ID/Analysis Matrix S M			□n/A	13.	HNO3 H2SO4		
All containers needing preservation have been checker	" Hes	□No	UNA				
H paper Lot # ACASTU?.				Sample #			
All containers needing preservation are found to be in compliance with EPA recommendation?	5 X						×
HNO ₃ , H ₂ SO ₄ , HCl, NaOH>9 Sulfide,	Pres	DNo	□N/A				
VAOH>12 Cγanide) Exceptions: VOA, Coliform, TOC/DOC, Oil and Grease				1-22-1		· b. c	time ode
DRO/8015 (water). Per Method, VOA pH is checked after analysis				Initial when co	mpleted: Lot # of added	preservative: Date/Time prese	ervative auc
		□No	NIA	14.			
Samples checked for dechlorination:	□Yes	0110	T				
(Estarch test strips Lot # Residual chlorine strips Lot #				Posit	ive for Res. Chlorine? Y	Ν	
leadspace in VΩA Vials (>6mm):	□Yes	[]No	/ON/A	15.			
rip Blank Present:	□Yes	□No	ÉNIA	16.			
rip Blank Custody Seals Present	□Yes	No	MINIA				
Pace Trip Blank Lot # (if applicable):			,				
Client Notification/ Resolution:				Field Data Red	yuired? Y	/ N	
Person Contacted:				Date	/Time:		
013011 001100000.							
Comments/ Resolution:		123054					

BUCKINGHAM



Pace Analytical Services, LLC 575 Broad Hollow Road Melville, NY 11747 (631)694-3040

August 28, 2019

Randy Copenhaver Langan Engineering 2700 Kelly Road, Suite 200 Warrington, PA 18976

RE: Project: Central Bucks (Buckingham) Pace Project No.: 70102148

Dear Randy Copenhaver:

Enclosed are the analytical results for sample(s) received by the laboratory on August 21, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Joh Shu

John D. Stanton john.stanton@pacelabs.com (631)694-3040 Project Manager

Enclosures

cc: Bill Lambing, Langan Engineering





CERTIFICATIONS

Project: Central Bucks (Buckingham) Pace Project No.: 70102148

Long Island Certification IDs

575 Broad Hollow Rd, Melville, NY 11747 New York Certification #: 10478 Primary Accrediting Body New Jersey Certification #: NY158 Pennsylvania Certification #: 68-00350 Connecticut Certification #: PH-0435 Maryland Certification #: 208 Rhode Island Certification #: LAO00340 Massachusetts Certification #: M-NY026 New Hampshire Certification #: 2987



ANALYTICAL RESULTS

Project: Central Bucks (Buckingham)

Pace Project No.: 70102148								
Sample: BOWF	Lab ID: 701	02148001	Collected: 08/20/	19 07:59	Received: 08	8/21/19 10:20	Matrix: Drinking	Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Meth	nod: EPA 200	0.8					
Lead	42.1	ug/L	1.0	1		08/22/19 16:5	2 7439-92-1	
Sample: B58R	Lab ID: 701	02148003	Collected: 08/20/*	19 08:00	Received: 08	8/21/19 10:20	Matrix: Drinking	Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Meth	nod: EPA 200	0.8					
Lead	16.1	ug/L	1.0	1		08/22/19 16:5	3 7439-92-1	



QUALITY CONTROL DATA

Project: Central Bucks (Br	uckingham)							
Pace Project No.: 70102148								
QC Batch: 127106		Analysis Me	ethod:	EF	PA 200.8			
QC Batch Method: EPA 200.8		Analysis De	escription:	20	0.8 MET No Pr	ep Drinking Wa	ater	
Associated Lab Samples: 7010214	8001, 70102148003							
METHOD BLANK: 606959		Matrix	: Water					
Associated Lab Samples: 70102148	8001, 70102148003							
Parameter	Units	Blank Result	Reportin Limit	g	Analyzed	Qualifie	ers	
Lead	ug/L	<1.0		1.0	08/22/19 16:3	33		
LABORATORY CONTROL SAMPLE:	606960							
Parameter	Units	Spike Conc.	LCS Result	c	LCS % Rec	% Rec Limits	Qualifiers	
Lead	ug/L	50	51.9		104	85-115		
MATRIX SPIKE SAMPLE:	606962							
		3031960600	5 Spike		MS	MS	% Rec	
Parameter	Units	Result	Conc.		Result	% Rec	Limits	Qualifiers
Lead	ug/L	0.0049 m	g/L	4	9.2	107	70-130	
MATRIX SPIKE SAMPLE:	606964							
Parameter	Units	7010178600 [°] Result	7 Spike Conc.		MS Result	MS % Rec	% Rec Limits	Qualifiers
Lead	ug/L		1.0	4	4.8	110		Quaimers
SAMPLE DUPLICATE: 606961		20240606005	D					
Parameter	Units	30319606005 Result	Dup Result		RPD	Qualifiers		
Lead	ug/L	0.0049 mg/L		4.7	Ę	5	_	
SAMPLE DUPLICATE: 606963								
Parameter	Units	70101786007 Result	Dup Result		RPD	Qualifiers		
Lead	ug/L	<1.0		<1.0				
	- 3							

