Appendix G

Building Inspections and Hazardous Materials Reports

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PIQUA NUCLEAR POWER FACILITY
CHARACTERIZATION SURVEY REPORT

JULY 2020

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1.0 INTRODUCTION

This Characterization Status Survey (CSS) report provides the results of the sampling effort as described in the Characterization Survey Plan (DMA-TR-107), which was developed to provide survey data to establish the radiological status of the Piqua Nuclear Power Facility. The Reactor and Auxiliary buildings were released from radiological control in the late 1960s. This report is issued to document the data results from the characterization surveys.

The CSS was completed in accordance with the methods described in the Multi-Agency Radiological Site Survey and Investigation Manual (MARSSIM). The survey was designed such that it could be used for a final status survey (FSS).

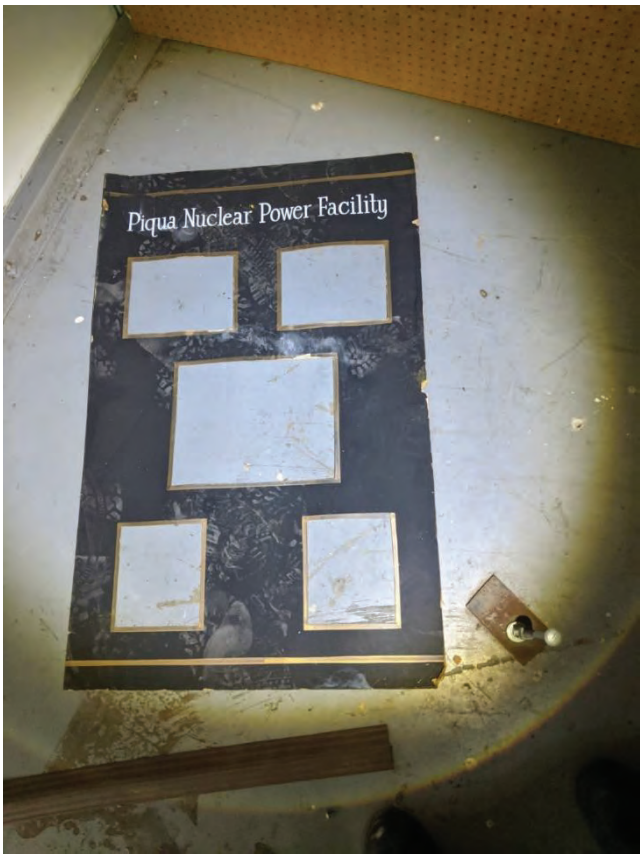


Figure 1 - Old Paper Frame On Floor

2.0 SCOPE

The CSS plan described the data quality objectives (DQO) that were employed to confirm that adequate sampling and analyses have been completed for release of the area. This report will describe the sampling methods used, the radionuclides of concern, the analytical methods used, and the validation and interpretation of the data collected. The PNPF was divided into the following survey units, as described in the Radiological Historical Site Assessment (DMA-TR-106):

- Reactor 56 Feet Level – 3 Class 1 survey units for both floor and wall (6 surveys)
- Reactor 79/83 Feet Levels – 4 Class 1 survey units for both floor and wall (8 surveys)
- Reactor 100 Feet Level – 3 Class 1 survey units for both floor and wall, plus 1 survey unit for the walls above 2 meters (7 surveys)
- Reactor 111 Feet Level – 1 Class 1 survey unit for both floor and wall (2 surveys)
- Reactor Stairwells – 1 Class 1 survey unit for each stairwell, normal stairs separated to floor and wall, spiral all one survey (3 surveys)
- Reactor Exterior – 1 Class 3 survey unit (1 survey)
- Auxiliary 79 Feet Level – 5 Class 1 survey units for both floor and wall (10 surveys)
- Auxiliary 100 Feet Level – 1 Class 2 and 1 Class 3 survey units for both floor and wall (4 surveys)
- Auxiliary 111 Feet Level – 1 Class 3 survey unit, floor only wall included with 100 feet wall (1 survey)
- Auxiliary 121 Feet Level – 1 Class 3 survey unit, floor only wall included with 100 feet wall (1 survey)
- Auxiliary Exterior – 1 Class 3 survey unit (1 survey)
- Grounds – 1 Class 3 survey unit (1 survey)

3.0 MEASUREMENT METHODS

3.1 MEASURMENT LOCATIONS

The measurement locations were selected using the Virtual Sample Plan program as described in the Characterization Survey Plan (DMA-TR-107). In addition to the measurement locations for direct measurements and swipe collection, all areas were also scan surveyed.

Not every survey unit had a pre-printed map and survey point pre-selection. The Class 3 wall survey in the Auxiliary Building, Levels 100, 111, and 121, as well as Class 1 surveys of the Spiral and Normal Staircases in the Reactor Building, do not have maps and preselected survey points. All of these surveys were documented on-site, with bias and random selected locations.

The Spiral Staircase cannot be used; therefore, the surveyor was only able to survey locations that could be reached from a stable, allowable location. 100% of all reachable areas were scanned and 16 sample points were selected for static and removable measurements.

The Normal Stairwell was surveyed at the landings, floors, first two meters of the walls, and each stair tread. Thirty-two sample points, 16 each for the floor and wall, were be selected for static and removable measurements.

3.2 MEASUREMENT INSTRUMENTS

A building-specific background was established using data analysis of the first surveys performed in the auxiliary building. Since the reactor and auxiliary buildings were built at the same time, there is no evidence of any contamination in the ground floor or above of the auxiliary building, and concrete floors and walls predominate in the reactor building, it is reasonable to use the auxiliary building above grade floors and concrete walls to establish background levels for the materials.

Measurements were taken using scan surveys, direct measurements, and smears. .

The scanning instrument used were:

- Ludlum Model 44-10, 2x2 NaI Detector, used to perform gamma scan surveys.
- Ludlum Model 239-1F, Gas proportional floor monitor, used for scanning survey of floor surfaces for alpha and beta residual radioactivity.
- Ludlum Model 43-10-1, Dual Phosphor Scintillator, used to analyze wipe samples for alpha and beta removable residual radioactivity.
- Ludlum Model 43-68, Gas proportional detector, used for direct measurements and scan surveys for alpha and beta residual radioactivity.

3.3 SCAN SURVEYS

Scanning surveys with the NaI detector were performed by walking at approximately 2 feet per second while moving the detector in a serpentine fashion over the floor at approximately 12 inches above the floor surface, and while holding the detector at approximately 1 meter above the floor and

12 inches from the wall for wall surveys. Average, maximum, and any elevated results were indicated on the survey report for each survey unit.

Scanning surveys with the floor monitor were performed while moving at approximately 8 inches per second with overlapping pathways on all available areas of the floor. Areas that had too much rubble or items that could damage the detector were not surveyed, and were indicated on the map. The detector was set approximately ¼' above the surface. Average, maximum, and any elevated results were indicated on the survey report for each survey unit

Scanning surveys with the 43-68 detector were performed while moving at approximately 4 inches per second with overlapping pathways on all available areas of the floor or wall being surveyed. The detector was held within ¼" of the surface. The scan survey was summarized on the survey report.

3.4 MEASUREMENT LOCATION SURVEYS

At each measurement location, the 43-68 detector was used to collect a 1 minute static measurement, and a 2" cloth swipe was used to collect a removable activity sample.

The direct measurements were collected using the built in scaler function of the meter to collect all counts for 1 minute, and to electronically separate the alpha and beta counts. These results were recorded on the surveys for each survey unit. The removable samples were counted using the 43-10-1 detector for 1 minute, which also electronically separates the alpha and beta counts. These results were recorded on the bench counter worksheet for each survey.

Figure 2 - Survey Equipment Area

4.0 SURVEY RESULTS

The first surveys performed in the auxiliary building in areas that were pre-classified as Class 3, were used to establish building specific backgrounds and to calculate the minimum detectable count rate (MDCR). This method is often used when there are no other existing buildings from the same era that can be used for background measurements, and when there is little expectation of contamination. Preliminary evaluation of the data indicated that there was no indication of any elevated activity, so the values were assumed to represent background. The MDCR is calculated using 3.29, the value from MARSSIM (NRC 2000) for 5% alpha and beta errors, and the critical value is the average plus the MDCR These values are:

Table 1 – Instrument Backgrounds, MDCRs, and Critical Values

Instrument	Beta BKG	Beta MDCR	Beta Critical Value	Alpha Background	Alpha MDCR	Alpha Critical Value
Floor Monitor	551	112	663	2.8	10.5	13.3
43-68	185	66	251	2.2	9.6	11.8
43-10-1	46	34	81	0.15	4.5	4.7

The vast majority of the survey results were below the critical values. There were a few identified areas where measurement results were elevated. Each of these areas are discussed in the following paragraphs.