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALIFIERS

Project: Central Bucks (Buckingham)

Pace Project No.: 70102148

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:Central Bucks (Buckingham)Pace Project No.:70102148

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
70102148001 70102148003	BOWF B58R	EPA 200.8 EPA 200.8	127106 127106		

	tical
	Analy
5	Pace
	2

Section A Required Client Information:

CHAIN-OF-CUSTODY / Analytical Require Chain-of-Custody is a LEGAL DOCUMENT. All relevant

Invoice Information: Section C

Section B Required Project Information: Report To: Randy Copenhaver Copy To: Bill Lambing - blambing@langan.com



WO#:70102148

5 -Page :

Require	Clie	Required Project Information:	ect into	ormation:			Invoi	ce Into	Invoice Information:	ï											-	Page:		۲	ę	-	
Company:		Report To: Ré	andy C	Randy Copenhaver				Atte	Attention:	Ra	Randy Copenhaver	penhi	aver														
Address:	2700 Kelly Road, Suite 200	Copy To: Bil	ill Lam	Bill Lambing - blambing@langan.com	ng@langai	n.com		G	Company Name: Langan Engineering	Name:	Lang	jan En	gineer	ing													
Warring	Warrington, PA 18976					1		Add	Address:		2700 Kelly Road, Suite 200	y Roa	d, Suit	e 200								Regi	ulatory	Regulatory Agency		100	
Email:	rcopenhaver@langan.com	Purchase Order #:	#	200130401-400-001	400-001			Pac	Pace Quote:	e:			ee Lar	-ngan-F	See Langan-Pace MSA	ISA											
Phone:	1-6500	Project Name:	Cer	Central Bucks School District (Buckingham)	chool Distri	ict (Bucking	ham)	Pac	Pace Project Manager:	ect Mar	nager:		hn.sta	nton@	pacel	john.stanton@pacelabs.com,	É					Ste	State / Location	cation			
Request	Requested Due Date: RUSH	Project #: 200130401	30401					Pac	Pace Profile #:	le #:	7983	~											PA				
																L.	Request	ed Analy	sis Filt	Requested Analysis Filtered (Y/N	N)						
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	SAMPLE ID	WT WW		START	₹T	END										(9,							(N/X) əu				
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Pace Analytical						
Environ 1 and an and an and an and an	Client Na	ame:				WO#:70102148
	1 41	NI-P	A			PM: JDS Due Date: 08/28/19
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Courier: Pred Ex UPS USFS OIL			1000			
Tracking #:	s Alo	0	y y	Yes Ro)	Temperature Blank Present: 🗌 Yes 🏹 🏎
Custody Seal on Cooler/Box Present: Ye						Type of Ice: Wet Blue None
Packing Material: Bubble Wrap	sags Lezipio	in Factor:	XO	\bigcirc	Г	Samples on ice, cooling process has begun
Thermometer Used: TH091	Correctio			d (°C):	255	Date/Time 5035A kits placed in freezer
Cooler Temperature (°C): 25.3	- Cooler Ter	nperature	Concete	u (0).	10.0	
Temp should be above freezing to 6.0°C				Dato and	Initials of	person examining contents:
USDA Regulated Soil (WA, water sample						Did samples orignate from a foreign source (internationally,
Did samples originate in a quarantine zone within the I NM, NY, OK, OR, SC, TN, TX, or VA (check map)?	I YESI	INU				including Hawaii and Puerto Rico)? [] Yes[] No
If Yes to either question, fi	Il out a Regu	lated Soil	l Checklis	t (F-LI-C-0	10) and inc	clude with SCUR/COC paperwork.
						COMMENTS:
Chain of Custody Present:	Gres	□No		1.		
Chain of Custody Filled Out:	Ores	□No		2.		
Chain of Custody Relinquished:	Ores	□No		3.		
Sampler Name & Signature on COC:	Elles	□No	DN/A	4.		• *
Samples Arrived within Hold Time:	Res	□No		5.		
Short Hold Time Analysis (<72hr):	□Yes	LANO		6.		
Rush Turn Around Time Requested:	□Yes	-DNO	•)	7.		
Sufficient Volume: (Triple volume provided for MS/MS	D. 🗆 Yes	□No		8.		
Correct Containers Used:	Wes	□No		9.		
-Pace Containers Used:	Gres	□No				•
Containers Intact:	Dres	□No	0	10.		
Filtered volume received for Dissolved tests	□Yes	□No	DARA	1	Note if sedime	ent is visible in the dissolved container.
Sample Labels match COC:	Thes	□No		12.		
-Includes date/time/ID/Analysis Matrix SL	the second se					
All containers needing preservation have been checke	ed Exes	□No	□N/A	13.	□ HNO ₃	□ H₂SO₄ □ NaOH □ HCI
pH paper Lot # HC 803403				Comple #		
All containers needing preservation are found to be in			0	Sample #		
compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCI, NaOH>9 Sulfide,	□Yes	□No	- DN/A			а.
NAOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC, Oil and Greas	e,					
DRO/8015 (water). Per Method, VOA pH is checked after analysis				Initial whe	en completed:	Lot # of added preservative: Date/Time preservative added
			EIN/A	14.		
Samples checked for dechlorination:	□Yes	□No	ENGIA	14.		
KI starch test strips Lot # Residual chlorine strips Lot #			2		Positive for Re	es. Chlorine? Y N
Headspace in VOA Vials (>6mm):	□Yes	□No	EN/A	15.		
Trip Blank Present:	□Yes	□No	GIN/A	16.		
Trip Blank Custody Seals Present	□Yes	□No	DOPA			
Pace Trip Blank Lot # (if applicable):						
Client Notification/ Resolution:				Field Data	a Required?	Y / N
Person Contacted:					Date/Time	
Comments/ Resolution:	- real	vest	ed :	200.7	Pb	was logged for 200.8.
				5 		00