The ground level (100 foot level) of the auxiliary building had elevated NaI scan results near the brick at the entry to the building. This was also evident on the NaI survey of the grounds when near the brick. The brick was surveyed 100% with the NaI with all areas being uniform. It appears that this elevated activity is due to the natural content of the brick, which is not unusual.

There were elevated direct measurements found for alpha and beta on several survey units, the 79 foot Auxiliary survey unit 1-5 wall, the 121 foot auxiliary floor, the outdoor ground survey, and both building exterior surveys. In all cases but one, the smear survey showed no elevated activity, but there was at least an hour between collection of the smears and analysis. The one elevated smear result was from the Auxiliary building exterior survey, from an elevated location that was metal, and the smear was analyzed within an hour of being taken. The exterior of the reactor building was also metal which can hold a static charge and collect radon daughters. The one elevated smear decayed to below the critical value by the next day. All of this indicates that the slightly elevated measurements are the result of radon progeny deposition.

In addition to the planned surveys, there were a few material screening surveys performed. Samples collected by the environmental team, including concrete from drilling, granular material from tank openings, air vents, and the tank openings themselves when they were large enough for the instrument, were scanned with the NaI instrument and with the 43-68 when possible. None of these scans found any elevated activity. All of these scans were performed using instruments that were

being used for planned surveys and had successfully passed a source and background check that day.

4.1 EVALUATION AGAINST RELEASE CRITERIA

For purposes of this survey, from DMA-TR-107, the appropriate release criteria are removable contamination below 1000 dpm / 100 cm^2, average total contamination below 5000 dpm / 100 cm^2, and the maximum total activity on any 100 cm^2 area below 15,000 dpm / 100 cm^2. These criteria are generally acceptable for unrestricted release for DOE O 458.1, as found in 10CFR835 Appendix D and MARSSIM (NRC, 2000) for the NRC/State of Ohio.

In the Characterization Survey Plan, the action level (AL) was set to 25% of the DCGL at the release criteria. The resulting ALs are 250 dpm / 100 cm^2 removable, 1250 dpm / 100 cm^2 total, and 3750 dpm / 100 cm^2 for an elevated area. Since all of the results, even the slightly elevated results that appear to be from radon progeny deposition, are well below these values, no further evaluation of the measurements was performed since it would not affect the final outcome and all areas of the site are well below the release criteria.

Figure 3 - Bench Counter Table

5.0 DEVIATIONS FROM PLAN

5.1 SAMPLE LOCATIONS

During execution of survey designs, obstructions sometimes prevent personnel from collecting a measurement at the precise location described in the sample planning documents. In these cases, the sample point was relocated to a nearby accessible location. Since all locations were based on a random location, even when a triangular grid is used the starting location was random, there is no impact to the statistical validity of the sample population.

The first 2 meters of the walls in the Auxiliary Building Floors 100, 111, and 121 levels were surveyed as a survey unit. Twenty-five sample points were selected, with a scan of each full square meter surrounding the survey point. The sample points were biased by selecting cracked, stained, or otherwise suspect areas when possible, with the points randomly scattered such that each room or hallway has at least 1 point. Many of the rooms shown on the map were no longer in existence, many walls have been removed.

The room shown on the "Plan – 79 Foot Level" map as B-7 was discovered to be a fully enclosed concrete room with a room sized metal tank up to approximately the 8 foot level. The only entry into this "room" is from an elevated platform from the B-8 room, which consists of a metal ladder up to a metal grate platform at approximately 10 feet above the concrete floor. NaI scanning at the doorway, including lowering the probe by the cord down to the top of the tank did not show any increase in the NaI readings. No further surveys were performed in this room due to the uncertainty in the contents of the tank and the safety concerns with entering the area.

6.0 DATA QUALITY ASSESSMENT

The following Data Quality Assessment (DQA) methods ensure that the type, quantity, and quality of environmental data used in decision-making are appropriate for the intended application. The DQA methods systematically compare the data obtained to the quality criteria of the sample plan design. The results of the data collection are compared to the assumptions that support the sample plan, the type and quantity of measurements, and the survey instructions using the following methods:

- Review the raw survey sheets for completeness, reasonableness, and internal reviews.
    - The following data was collected:
        - Survey date
        - Surveyor
        - Location of each measurement location indicated on map of survey unit
        - Gamma scan, alpha/beta scan, alpha/beta direct, and alpha/beta removable
    - All data was reviewed by the NV5 Project Manager following collection.
- Perform a preliminary data review (i.e., confirm that all planned surveys were completed and analyzed), evaluate any issues, and note any apparent outliers.
    - All samples were collected as planned. Some measurement locations were moved slightly due to accessibility issues or to coincide with a floor drain. There were a few elevated samples that all appear to be due to radon progeny deposition.
- Verify that repetitive (i.e., Quality Control) measurements agree with initial measurements.
    - Repetitive measurements are not generally required for background level samples as comparisons are meaningless at these levels. The only elevated swipe sample was analyzed at several different times, until it had decayed away.
    - The daily source checks all fall within the plus/minus 20% of the expected values, showing that the instrument, which is used to show that the instrument data is not biased, and has acceptable precision.
    - Precision and lack of bias indicates that the instrument has acceptable accuracy. The background and source checks show this.
- Verify the assumptions of the survey design.
    - The assumption that the survey units are above the release criteria was rejected. All samples were taken as planned indicating adequate power for the analysis.

The following aspects of the field data and the analytical results will be verified to ensure compliance with the DQOs and the sample plan design against:

- The specified number of samples for each survey unit was collected.
    - All required samples were taken
    - The Class 3 area for the Auxiliary Building walls for the 100, 111, and 121 level was 25 locations. The CSP called for 30 sample locations, with one in each room or hallway. Several rooms that show on the maps no longer existed, the walls have been removed, resulting in fewer sampling locations.
- A COC process was implemented for all the swipes.
    - All swipes were under custody during survey and were then analyzed using a Bench Counter Worksheet which documents the analytical results for each swipe, in effect providing the COC.

- At background levels, statistics break down for duplicates, replicates, etc, are not meaningful. Since no significantly elevated areas were located, no duplicate/replicates/etc. analysis was performed.
- All instrument performance checks were performed.
    - All instruments were checked daily prior to use by performing a control source check and background check, which are documented in the electronic file for that instrument.
    - Handheld instruments used for the direct measurements were control source checked both before and after each individual survey to ensure the instrument was functioning correctly during the survey and are document on the survey form.

7.0 CONCLUSION

In summary, all required surveys were performed. Results are reasonable given the types of surveys planned and performed. No data issues were noted. All measurement results are below the AL and the Critical Values. The classifications of the areas, and subsequent survey units, can be assumed to be correct, based on previous use, even though all measurements were not elevated. If the facilities were to be left as is, since the CSS data was collected using FSS level DQOs, this data would be sufficient to support the release of the facilities from radiological controls, other than the entombment in the reactor building and room B-7 in the auxiliary building.

8.0 REFERENCES

Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). The Nuclear Regulatory Commission, Washington, DC. 2000

NV5 2020a. DMA-TR-106. *Radiological Historical Site Assessment, Piqua Nuclear Power Facility*. NV5/Dade Moeller, Richland, WA.

NV5 2020b. DMA-TR-107. *Characterization Survey Plan, Piqua Nuclear Power Facility*. NV5/Dade Moeller, Richland, WA.

PNNL, 2017. *Visual Sample Plan (VSP)*. Pacific Northwest National laboratory, Richland, WA

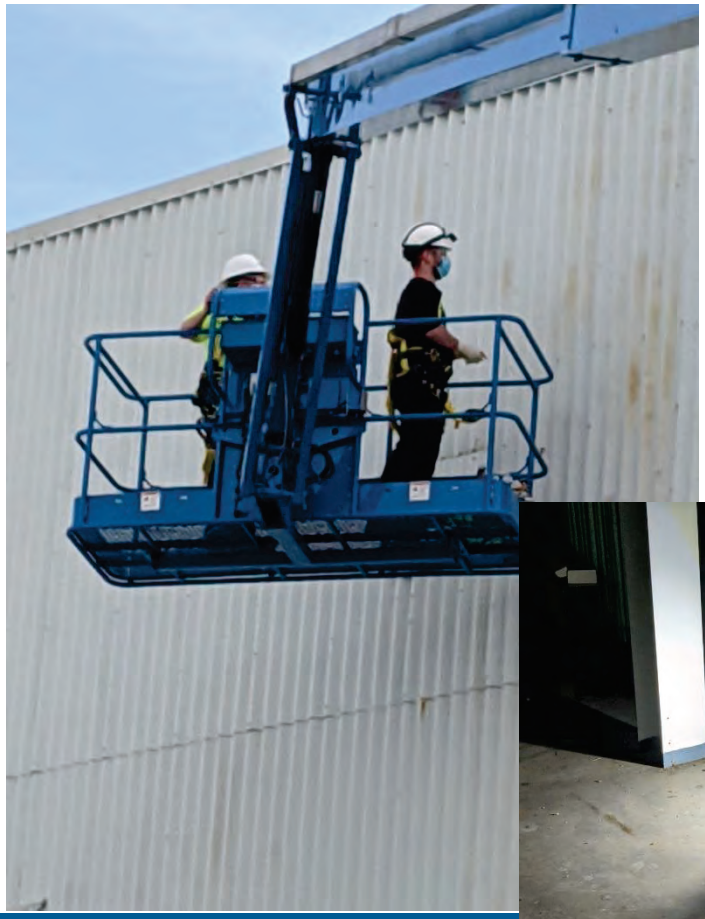
DOE O 458.1. *Radiation Protection of the Public and the Environment*. DOE Order 458.1 Change 3, Department of Energy, January 2013

10 CFR 835 Appendix D, *Surface Contamination Values*. 74 Federal Register 18116, April 2009

9.0 ATTACHMENTS

Attachment 1 - Reactor 56 Feet Level
Attachment 2 - Reactor 79 and 83 Feet Levels
Attachment 3 - Reactor 100 Feet Level
Attachment 4 - Reactor 111 Feet Level
Attachment 5 – Reactor Stairwells
Attachment 6 - Reactor Exterior
Attachment 7 - Auxiliary 79 Feet Levels
Attachment 8 - Auxiliary 100 Feet Level
Attachment 9 - Auxiliary 111 Feet Level
Attachment 10 – Auxiliary 121 Feet Level
Attachment 11 - Auxiliary Exterior
Attachment 12 - Grounds
Attachment 13 - Instrument Initial And Daily Check Files
Attachment 14 - MDCR Calculation Workbook

All attachements are provided as accompanying PDF files.



NV5

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Meter/Detector Response - BKG and Source

Date	5/26/2020	Performed by (sign/date)	C, Barton	5/26/2020
	Model	Serial Number		
Meter	12	251999		
Probe	44-10	PR181317	Isotope	Quantity
Source		check button	Cs-137	1 uCi
2nd Source				

Location: Piqua Project

Notes:

Reading number	Source Counts	Background Counts	2nd Source
1	275000	3800	
2	245000	4000	
3	240000	3800	
4	250000	3700	
5	260000	3700	
6	255000	3800	
7	250000	3900	
8	265000	3800	
9	260000	3900	
10	255000	4000	
average	255500	3840	#DIV/0!
-20%	204400	3072	#DIV/0!
20%	306600	4608	#DIV/0!

Daily Source Check Data Sheet

Date	5/26/2020	Initiated by (sign/date)	Clark Barton	
	Model	Serial Number	6/1/2020	
Meter	12	251999		
Probe	44-10	PR181317	LCL	HCL
Source	Cs-137	check button	204400	306600
2nd Source	0	0	#DIV/0!	#DIV/0!
Location:				

Date	Background CPM	Source1 CPM	Source2 CPM	Initials
6/2/2020	3600	260000		jpg
6/3/2020	3500	220000		cbb
6/4/2020	4000	280000		cbb
6/8/2020	4000	280000		cbb

Daily Source Check Data Sheet Continuation

Probe	44-10	PR181317		LCL	HCL
Source	Cs-137	check button		204400	306600
2nd Source	0	0		#DIV/0!	#DIV/0!
Date	Background CPM	Source1 CPM	Source2 CPM	Signature	

Daily Source Check Data Sheet

Date	6/2/2020	Initiated by (sign/date)		Clark Barton	6/2/2020
	Model	Serial Number			
Meter	2224	187246			
Probe	43-37	PR161685		LCL	HCL
Source	I-129	exempt		622.2	933.24
2nd Source	Th-230	exempt		72.8	109.2
Location:					
	Alpha/Beta				
Date	Background CPM	Source1 CPM	Source2 CPM	Initials	
6/2/2020	6/557	799	85	cbb	
6/3/2020	5/541	812	82	cbb	
6/4/2020	5/568	821	96	cbb	
6/5/2020	12/632 - some radon likely, put fan on area, will recount later 08			cbb	
6/5/2020	7/595	859	100	cbb	
6/8/2020	4/609	774	108	cbb	
6/9/2020	5/667	917	107	cbb	

Daily Source Check Data Sheet Continuation

Probe	43-37	PR161685		LCL	HCL
Source	I-129	exempt		622.16	933.24
2nd Source	Th-230	exempt		72.8	109.2
Date	Background CPM	Source1 CPM	Source2 CPM	Signature	

Meter/Detector Response - BKG and Source

Date	6/2/2020	Performed by (sign/date)	C. Barton	6/2/2020
	Model	Serial Number		
Meter	2224	162850		
Probe	43-68	PR216252	Isotope	Quantity
Source	Nucleus	exempt	I-129	0.05 uCi
2nd Source	The Source	exempt	Th-230	0.001 uCi

Location: Piqua Project

Notes: set at 1600 volts Pu239 4887/24900 (19.6%), Tc99 32187/93200 (34.5%)

Reading number	Beta Source Counts	Background Counts (beta)	Alpha Source Counts	Background Counts (alpha)
1	295	126	299	0
2	304	113	317	0
3	299	129	321	0
4	334	117	309	0
5	312	114	317	0
6	305	125	315	0
7	278	109	313	3
8	285	114	310	0
9	285	108	313	1
10	279	116	316	2
average	297.6	117.1	313.0	0.6
-20%	238.1	93.7	250.4	0.48
20%	357.1	140.5	375.6	0.72

Daily Source Check Data Sheet

Date	6/2/2020	Initiated by (sign/date)		Clark Barton	
	Model	Serial Number		6/2/2020	
Meter	2224	162850			
Probe	43-68	PR216252		LCL	HCL
Source	I-129	exempt		238.1	357.12
2nd Source	Th-230	exempt		250.4	375.6
Location:					
	Alpha/Beta				
Date	Background CPM	Source1 CPM	Source2 CPM	Initials	
6/2/2020	2/116	279	316	cbb	
6/3/2020	1/122	280	259	jpg	
6/4/2020	1/127	309	311	jpg	
6/5/2020	2/138	316	317	jpg	
6/8/2020	0/123	278	278	jpg	
6/9/2020	3/135	276	288	jpg	
6/10/2020	0/135	323	338	jpg	
6/11/2020	1/122	294	318	jpg	

Daily Source Check Data Sheet Continuation

Probe	43-68	PR216252		LCL	HCL
Source	I-129	exempt		238.08	357.12
2nd Source	Th-230	exempt		250.4	375.6
Date	Background CPM	Source1 CPM	Source2 CPM	Signature	

Meter/Detector Response - BKG and Source

Date	6/2/2020	Performed by (sign/date)	C. Barton	6/2/2020
	Model	Serial Number		
Meter	2224	260445		
Probe	43-68	PR190297	Isotope	Quantity
Source	Nucleus	exempt	I-129	0.05 uCi
2nd Source	The Source	exempt	Th-230	0.001 uCi

Location: Piqua Project

Notes: set at 1600 volts Pu239 5722/24900 (23.0%), Tc99 27322/93200 (29.3%)

Reading number	Beta Source Counts	Background Counts (beta)	Alpha Source Counts	Background Counts (alpha)
1	341	151	400	0
2	380	158	402	0
3	332	143	409	1
4	388	155	364	1
5	348	148	412	0
6	386	151	415	0
7	359	158	389	0
8	338	126	389	1
9	375	151	354	1
10	386	146	399	0
average	363.3	148.7	393.3	0.4
-20%	290.6	119.0	314.6	0.32
20%	436.0	178.4	472.0	0.48

Daily Source Check Data Sheet

Date		Initiated by (sign/date)		Don Stewart	
	Model	Serial Number			
Meter	2224	260445			
Probe	43-68	PR190297		LCL	HCL
Source	I-129	exempt		290.6	435.96
2nd Source	Th-230	exempt		314.64	471.96
Location:					
	Alpha/Beta				
Date	Background CPM	Source1 CPM	Source2 CPM	Initials	
6/2/2020	0/140	386	399	cbb	
6/4/2020	2/132	346	427	cbb	
6/8/2020	1/120	376	435	cbb	
6/9/2020	2/175	324	429	cbb	
6/10/2020	0/134	376	434	cbb	
6/11/2020	0/168	380	394	cbb	

Daily Source Check Data Sheet Continuation

Probe	43-68	PR190297		LCL	HCL
Source	I-129	exempt		290.64	435.96
2nd Source	Th-230	exempt		314.64	471.96
Date	Background CPM	Source1 CPM	Source2 CPM	Signature	