LENAPE



Pace Analytical Services, LLC 575 Broad Hollow Road Melville, NY 11747 (631)694-3040

August 28, 2019

Randy Copenhaver Langan Engineering 2700 Kelly Road, Suite 200 Warrington, PA 18976

RE: Project: Central Bucks (Lenape) Pace Project No.: 70102153

Dear Randy Copenhaver:

Enclosed are the analytical results for sample(s) received by the laboratory on August 21, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Joh She

John D. Stanton john.stanton@pacelabs.com (631)694-3040 Project Manager

Enclosures

cc: Bill Lambing, Langan Engineering





CERTIFICATIONS

Project: Central Bucks (Lenape) Pace Project No.: 70102153

Long Island Certification IDs

575 Broad Hollow Rd, Melville, NY 11747 New York Certification #: 10478 Primary Accrediting Body New Jersey Certification #: NY158 Pennsylvania Certification #: 68-00350 Connecticut Certification #: PH-0435 Maryland Certification #: 208 Rhode Island Certification #: LAO00340 Massachusetts Certification #: M-NY026 New Hampshire Certification #: 2987



ANALYTICAL RESULTS

Project: Central Bucks (Lenape)

Sample: L205R	Lab ID: 701	02153001	Collected: 08/20/1	9 08:36	Received: 0	8/21/19 10:20	Matrix: Drinking	Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Meth	nod: EPA 20	0.8					
Lead	1.8	ug/L	1.0	1		08/22/19 16:5	54 7439-92-1	
Sample: L510BR	Lab ID: 701	02153003	Collected: 08/20/1	9 08:39	Received: 0	8/21/19 10:20	Matrix: Drinking	Water
Sample: L510BR Parameters	Lab ID: 701 Results	02153003 Units	Collected: 08/20/1 Report Limit	9 08:39 DF	Received: 0 Prepared	8/21/19 10:20 Analyzed	Matrix: Drinking CAS No.	Water Qual
Sample: L510BR Parameters 200.8 MET ICPMS Drinking Water		Units	Report Limit				0	