Meter/Detector Response - BKG and Source

Date	5/26/2020	Performed by (sign/date)	C Barton	5/26/2020
	Model	Serial Number		
Meter	2929	118411		
Probe	43-10-1	PR127215	Isotope	Quantity
Source	Nucleus	exempt	I-129	.05 uCi
2nd Source	The Source	exempt	Th-230	0.001 uCi

Location: Piqua Project

Notes: Voltages set 625, Pu239 10055/24900 (40.4%), Tc99 33389/93200 (35.8%)

Reading number	Source Counts	beta Background Counts	2nd Source	Alpha Background Counts
1	517	51	737	0
2	504	33	711	0
3	551	35	711	0
4	484	47	756	0
5	511	40	739	0
6	468	47	723	0
7	444	48	780	0
8	463	45	732	1
9	483	53	766	1
10	474	52	727	0
average	489.9	45.1	738.2	0.2
-20%	391.92	36.08	590.56	0.16
20%	587.88	54.12	885.84	0.24

Daily Source Check Data Sheet

Date	5/26/2020	Initiated by (sign/date)		C. Barton	
	Model	Serial Number		6/1/2020	
Meter	2929	118411			
Probe	43-10-1	PR127215		LCL	HCL
Source	I-129	exempt		391.92	587.88
2nd Source	Th-230	exempt		590.56	885.84
Location:					
	alpha/beta				
Date	Background 10 min	Source1 CPM	Source2 CPM	Initials	
6/2/2020	4/451	462	761	cbb	
6/3/2020	0/417	446	688	cbb	
6/4/2020	0/453	478	744	cbb	
6/5/2020	1/456	489	698	cbb	
6/8/2020	0/460	504	773	cbb	
6/9/2020	2/490	489	730	cbb	
6/10/2020	3/473	458	757	cbb	
6/11/2020	1/454	476	693	cbb	

Daily Source Check Data Sheet Continuation

Probe	43-10-1	PR127215		LCL	HCL
Source	I-129	exempt		391.92	587.88
2nd Source	Th-230	exempt		590.56	885.84
Date	Background CPM	Source1 CPM	Source2 CPM	Signature	

Meter/Detector Response - BKG and Source

Date	5/26/2020	Performed by (sign/date)	C Barton	5/26/2020
	Model	Serial Number		
Meter	2929	121877		
Probe	43-10-1	PR127218	Isotope	Quantity
Source	Nucleus	exempt	I-129	.05 uCi
2nd Source	The Source	exempt	Th-230	0.001 uCi

Location: Piqua Project

Notes: Voltages set 825, Pu239 10403/24900 (41.8%), Tc99 29098/93200 (31.2%)

Reading number	Source Counts	beta Background Counts	2nd Source	Alpha Background Counts
1	2553	41	739	0
2	2604	50	773	0
3	2570	36	765	0
4	2570	49	781	0
5	2630	44	794	0
6	2454	44	846	0
7	2612	44	785	0
8	2487	48	823	1
9	2483	60	736	0
10	2397	60	853	0
average	2536	47.6	789.5	0.1
-20%	2028.8	38.08	631.6	0.08
20%	3043.2	57.12	947.4	0.12

Daily Source Check Data Sheet

Date	5/26/2020	Initiated by (sign/date)		C. Barton	
	Model	Serial Number		6/1/2020	
Meter	2929	121877			
Probe	43-10-1	PR127218		LCL	HCL
Source	I-129	exempt		2028.8	3043.2
2nd Source	Th-230	exempt		631.6	947.4
Location: Piqua - counter appears to be low energy gamma sensitive.					
	alpha/beta				
Date	Background 10 min	Source1 CPM	Source2 CPM	Initials	
6/2/2020	5/547	2569	796	cbb	
6/3/2020	6/560	2570	775	cbb	
6/4/2020	3/527	2692	750	cbb	
6/5/2020	2/544	2170	744	cbb	
6/8/2020	3/564	2545	787	cbb	
6/9/2020	1/652 - 3/546	2606	738	cbb - cleaned planchette	
6/10/2020	2/561	2603	818	cbb	
6/11/2020	4/532	2675	835	cbb	

Daily Source Check Data Sheet Continuation

Probe	43-10-1	PR127218		LCL	HCL
Source	I-129	exempt		2028.8	3043.2
2nd Source	Th-230	exempt		631.6	947.4
Date	Background CPM	Source1 CPM	Source2 CPM	Signature	

Instrument	beta bkg	alpha bkg	beta MDCR	alpha MDCR	Beta Critical	Alpha Critical
43-68 162850	141	0.72	58.0	6.7	199.0	7.4
43-68 260445	178	0.48	64.8	5.9	242.8	6.4
43-68			2.7	2.7	2.7	2.7
43-68			2.7	2.7	2.7	2.7
43-37	551	2.8	111.9	10.5	662.9	13.3
44-10	gamma	4000		297.0		4297.0
2929 121877	47.6	0.1	34.8	4.2	82.4	4.3
2929 118411	45.1	0.2	34.0	4.8	79.1	5.0
2929 all	46.35	0.15	34.4	4.5	80.7	4.7

44-10 B16 bkg	gamma	5500+-2500				3000-8000
43-68 260445		211	1.7	70.3	8.8	281.3	10.5
43-68 162850		171	2.6	63.6	10.2	234.6	12.8
43-68 all		185	2.2	66.0	9.6	251.0	11.8

Instrument	Beta	Alpha	
260445	170	0	
260445	194	2	
260445	259	3	
260445	230	1	
260445	230	3	
260445	283	1	
260445	229	0	
260445	251	1	
260445	211	4	
260445	252	1	
260445	223	2	epoxy
	169	2	tile
	165	2	tile
	154	2	tile
	144	1	tile

Instrument	beta averaį	b 2SD	alpha avg	a 2SD	
260445	210.9333	82.53796	1.666667	2.149935	bare only

Instrument	Beta	Alpha	
162850	205	0	
162850	146	4	
162850	191	3	
162850	210	5	
162850	172	2	
162850	163	1	
162850	169	5	
162850	196	4	
162850	154	0	
162850	176	2	
162850	161	2	
162850	183	3	
162850	198	3	
162850	172	2	
162850	184	3	
162850	163	2	bare
162850	199	2	bare
162850	170	2	bare
162850	160	2	bare
162850	158	4	bare
162850	168	2	bare
162850	175	1	bare
162850	191	2	bare
162850	156	4	bare
162850	153	2	bare
162850	170	2	bare
162850	185	3	bare
162850	174	3	bare
162850	136	3	bare
162850	117	2	bare

Instrument	beta avera	b 2SD	alpha avg	a 2SD	
162850	178.6667	36.41001	2.6	2.993326	paint and tile
162850	165	39.73244	2.4	1.6	bare
all	170.6897	39.22386	2.586207	2.260134	

Instrument	Beta	Alpha	
162850	205	0	
162850	146	4	
162850	191	3	
162850	210	5	
162850	172	2	
162850	163	1	
162850	169	5	
162850	196	4	
162850	154	0	
162850	176	2	
162850	161	2	
162850	183	3	
162850	198	3	
162850	172	2	
162850	184	3	
260445	175	0	tile
	169	2	tile
	165	2	tile
	154	2	tile
	144	1	tile
162850	163	2	bare
162850	199	2	bare
162850	170	2	bare
162850	160	2	bare
162850	158	4	bare
162850	168	2	bare
162850	175	1	bare
162850	191	2	bare
162850	156	4	bare
162850	153	2	bare
162850	170	2	bare
162850	185	3	bare
162850	174	3	bare
162850	136	3	bare
162850	117	2	bare
260445	170	0	
260445	194	2	
260445	259	3	
260445	230	1	
260445	230	3	
260445	283	1	
260445	229	0	
260445	251	1	
260445	211	4	
260445	252	1	
260445	223	2	epoxy

Instrument	beta avera	b 2SD	alpha avg	a 2SD	
162850	178.6667	36.41001	2.6	2.993326	paint and tile
260445	161.4	22.14859	1.4	1.6	tile
162850	182.9048	77.16872	2.190476	1.914262	bare
all	184.6522	68.02968	2.222222	2.454525	

AUXANO ENVIRONMENTAL LLC.