QUALITY CONTROL DATA

Project: Central Bucks (Le	enape)							
Pace Project No.: 70102153								
QC Batch: 127106		Analysis Me	ethod:	EP	A 200.8			
QC Batch Method: EPA 200.8		Analysis De	escription:	20	0.8 MET No Pi	ep Drinking W	ater	
Associated Lab Samples: 70102153	3001, 70102153003							
METHOD BLANK: 606959		Matrix	: Water					
Associated Lab Samples: 7010215	3001, 70102153003							
Parameter	Units	Blank Result	Reportin Limit	g	Analyzed	Qualifie	ers	
Lead	ug/L	<1.0		1.0	08/22/19 16:3	33		
LABORATORY CONTROL SAMPLE:	606960							
Parameter	Units	Spike Conc.	LCS Result		LCS 6 Rec	% Rec Limits	Qualifiers	
		50		/			Quaimers	
Lead	ug/L	50	51.9		104	85-115		
MATRIX SPIKE SAMPLE:	606962							
Denemotion	l la ita	3031960600			MS	MS % Date	% Rec	Qualifiana
Parameter	Units	Result	Conc.		Result	% Rec	Limits	Qualifiers
_ead	ug/L	0.0049 m	g/L	4	9.2	107	7 70-130	
MATRIX SPIKE SAMPLE:	606964							
-		7010178600			MS	MS	% Rec	o ""
Parameter	Units	Result	Conc.		Result	% Rec	Limits	Qualifiers
_ead	ug/L	<	1.0	4	4.8	110) 70-130	
SAMPLE DUPLICATE: 606961								
Parameter	Units	30319606005 Result	Dup Result		RPD	Qualifiers		
Lead	ug/L	0.0049 mg/L		4.7	Ę			
SAMPLE DUPLICATE: 606963								
Parameter	Units	70101786007 Result	Dup Result		RPD	Qualifiers		
		<1.0						
Lead	ug/L	<1.0	•	<1.0				

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALIFIERS

Project: Central Bucks (Lenape)

Pace Project No.: 70102153

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:Central Bucks (Lenape)Pace Project No.:70102153

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
70102153001 70102153003	L205R L510BR	EPA 200.8 EPA 200.8	127106 127106		

| | | | Regulatory Agency | | State / Location | | | (N/X) ər | Residual Chlorin | |

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 | TE TIME SAMPLE CONDITIONS | 2 11-11 2 | 19 10:20 25.3 N N Y
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s Information: | Attention: Randy Copenhaver | Nar | 2700 Kelly Ro | | ariager.
7083 | | Preservatives | | | , t | 1 x

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Bill Lowbing | |
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PRINT Name of SAMPLER | SIGNATURE of SAMPLER: |
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| Client Information: | Langan Engineering | 2700 Kelly Road, Suite 200 | ō | | Z15-491-6500 rax 2015-491-6501
ed Due Date: R11SH | | MATRIX | SAMPLE ID Solution Water | One Character per box. Wipe
(A-Z, 0-9 / , -) Other
Sample Ids must be unique Tissue | L205R | L205R1