Painted Surfaces Contaminated with PCBs and Lead
At the Decommissioned Reactor Building
123 Bridge Street, Piqua OH

Submitted By:

Nichole Lashley, CHMM
Certified Hazardous Materials Manager
Auxano Environmental

Submitted To:
Louisville Corps of Engineers
Attn: Greg Schanding, P.E.
600 Dr. Martin Luther King Place
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Date:
July 8, 2020
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LIST OF ACRONYMS

AAS	Atomic Absorption Spectrophotometry
ABIH	American Board of Industrial Hygiene
AIHA	American Industrial Hygiene Association
Assessor(s)	Nichole Lashley, CHMM Jasmine Rendon Tim Sugrue
ASTM	American Society for Testing and Materials
Auxano	Auxano Environmental LLC.
CFR	Code of Federal Regulations
DL	Detection Limit
HW	Hazardous Waste
LBP	Lead Based Paint
LED	Light Emitting Diode
LOD	Limit of Detection
MCE	Mercury Containing Equipment
MG / CM^2	Milligrams Per Square Centimeter
MSDS	Material Safety Data Sheets
ND	Non-Detect
NIST	National Institute of Standards and Technology
NVLAP	National Voluntary Laboratory Accreditation Program
OAC	Ohio Administrative Code
ODH	Ohio Department of Health
OSHA	Occupational Safety and Health Administration
PACM	Presumed Asbestos Containing Material(s)
PCS	Performance Characteristics Sheet
PEL	Permissible Exposure Level

PPE	Personal Protective Equipment
RSL	Regional Screening Level
PCB	Polychlorinated Biphenyls
RCRA	Resource Conservation and Recovery Act
SOW	Statement of Work
SOP	Standard Operating Procedures
TCLP	Toxicity Characteristics Leaching Procedure
TSCA	Toxic Substance Control Act
UW	Universal Waste
UWR	Universal Waste Rule
USEPA	United States Environmental Protection Agency
USGS	United States Geological Society

PAINTED SURFACES CONTAMINATED WITH PCBs AND LEAD
AT THE DECOMMISSIONED REACTOR BUILDING
123 BRIDGE STREET, PIQUA OH

1.0 INTRODUCTION

1.1 Site Information

The site is located at 123 Bridge Street in Piqua, Ohio (see Appendix A for location map). The 4,380 square foot (sf) (square footage at main level) decommissioned Reactor Building has an above-ground containment dome that extends 68-feet high and a 44-foot below-ground, this structure contains an entombed thermal reactor that was decommissioned and buried in place in 1969. The exterior shell of the reactor building is pill shape and is ½ inch thick steel. The dome above the entombment has concrete that lines the inside; at the base is 20 inches of concrete. As the dome progresses upward the concrete thickness decreases to approximately 3 inches at the top. There are several levels below the main level with varying square footages. The reactor is entirely below ground and entombed with 8-foot-thick concrete. There are no radiological exposures at the site, and routine surveillance is performed to ensure that the concrete and steel entombment structure continues to be protective of human health and the environment. Since the entombed material has been surrounded by concrete, it poses no risk to any personnel working or visiting the site.

The Administrative Building consists of three stories above grade and a full basement. The floor space ranges from 32,614 sf at the basement level, 13,016 sf on the 1st floor, 3,015 sf on the 2nd floor and 355 sf on the 3rd floor for a total of ~51,000 sf including stairways. The basement level of the administrative building is connected to the middle level of the reactor building by an airlock.

Resource International Inc. completed several evaluations of the paint within the buildings from October 2016 through March 2018 (reports available upon request). The presence of LBP (lead levels greater than 1.0 milligrams per square centimeters [mg/cm^2]) is extensive, accounting for approximately 51,000 sf in the Administration Building and 23,000 sf in the decommissioned Reactor Building. In the Administration Building, surfaces with LBP include walls, concrete support columns, piping, handrails, airlock walls/doors, fire suppression piping, stair tread, and exterior blue metal panels, etc. Reactor Building surfaces with LBP include walls, concrete floors, ladders, handrails, piping, I-beams, the overhead crane system, etc. Newer drywall appears to have been installed on top of original plaster walls in offices on the 1st floor of the Administration Building. The original plaster walls behind the drywall are assumed to contain LBP.

Results from the June 2017 assessment identified that the LBP within the reactor building and the basement and basement stairs of the administration building also contains detectable concentrations of PCBs ranging from 0.4 milligrams per kilogram (mg/kg) to 97.8 mg/kg. The variation in sample resulted from PCBs congealing together as applied oil-based paint dries.

Based on this information an additional PCB study was needed to better understand how to dispose of the construction debris that may be generated by the demolition of the dome and lower levels of the reactor building and basement and basement stairs of the administration building at the site. It should be noted for PCB terminology that this site would be considered an industrial site in a low occupancy area. Additionally, the area will remain industrial due to the proximity of the City of Piqua's wastewater treatment plant and maintenance buildings which surround the site. This study will give options on the disposal or disposition of waste that will be generated by the demolition of the dome and basement of the administration building.

1.2 Work Plan Approval

The Work Plan (under separate cover) was approved by the Louisville Corps of Engineers in March 2020 prior to the commencement of any work.

Since two types of contaminates were found on the surface of the concrete (lead and PCBs) in the dome and the lower levels of the administration building, we assured that we sampled the areas appropriately. The permissible exposure guidlines were followed while work was conducted.

1.3 PCB Permissible Levels

PCBs, also referred to as Aroclors, are synthetic industrial products that have been commonly used as cooling fluids and electrical insulators in light ballast. PCBs are recognized environmental pollutants and human carcinogens. Work involving contact with PCBs exceeding 100 µg/g (specify dermal or inhalation) (i.e., parts per million [ppm]) may require special medical evaluation and approval of the HSO.

PCBs are skin absorbable and appropriate precautions shall be implemented. Handling of samples that may be contaminated with PCBs shall be performed wearing appropriate chemically compatible PPE (gloves, safety glasses, and face shield where warranted). In addition, precautions should be implemented to prevent inhalation of dusts that may be contaminated with PCB's. Process samples that are suspected to contain PCBs are to be stored and handled in well ventilated areas and hands, forearms and face are to be washed with soap and water after sample processing.

Although OSHA has not set standards for each specific PCB, occupational exposures for this project were set at chlorodiphenyl 42% and chlorine 54% chlorine is defined in 29 CFR 1910.1000, Table Z-1. Limits for these air contaminants are 1 mg/m3 and 0.5 mg/m3 respectively.

1.4 LBP Permissible Levels

OSHA has set standards for occupational exposures to lead which is defined in 29 CFR 1910.1025 and 29 CFR 1926.62. The airborne lead Permissible Exposure Limit is 0.050 mg/m^3 as an 8-hour Time-Weighted Average. An Action Level has also been promulgated at 0.030 mg/m^3 as an 8-hour Time-Weighted Average.

ACGIH recommends an 8-hour TWA Threshold Limit Value of 0.05 mg/m^3 for lead.

NIOSH recommends an 8-hour TWA Recommended Exposure Limit of 0.05 mg/m^3 for lead.

2.0 SAMPLING PROTOCOL

2.1 Surface Paint Sampling

On November 13th, 2019 Nichole Lashley, Certified Hazardous Materials Manager (24829) and Jasmine Rendon (HAZWOPER 40 hour certified) (see Appendix B), conducted nine scrape samples in areas for PCBs and Lead based paint to establish the worst-case scenario concentrations for the paint on the structure (see Appendix C for sampling locations).

Scrape sampling is an effective method for the collection of dust or residue on non-porous surfaces. To collect an appropriate amount of sample for analysis. Then, while wearing a new pair of disposable nitrile gloves, a dedicated scraper is used to scrape material into a dedicated Ziplock for each sample location and then transferred into a laboratory supplied 4 oz glass jar. The samples were placed in laboratory-provided ice-filled coolers and after sampling was completed for the day the cooler was taken to Pace analytical laboratory in Englewood, OH under chain-of-custody protocol and dropped off each night at the lab. The samples were assessed utilizing SW-846 method 8082A for PCBs and Lead SW-846 method 6010B.

2.2 Paint and Concrete Core Sampling

June 1st through the 10th, 2019 Nichole Lashley, Certified Hazardous Materials Manager (24829) and Tim Sugrue (HAZWOPER 40 hour certified) (see Appendix B), conducted an evaluation for PCBs utilizing the EPA Region 1 SOP for Sampling Concrete in the Field. Nineteen samples were collected in the field to determine the PCB remediation waste verification based on in-situ characterization data (i.e., "as found" per 40 CFR §761 .61) (see Appendix C for sampling locations).

For PCB waste management involving porous structural surfaces, such as floors, walls, or ceilings made of concrete, brick, wood, plaster, plasterboard, etc., "clean" is defined by a bulk PCB concentration, e.g., weight/weight or volume/volume, such as a core sample, and not a surface PCB concentration, such as a wipe sample. In characterizing the property, established EPA sampling procedures or guidance such as 40 CFR 761, Subpart N (40 CFR §761 .260 et al.), and CERCLA site characterization guidance were taken into consideration to determine the appropriate number and location of samples. For this assessment, EPA SOP #2011, Chip, Wipe and Sweep Sampling and the EPA Region 1 SOP for Sampling Concrete in the Field was utilized. PCB remediation waste verification sampling must be based on in-situ characterization data (i .e., "as found" per 40 CFR §761 .61) rather than post-excavation or demolition composite samples collected from waste piles and roll-off containers.