 | L510BR
 | L510BR1 |
 | |

 | | - | |
 | ADDITIONAL COMMENTS | V HIGHLIGHT TO BE SAMPLED | UNTIL NOTIFIED
 | - | Page 7 of | 8 |
| | Section B
Section C
Section C
70103153 | Section B Section C Client Information: Required Project Information: Langan Engineering Report To: Randy Copenhaver | Section B Section C nation: Required Project Information: Engineering Report To: Randy Copenhaver Silt Road, Suite 200 Company Name: Langan Engineering | Section B Section C Dilent Information: Required Project Information: Langan Engineering Report To: Randy Copenhaver 2700 Kelly Road, Suite 200 Company Name: Langan Engineering PA 18976 Address: 2700 Kelly Road, Suite 200 | Section B Section C Liend thremation: Required Project Information: Langan Engineering Report To: Randy Copenhaver Z700 Kelly Road, Suite 200 Copy To: Bill Lambing@langan.com Attention: Randy Copenhaver PA 18976 Address: Z700 Kelly Road, Suite 200 Purchase Order #: 2000 Finance Company Name: Langan Engineering Purchase Purchase Order #: 2013 401 400-001 Pace Quote: | Section B Section C Section C Linet Information: Required Project Information: Imvoice Information: Langan Engineering Report Te: Randy Copenhaver Imvoice Information: 2700 Kelly Road, Suite 200 Copy To: Bill Lambing@langan.com Attention: Randy Copenhaver 2700 Kelly Road, Suite 200 Copy To: Bill Lambing@langan.com Address: 2700 Kelly Road, Suite 200 A 18976 Purchase Order #: 200130401.400-001 Pace Quote: 2700 Kelly Road, Suite 200 215.431-5500 Fax 2015.431-5501 Project Name: Central Bucks School District (Lenape) Due Date District (Lenape) Pace Quote: join.stanton@pacelabs.com, Due Date District (Lenape) Pace Project Manager: join.stanton@pacelabs.com, | Section B Section C Section C Lint Information: Required Project Information: Imvoice Information: Langan Engineering Report To: Randy Copenhaver Invoice Information: Z700 Kelly Road, Suite 200 Copy To: Bill Lambing elamaing@langan.com Attention: Randy Copenhaver Z700 Kelly Road, Suite 200 Dompany Name: Langan Engineering Address: 2700 Kelly Road, Suite 200 Address: 2700 Kelly Road, Suite 200 Z15-491-6501 Project Mare: Central Bucks School District (Lenape) Pace Project Manager: john stanton@pacelabs.com, Address: 2700 Kelly Road, Suite 200 Due Date: RUSH Project #: 200130401 Pace Project Manager: john stanton@pacelabs.com, Address Set Langan - Pace Mare | Section B
Linet Information: Required Project Information: Invoice Information: Required Project Information: Required Project Information: Required Project Information: Required Project Information: Invoice Information: Information: Invoice Information: Invoice Information: Invoice Information: Invoice Information: Invoice Information: Informatio | Section B
Section C
Langar Engineering Engineering Engineering Engineering Invoice Information:
Langar Engineering Engineering Engineering Invoice Information:
Z200 Keily Road, Suite 200 Copy To: Bill Lambing Dambing@langan.com Attention: Randy Copenhaver
Z200 Keily Road, Suite 200 Copy To: Bill Lambing@langan.com Attention: Randy Copenhaver
Z200 Keily Road, Suite 200 Copy To: Bill Lambing@langan.com Attention: Randy Copenhaver
Z200 Keily Road, Suite 200 Copy To: Bill Lambing@langan.com Address: Z100 Keily Road, Suite 200 Coppany Name: Langan Engineering Company Name: Total Science Company Name: Company Na | Section B Section C Section C Section C Inter information: Required Project Information: Required Project Information: Marchine 2700 Real: Flighteeting Project Name Reaving Project Information: Invoice Information: Invoice Information: 2700 Real: Flighteeting Project Name Reaving Coopering Reaving Reaving | Section E Section E <t< td=""><td>Section Element Section Element Section Element Section Element Section Element Image Element Required Froject information: Required Froject information: Image Element Image Element Image Element Image Element Required Froject information: Image Element Image Element Image Element Image Element Image Element Image Element Required Froject information: Image Element Image Element Image Element Image Element Image Element Image Element Required Froject Information: Image 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0	San	nple Cond	ition Upo	on Rece	eipt
Pace Analytical	Client Na	me.		Projec	WO#:70102153
		$\Lambda \downarrow \Box \Lambda$			PM: JDS Due Date: 08/28/19
	_LA	N-VA		-78.3	CLIENT: LAN-PA
	ent Commer	cial [] Pace []	Dther		OLILINI. LAN-PA
Tracking #: 7892_	6120	8166		-	
Custody Seal on Cooler/Box Present: Y	es Ao		: 🗌 Yes 🕼	0	Temperature Blank Present: 🔲 Yes 🏹 🏎
Packing Material: Bubble Wrap Bubble	Bags Riplo	c 🛛 None 🖽	her		Type of Ice: Wet Blue None
Thermometer Used: TH091	Correctio	n Factor: + (D.Z		Samples on ice, cooling process has begun
Cooler Temperature (°C): 25.3	Cooler Ten	nperature Corre	ected (°C):	25.5	Date/Time 5035A kits placed in freezer
Temp should be above freezing to 6.0°C					
USDA Regulated Soil (WA, water sampl	e)		Date an	d Initials o	f person examining contents:
Did samples originate in a quarantine zone within the	United States: A	L, AR, CA, FL, GA	, ID, LA, MS, NO	С,	Did samples orignate from a foreign source (internationally,
and an an The TY as VA (check man)?	YESI	INU			including Hawaii and Puerto Rico)? [Yes No
If Yes to either question,	fill out a Regu	lated Soil Cheo	klist (F-LI-C-	010) and ir	clude with SCUR/COC paperwork.
	0				COMMENTS:
Chain of Custody Present:	Ores	□No	1.		
Chain of Custody Filled Out:	Res	No	2.		
Chain of Custody Relinquished:	Ores	□No	3.		• 3
Sampler Name & Signature on COC:	Blos				
Samples Arrived within Hold Time:	Thes		5.		
Short Hold Time Analysis (<72hr):	□Yes	BATO	6.		
Rush Turn Around Time Requested:	□Yes	-DAD	7.		
Sufficient Volume: (Triple volume provided for MS/M	SD. DYes	□No	8.		
Correct Containers Used:	Pes	□No	9.		
-Pace Containers Used:	Gees	□No,			•
Containers Intact:	Des	□No	10.		
Filtered volume received for Dissolved tests	□Yes		A 11.	Note if sedin	nent is visible in the dissolved container.
Sample Labels match COC:	Res	□No	12.		
and 10 March	WT OIL				
All containers needing preservation have been check	ed Res		A 13.	□ HNO ₃	□ H₂SO₄ □ NaOH □ HCI
pH paper Lot # HP 863463	\sim				
All containers needing preservation are found to be in	1	1990 18 mars	Sample #		
compliance with EPA recommendation?	□Yes	DNO RU	۹.		
(HNO ₃ , H ₂ SO ₄ , HCI, NaOH>9 Sulfide, NAOH>12 Cyanide)					8
Exceptions: VOA, Coliform, TOC/DOC, Oil and Grea DRO/8015 (water).	se,		Initial whe	en completed	: Lot # of added preservative: Date/Time preservative added
Per Method, VOA pH is checked after analysis					
Samples checked for dechlorination:	□Yes	DNO YEAN	K 14.		
KI starch test strips Lot #				Desitive (or [ter Chlorine2 V N
Residual chlorine strips Lot #		0		POSITIVE TOF P	tes, Chlorine? Y N
Headspace in VOA Vials (>6mm):	□Yes	DNO DAU			
Trip Blank Present:	□Yes		A 16.		
Trip Blank Custody Seals Present	□Yes		2		
Pace Trip Blank Lot # (if applicable):					
Client Notification/ Resolution:				a Required?	
Person Contacted:			200 7	Date/Time	
Comments/ Resolution: Client	reque	sted ?	200.1	TB I	ogged for dur. 8.
	V				00

* PM (Project Manager) review is documented electronically in LIMS.

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TOHICKON



Pace Analytical Services, LLC 575 Broad Hollow Road Melville, NY 11747 (631)694-3040

August 28, 2019

Randy Copenhaver Langan Engineering 2700 Kelly Road, Suite 200 Warrington, PA 18976

RE: Project: Central Bucks (Tohickon) Pace Project No.: 70102151

Dear Randy Copenhaver:

Enclosed are the analytical results for sample(s) received by the laboratory on August 21, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Joh She

John D. Stanton john.stanton@pacelabs.com (631)694-3040 Project Manager

Enclosures

cc: Bill Lambing, Langan Engineering





Pace Analytical Services, LLC 575 Broad Hollow Road Melville, NY 11747 (631)694-3040

CERTIFICATIONS

Project: Central Bucks (Tohickon) Pace Project No.: 70102151

Long Island Certification IDs

575 Broad Hollow Rd, Melville, NY 11747 New York Certification #: 10478 Primary Accrediting Body New Jersey Certification #: NY158 Pennsylvania Certification #: 68-00350 Connecticut Certification #: PH-0435 Maryland Certification #: 208 Rhode Island Certification #: LAO00340 Massachusetts Certification #: M-NY026 New Hampshire Certification #: 2987



ANALYTICAL RESULTS

Project: Central Bucks (Tohickon)

Pace Project No.: 70102151

Sample: TNBR	Lab ID: 7	70102151001	Collected: 08/20/	19 08:20	Received:	08/21/19 10:20	Matrix: Drinking	Water
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical N	lethod: EPA 200	0.8					
Lead	1.8	ug/L	1.0	1		08/22/19 16:	54 7439-92-1	