EPA proposed and finalized a reinterpretation of its position regarding Polychlorinated Biphenyl (PCB) contaminated building materials in 2012. The reinterpretation specifically addresses the definitions of bulk product waste (e.g., PCB contaminated caulk or paint) and remediation waste (e.g., PCB contaminated masonry or concrete). This distinction is important as it determines the appropriate cleanup requirements and disposal options. The reinterpretation allows building material (i.e., substrate) “coated or serviced” with PCB bulk product waste (e.g., caulk, paint, mastics, sealants) at the time of disposal to be managed as a PCB bulk product waste, even if the PCBs have migrated from the overlying bulk product waste into the substrate.

Auxano personnel utilized the following procedure to collect discrete concrete samples:

• A one half -inch diameter carbide drill bit is used in a rotary impact hammer drill to generate a fine concrete powder suitable for analysis. The powder is placed in a sample container and homogenized for field or fixed laboratory analysis. The drill was utilized to attain enough sample (30 grams) to analyze but since the penetration depth was 1-inch maximum as to not dilute the sample, several sample holes had to be created.

• The concrete particles were collected from within the sample area using a disposable Ziplock bag, the concrete powder samples were then transferred into the laboratory supplied sample containers (4-oz glass jar).

• Once the required sample volume was collected, the area was cleaned of excess concrete/particles, which were placed in appropriate containers for proper disposal. The concrete core holes were filled with concrete patch at each location.

• The drill bit was cleaned with Alconox® and Water between each sample location followed by a water rinse, and the disposable gloves were also changed between each sample location.

• The concrete samples were placed in laboratory-provided ice-filled coolers and after sampling was completed for the day the cooler was taken to Pace analytical laboratory in Englewood, OH under chain-of-custody protocol and dropped off each night at the lab. The samples were assessed utilizing SW-846 method 8082A for PCBs.

3.0 RESULTS

3.1 Sampling Locations

Samples were collected following a stringent protocol to ensure sample integrity. Disposable nitrile gloves were worn, changed, and discarded between each sample location and equipment was decontaminated in an Alconox solution to avoid cross-contamination. The samples were placed in 4-ounce glass laboratory-provided jars using nitrile gloves and preserved on ice for shipment to the laboratory. The samples were hand delivered to Pace Analytical of Englewood, OH. All samples were maintained under strict chain-of-custody procedures and arrived at the laboratory between 2-4 degrees Celsius. Sampling locations along with photographic documentation are in Appendix C and D, respectively. A report of the laboratory analysis is provided in Appendix E.

A table illustrating the sample IDs and corresponding locations is provided below:

Table 3.1: Surface Paint Sampling Table

Sample ID	Sampling Location	Depth (Inches)	Date Sampled	Analysis
Administration Basement	Administration Building Basement	<1/16	11/13/19	8082A 6010B
Administration Stairwell	Stairwell Administration Building	<1/16	11/13/19	8082A 6010B
300 Dome	Mezzanine in Dome Decommissioned Reactor Building	<1/16	11/13/19	8082A 6010B
200 Exterior Wall	Sub-Basement Decommissioned Reactor Building	<1/16	11/13/19	8082A 6010B
200 Entombment	Sub-Basement Decommissioned Reactor Building	<1/16	11/13/19	8082A 6010B
Stairwell	Stairwell Decommissioned Reactor Building	<1/16	11/13/19	8082A 6010B
100 Entombment	Basement Decommissioned Reactor Building	<1/16	11/13/19	8082A 6010B
100 Exterior Wall	Basement Decommissioned Reactor Building	<1/16	11/13/19	8082A 6010B
Overall PCBs	Composite Sample from All Samples Collected	N/A	11/13/19	8082A
Lead TCLP	Composite Sample from All Samples Collected	N/A	11/13/19	6010B/TCLP

Concrete core samples collected were labeled in the following manner using indelible ink:

PI- XX-II

- PI or PO = (PI= Piqua Inside)
- XX = Elevation in Feet
- II = sample number

A table illustrating the sample IDs and corresponding locations is provided below:

Table 3.2: Paint and Concrete Core Sampling Table

Sample ID	Sampling Location	Depth (Inches)	Date Sampled	Analysis
PI-15-01	Dome Decommissioned Reactor Building	1 (7 holes)	06/01/20	8082A
PI-25-02	Dome Decommissioned Reactor Building	1 (5 holes)	06/01/20	8082A
PI-40-03	Dome Decommissioned Reactor Building	1 (5 holes)	06/01/20	8082A
PI-65-04	Dome Decommissioned Reactor Building	1 (5 holes)	06/02/20	8082A
PI-60-05	Dome Decommissioned Reactor Building	1 (5 holes)	06/02/20	8082A
PI-25-06	Dome Decommissioned Reactor Building	1 (5 holes)	06/02/20	8082A
PI-25-07	Dome Decommissioned Reactor Building	1 (5 holes)	06/02/20	8082A
PI-25-08	Dome Decommissioned Reactor Building	1 (5 holes)	06/02/20	8082A
PI-50-09	Dome Decommissioned Reactor Building	1 (5 holes)	06/02/20	8082A
PI-45-10	Dome Decommissioned Reactor Building	1 (5 holes)	06/02/20	8082A
PI-50-11	Dome Decommissioned Reactor Building	1 (5 holes)	06/02/20	8082A 6010B/TCLP
PI-25-12	Dome Decommissioned Reactor Building	1 (5 holes)	06/02/20	8082A
PI-05-13	Dome Decommissioned Reactor Building	1 (5 holes)	06/03/20	8082A
PI-05-14	Dome Decommissioned Reactor Building	1 (5 holes)	06/03/20	8082A
PI-15-15	Dome Decommissioned Reactor Building	1 (6 holes)	06/03/20	8082A
PI-AB-B1-16	Room B-1 Basement Administration Building	1 (5 holes)	6/10/20	8082A
PI-AB-B4-17	Room B-4 Basement Administration Building	1 (5 holes)	6/10/20	8082A
PI-L56-18	Stairs Decommissioned Reactor Building	1 (5 holes)	6/10/20	8082A
PI-L79-19	Stairs Decommissioned Reactor Building	1 (5 holes)	6/10/20	8082A

3.2 Analysis Results

Table 3.3: Surface Paint Results Table

Sample ID	Sampling Analytical Result	USEPA Bulk Remediation Waste Concentrations
Administration Basement	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) 2.4 mg/kg PCB-1260 (Aroclor 1260) ND Lead 2140 mg/kg	PCBs less than 50 ppm or mg/kg (<50 ppm) may be disposed of at: an approved PCB disposal facility; or when disposed pursuant to Sec . 761 .61(a) or (c), a permitted municipal solid waste or non-municipal non-hazardous waste facility ; or a RCRA Sec . 3004 or Sec . 3006 permitted hazardous waste landfills. Since Lead is included with the waste stream a TCLP is required for disposal at a municipal solid waste or non-municipal non-hazardous waste facility ; or a RCRA Sec . 3004 or Sec . 3006 permitted hazardous waste landfills.
Administration Stairwell	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) 1.6 mg/kg PCB-1260 (Aroclor 1260) ND Lead 814 mg/kg	
300 Dome	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND **PCB-1254 (Aroclor 1254) 52 mg/kg** PCB-1260 (Aroclor 1260) ND Lead 3380 mg/kg	
200 Exterior Wall	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) 20.4 mg/kg PCB-1260 (Aroclor 1260) ND Lead 1470 mg/kg	
200 Entombment	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) 7.3 mg/kg PCB-1260 (Aroclor 1260) ND Lead 1350 mg/kg	

Sample ID	Sampling Analytical Result	USEPA Bulk Remediation Waste Concentrations
Stairwell	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) 2.8 mg/kg PCB-1260 (Aroclor 1260) ND Lead 1620 mg/kg	PCBs less than 50 ppm or mg/kg (<50 ppm) may be disposed of at: an approved PCB disposal facility; or when disposed pursuant to Sec . 761 .61(a) or (c), a permitted municipal solid waste or non-municipal non-hazardous waste facility ; or a RCRA Sec . 3004 or Sec . 3006 permitted hazardous waste landfills. Since Lead is included with the waste stream a TCLP is required for disposal at a municipal solid waste or non-municipal non-hazardous waste facility ; or a RCRA Sec . 3004 or Sec . 3006 permitted hazardous waste landfills. Limit for TCLP disposal D008 Lead (PB) 5.0 mg/L.
100 Entombment	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) 5.9 mg/kg PCB-1260 (Aroclor 1260) ND Lead 2130 mg/kg	
100 Exterior Wall	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) 8.5 mg/kg PCB-1260 (Aroclor 1260) ND Lead 2040 mg/kg	
Overall PCBs Composite Sample	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) 4.6 mg/kg PCB-1260 (Aroclor 1260) ND	
Lead TCLP	0.11 mg/L	

ND - Not Detected at or above adjusted reporting limit.

Table 3.4: Paint and Concrete Core Results Table

Sample ID	Sampling Analytical Result	USEPA Bulk Remediation Waste Concentrations
PI-15-01	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) 0.21 mg/kg PCB-1260 (Aroclor 1260) ND	PCBs less than 50 ppm or mg/kg (<50 ppm) may be disposed of at: an approved PCB disposal facility; or when disposed pursuant to Sec . 761 .61(a) or (c), a permitted municipal solid waste or non-municipal non-hazardous waste facility ; or a RCRA Sec . 3004 or Sec . 3006 permitted hazardous waste landfills. Since Lead is included with the waste stream a TCLP is required for disposal at a municipal solid waste or non-municipal non-hazardous waste facility ; or a RCRA Sec . 3004 or Sec . 3006 permitted hazardous waste landfills.
PI-25-02	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) 0.35 mg/kg PCB-1260 (Aroclor 1260) ND	
PI-40-03	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) ND PCB-1260 (Aroclor 1260) 1.4 mg/kg	
PI-65-04	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) ND PCB-1260 (Aroclor 1260) 0.24 mg/kg	
PI-60-05	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) ND PCB-1260 (Aroclor 1260) 1.3 mg/kg	
PI-25-06	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) ND PCB-1260 (Aroclor 1260) ND	

Sample ID	Sampling Analytical Result	USEPA Bulk Remediation Waste Concentrations
PI-25-07	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) ND PCB-1260 (Aroclor 1260) ND	
PI-25-08	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) 0.21 mg/kg PCB-1260 (Aroclor 1260) ND	PCBs less than 50 ppm or mg/kg (<50 ppm) may be disposed of at: an approved PCB disposal facility; or when disposed pursuant to Sec . 761 .61(a) or (c), a permitted municipal solid waste or non-municipal non-hazardous waste facility ; or a RCRA Sec . 3004 or Sec . 3006 permitted hazardous waste landfills. Since Lead is included with the waste stream a TCLP is required for disposal at a municipal solid waste or non-municipal non-hazardous waste facility; or a RCRA Sec . 3004 or Sec . 3006 permitted hazardous waste landfills. Limit for TCLP disposal D008 Lead (PB) 5.0 mg/L.
PI-50-09	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) ND PCB-1260 (Aroclor 1260) 1.3 mg/kg	
PI-45-10	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) ND PCB-1260 (Aroclor 1260) 4.2 mg/kg	
PI-50-11	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) ND PCB-1260 (Aroclor 1260) 2.1 mg/kg TCLP Lead ND	
PI-25-12	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) ND PCB-1260 (Aroclor 1260) ND	
PI-05-13	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND	

Sample ID	Sampling Analytical Result	USEPA Bulk Remediation Waste Concentrations
	PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) 0.19 mg/kg PCB-1260 (Aroclor 1260) ND	
PI-05-14	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) 0.83 mg/kg PCB-1260 (Aroclor 1260) ND	
PI-15-15	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) 0.18 mg/kg PCB-1260 (Aroclor 1260) ND	
PI-AB-B1-16	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) ND PCB-1260 (Aroclor 1260) ND	
PI-AB-B4-17	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) ND PCB-1260 (Aroclor 1260) ND	
PI-L56-18	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) ND PCB-1260 (Aroclor 1260) ND	
PI-L79-19	PCB-1016 (Aroclor 1016) ND PCB-1221 (Aroclor 1221) ND PCB-1232 (Aroclor 1232) ND PCB-1242 (Aroclor 1242) ND PCB-1248 (Aroclor 1248) ND PCB-1254 (Aroclor 1254) ND PCB-1260 (Aroclor 1260) ND	

ND - Not Detected at or above adjusted reporting limit.

4.0 CONCLUSIONS AND RECOMENDATIONS

4.1 LBP Waste

Painted surfaces on the interior of the 1st, 2nd and 3rd floor of the administration structure should be considered coated with lead-based paint. Contractors impacting or disturbing painted substrates need to comply with the OSHA Lead in Construction Standard, 29 CFR 1926.62.

Since lead-based paint on the interior of the 1st, 2nd and 3rd floor of the administration building including 1st and 2nd floor staircases contains lead-based paint and not PCBs it would be considered a universal waste and can be disposed of as construction debris (~18,386 sf).

4.2 LBP and PCB Waste

Based on this assessment the dome structure of the reactor building and the sub floors ~23,000 sf and the basement and basement stairs to the administration building ~32,614 sf had lead based and PCB paint coating the concrete walls.

For purposes of cleaning, decontaminating, or removing PCB remediation waste under this section, there are four general waste categories: bulk PCB remediation waste, non-porous surfaces, porous surfaces, and liquids. Cleanup levels are based on the kind of material and the potential exposure to PCBs left after cleanup is completed.

For this site there are two options for disposal of the lead based and PCB paint.

According to current regulations if the intact concrete with paint attached is demolished and disposed of the material had PCB concentrations below 50ppm and lead TCLP levels below 5.0 mg/L. The material can be disposed of at an approved PCB disposal facility; or when disposed pursuant to Sec. 761 .61(a) or (c), at a permitted municipal solid waste or non-municipal non-hazardous waste facility; or a RCRA Sec. 3004 or Sec. 3006 permitted hazardous waste landfill. Please note that since it is anticipated that the dome of the reactor building will be cut at ground level and the basement filled this option will also require that the paint in the basement of the reactor building would still need to be remediated off the concrete walls and disposed of offsite prior to fill of the basement. The PCBs cannot remain on site.

The second option would be to remediate all the paint off the walls of the dome, sub floors of the dome, administration basement stairs and administration basement prior to demo and filling operations. The concrete would need to be tested after remediation to assure the PCBs had been removed from the concrete. Once confirmatory sampling is completed the concrete could be crushed and left on site. This would be an arduous process but the waste that would be generated would be less then option one.

Whichever remedial action that is carried out the federal EPA requires that at least thirty (30) days prior to initiating cleanup activities, provide written notifications to the EPA Regional Administrator (ATTN : Regional PCB Coordinator), the Director of the State and the Director of the county or local environmental protection agency where the cleanup will be conducted per 40 CFR §761 .61(a)(3)(i)(A)-(E). These notifications are required only for PCB remediation waste. Cleanup levels are determined based on the intended use of the building and contaminated medium. Post cleanup verification sampling of the porous surfaces (e.g., floor/walls) is required to determine that the cleanup standards have been met. Follow the verification sampling

procedures as required in 40 CFR §761 .61(a)(6), Subpart 0, or a verification sampling plan approved under a risk-based approval (40 CFR 761 .61(c)).

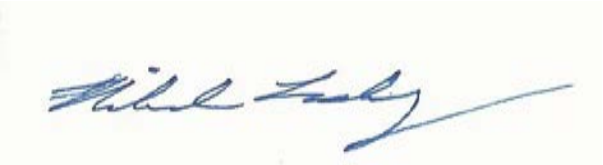
The federal EPA regional administrator for Region 5 is as follows:

Peter Ramanauskas
RCRA Corrective Action Project Manager/Regional PCB Coordinator
Corrective Action Section 3
Remediation Branch
Land, Chemicals, & Redevelopment Division
USEPA Region 5
77 West Jackson Blvd (LR-16J)
Chicago, IL 60604
(312) 886-7890

5.0 REPORT RELIANCE

This document was prepared for the use of The Army Corps of Engineers in association with project W912QR-17-D-0036 – Piqua Ohio Decommissioned Reactor and Administrative Building Demolition. Auxano assures that the scope of the investigation and contents included within the report are in conformance with accepted requirements and follow the generally accepted standards and practices of environmental consultants. The statements contained in the report are true and accurate to the best of our knowledge.

Sincerely,



Nichole Lashley
Senior Environmental Scientist
Auxano Environmental LLC.