QUALITY CONTROL DATA

Project: Central Bucks (To Pace Project No.: 70102151	hickon)						
QC Batch: 127106		Analysis Metho	od: I	EPA 200.8			
QC Batch Method: EPA 200.8		Analysis Descr	iption:	200.8 MET No Pi	rep Drinking Wat	er	
Associated Lab Samples: 70102151	001						
METHOD BLANK: 606959		Matrix: W	Vater				
Associated Lab Samples: 70102151	001						
Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifier	S	
Lead	ug/L	<1.0	1.	0 08/22/19 16:3	33		
LABORATORY CONTROL SAMPLE:	606960						
Parameter	Units	•	CS sult	LCS % Rec	% Rec Limits	Qualifiers	
Lead	ug/L	50	51.9	104	85-115		
MATRIX SPIKE SAMPLE:	606962						
Parameter	Units	30319606005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	0.0049 mg/L	4	9.2	107	70-130	
MATRIX SPIKE SAMPLE:	606964						
Parameter	Units	70101786007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	<1.0	4	4.8	110	70-130	
SAMPLE DUPLICATE: 606961							
Parameter	Units	30319606005 Result	Dup Result	RPD	Qualifiers		
Lead	ug/L	0.0049 mg/L	4.	7 !	5	-	
SAMPLE DUPLICATE: 606963							
Parameter	Units	70101786007 Result	Dup Result	RPD	Qualifiers		
Lead	ug/L	<1.0	<1.	0		_	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALIFIERS

Project: Central Bucks (Tohickon)

Pace Project No.: 70102151

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:Central Bucks (Tohickon)Pace Project No.:70102151

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
70102151001	TNBR	EPA 200.8	127106		

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1
1

WO#:70102151

CHAIN-OF-CUSTODY / Analytical Reques The Chain-of-Custody is a LEGAL DOCUMENT. All relevant field



Section A		Section B					Section C	υ							UL UL	70102151	51						
Required CI	Required Client Information:	Ϋ́	nformation:			Invo	ice Info	Invoice Information:											Page :	ge :	-	5	
Company:	Langan Engineering		Randy Copenhaver				Atte	Attention:	Rand	Randy Copenhaver	haver												
Address:	2700 Kelly Road, Suite 200	Copy To: Bill La	Bill Lambing - blambing@langan.com	ng@langa	n.com		Con	Company Name: Langan Engineering	ame: L	angan l	Enginee	ering					_						
岩	PA 18976						Add	Address:	2700	2700 Kelly Road, Suite 200	oad, Su	ite 200								Regulat	Regulatory Agency	ncy	
	rcopenhaver@langan.com	Purchase Order #:	200130401-400-00	400-001			Pac	Pace Quote:			See La	angan-l	See Langan-Pace MSA	SA									
Phone:	215-491-6500 Fax: 2015-491-6501	Project Name: (Central Bucks School District (Tohickon)	chool Dist	rict (Tohick	on)	Pac	Pace Project Manager:	t Manag	ger:	john.st	anton(Dacel	john.stanton@pacelabs.com,						State	State / Location	u	
Requested Due Date:	Due Date: RUSH	Project #: 200130401	11				Pac	Pace Profile #:		7983											PA		
														R	equested	I Analys	Requested Analysis Filtered (Y/N)	(N/A) pe					
		L	(amo	COLLE	LECTED			÷	Pres	Preservatives	ves		N/A										
	SAMPLE ID	N N N N N N N N N N N N N N N N N N N	C=CERAB C=C		END	0								(g						(N/A) ə			
# MƏTI	One Character per box. Wipe (A-Z, 0-9 /, -) Other Sample Ids must be unique	ੇ ਨੂੰ ਲੈ ∩ ਨੇ ਨਾ ਹੋ ਨੇ ਅੱਧ	AMPLE TYPE	TIME	DATE	TIME	A 9MPLE TEMP A # OF CONTAINEF	H5SO4 Nubreserved	EONH	N ⁹ OH HCI	Na2S2O3	Methanol Other	SezylenA	9) elistem 7.005						Residual Chlorin			
1 TNI	TNBR	MD	G 8/20/2019	820	8/20/2019	820	-		×					×									58
2 TNI	TNBR1	MD	G 8/20/2019	820	8/20/2019	820	-		×					X * HOLD	Р								
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	ADDITIONAL COMMENTS	RELI	RELINQUISHED BY / AFFILIATION	FFILIATIO	Z	DATE		TIME			ACCEP	TED BY	/ AFFII	ACCEPTED BY / AFFILIATION			DATE	TIME			SAMPLE	SAMPLE CONDITIONS	SNO
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(N/A)

	Sai	nple C	Conditio	on Upon R	Receipt
Pace Analytical		°		Pro	WO#:70102151
	Client N	ame:	20	FIO	,
	LA	4/V-	PM		PM: JDS Due Date: 08/28/19
Courier: Ped Ex UPS USPS Clie	ent Comme	rcial 🗌 P	ace Dth	er	CLIENT: LAN-PA
Tracking #: 7892	6120	8	166		
Custody Seal on Cooler/Box Present:	es Alo	Seals	s intact: 🗌	Yes Kio	Temperature Blank Present: 🗌 Yes 🕅 🚧
Packing Material: Bubble Wrap Bubble	Bags Diplo		e Bther	0	Type of Ice: Wet Blue None
Thermometer Used: TH091	Correctio	on Factor	+D.	2	Samples on ice, cooling process has begun
00	Cooler Te				5 Date/Time 5035A kits placed in freezer
Cooler Temperature (°C): 35.3				<u> </u>	
Temp should be above freezing to 6.0°C USDA Regulated Soil (), water sample	2)			Date and Initi	als of person examining contents:
USDA Regulated Soli (Se Dor, Water Sample	United States:	AL AR CA	EL GA ID	LA. MS. NC.	Did samples orignate from a foreign source (internationally,
(Did samples originate in a quarantine zone within the NM, NY, OK, OR, SC, TN, TX, or VA (check map)?	I YEST				including Hawaii and Puerto Rico)? [] Yes No
If Yes to either question, 1	fill out a Reg	ulated So	il Checklis	st (F-LI-C-010) a	ind include with SCUR/COC paperwork.
	~				COMMENTS:
Chain of Custody Present:	Gres	□No		1.	
Chain of Custody Filled Out:	Pes	□No		2.	
Chain of Custody Relinquished:	Res	□No		3.	
Sampler Name & Signature on COC:	1 Pres	□No	□n/A	4.	
Samples Arrived within Hold Time:	Thes	□No		5.	
Short Hold Time Analysis (<72hr):	□Yes	Roo		6.	
Rush Turn Around Time Requested:	□Yes	DR		7.	
Sufficient Volume: (Triple volume provided for MS/MS	SD. Dyes	□No		8.	
Correct Containers Used:	Res	□No		9.	
-Pace Containers Used:	Res	□No			•
Containers Intact:	DE	□No		10.	
Filtered volume received for Dissolved tests	□Yes	□No	DRA	11. Note if	sediment is visible in the dissolved container.
Sample Labels match COC:	Des	□No		12.	
-Includes date/time/ID/Analysis Matrix SL	~ ~ ~				
All containers needing preservation have been check	Course of the second seco	□No	□N/A	13. 🗆 HM	NO3 II H2SO4 II NaOH II HCI
pH paper Lot # HO 863463					
All containers needing preservation are found to be in	n			Sample #	x x 0.2.5
compliance with EPA recommendation?	□Yes	ΠNo	RUA		
(HNO ₃ , H ₂ SO ₄ , HCI, NaOH>9 Sulfide, NAOH>12 Cyanide)	Lites				5. u
Exceptions: VOA, Coliform, TOC/DOC, Oil and Greas	se,			Initial when com	pleted: Lot # of added preservative: Date/Time preservative added
DRO/8015 (water). Per Method, VOA pH is checked after analysis					
Samples checked for dechlorination:	□Yes	□No	-ELANA	14.	
KI starch test strips Lot #			1		
Residual chlorine strips Lot #			0		e for Res. Chlorine? Y N
Headspace in VOA Vials (>6mm):	□Yes	0No	BALLA	15.	
Trip Blank Present:	□Yes	□No	Lakua	16.	
Trip Blank Custody Seals Present	□Yes	□No	QA		
Pace Trip Blank Lot # (if applicable):					
Client Notification/ Resolution:				Field Data Requ	
Person Contacted:				Date/	
Comments/ Resolution: C/lent	reque	stec	1 20	0.7 PI	6 was logged for 200.8
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* PM (Project Manager) review is documented electronically in LIMS.