APPENDIX A

SITE LOCATION MAP

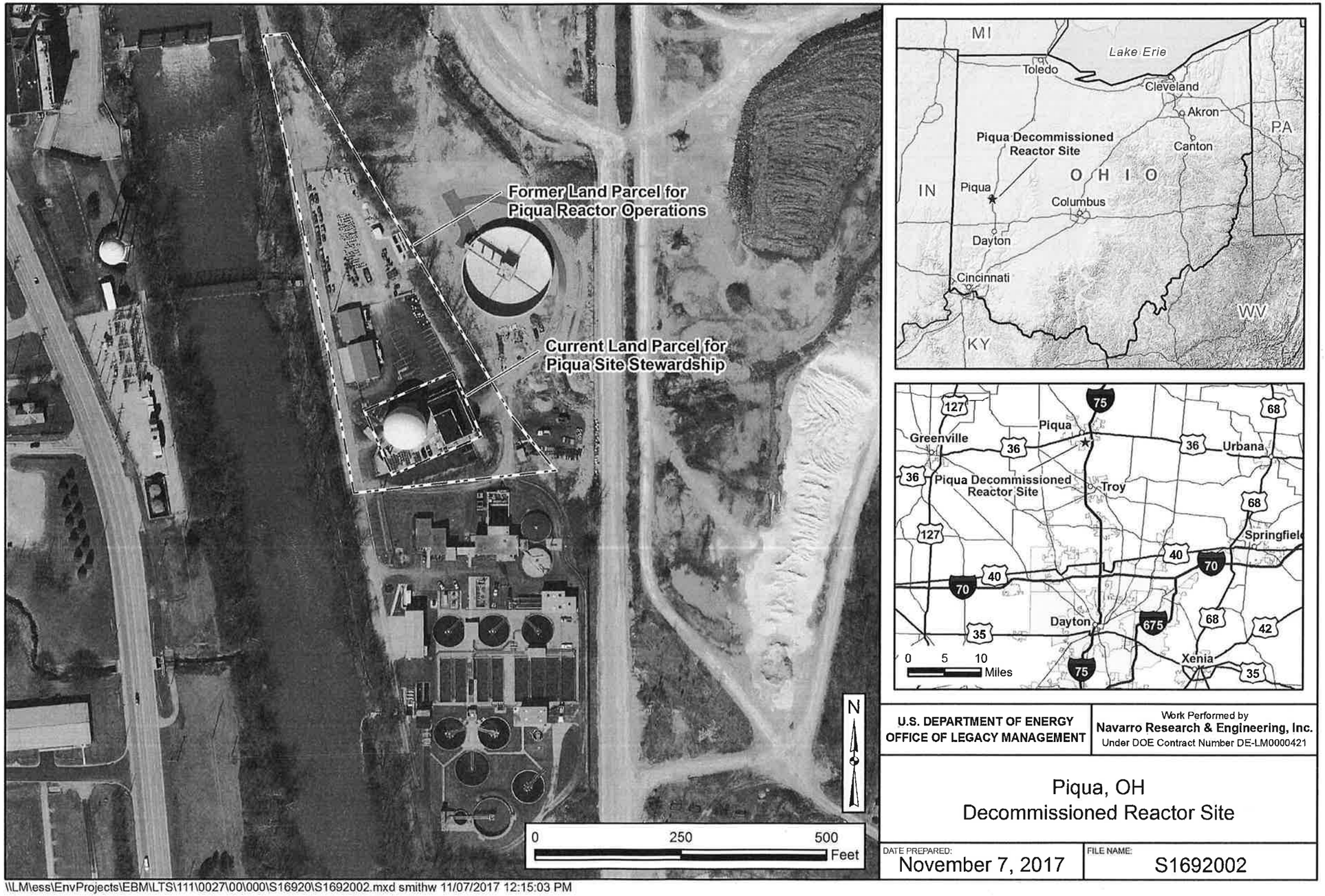


Figure 1. Location of the Piqua Site

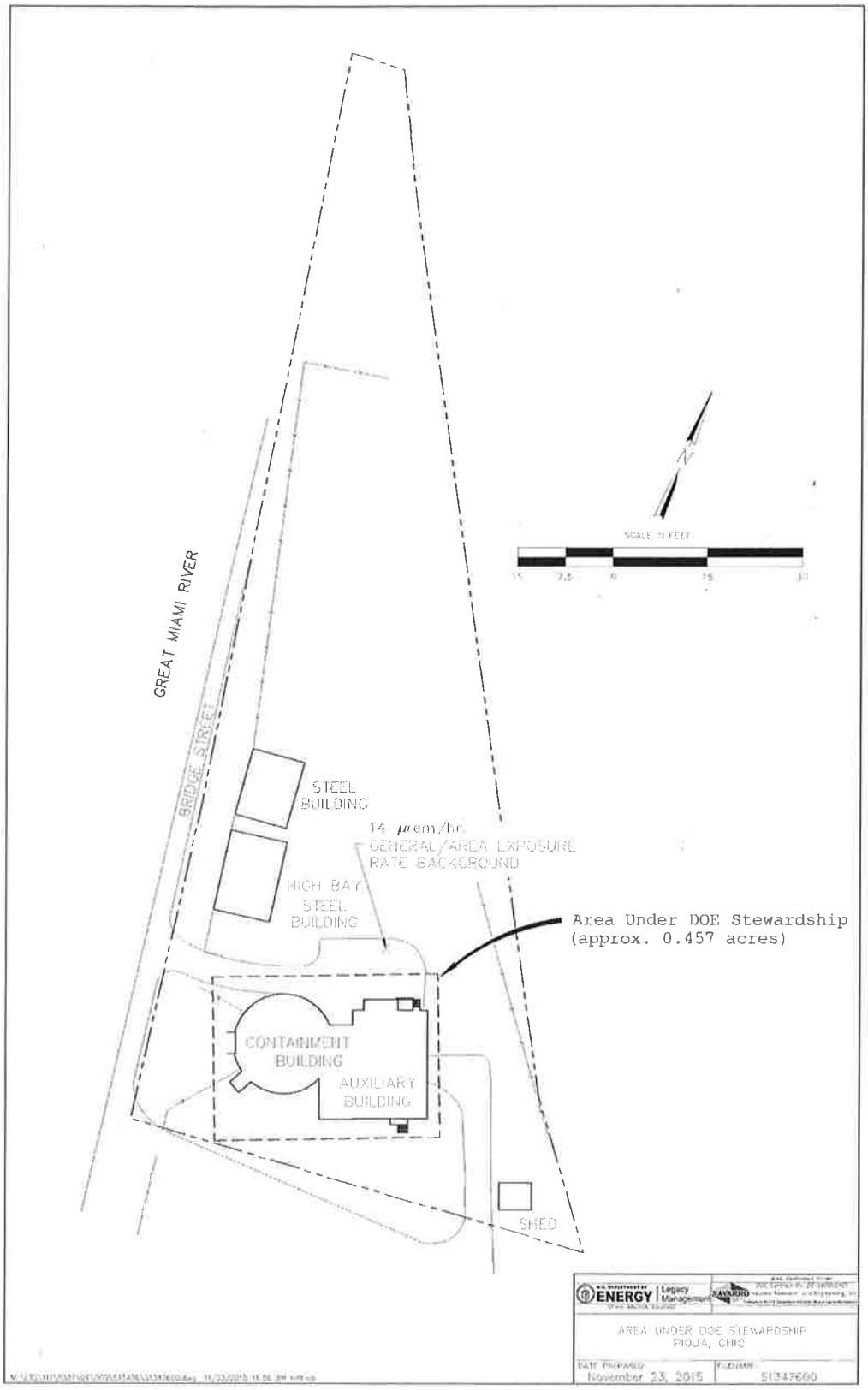


Figure 2. Area Under DOE Stewardship

APPENDIX B

ASSESSOR'S AND LABORATORY CERTIFICATIONS

INSTITUTE OF HAZARDOUS MATERIALS MANAGEMENT

THIS CERTIFIES THAT

NICHOLE LASHLEY

HAS SUCCESSFULLY MET ALL THE REQUIREMENTS OF EDUCATION, EXPERIENCE AND EXAMINATION, AND IS HEREBY DESIGNATED A

CERTIFIED HAZARDOUS MATERIALS MANAGER®
CHMM®

July 1, 2019
DATE OF CERTIFICATION

24829
CREDENTIAL NUMBER

July 31, 2024
CERTIFICATION EXPIRES

EUGENE A. GUILFORD, JR.
EXECUTIVE DIRECTOR

VALID SO LONG AS THIS CREDENTIAL IS RENEWED ACCORDING TO SCHEDULE AND IS NOT OTHERWISE REVOKED.

ANSI Accredited Program PERSONNEL CERTIFICATION

Accredited by the American National Standards Institute and the Council of Engineering and Scientific Specialty Boards

Certificate of Completion

This certifies that

Nichole Lashley

has successfully completed

8 Hour HAZWOPER Refresher Training

Refresher certification does NOT necessarily indicate initial 24 or 40 Hour HAZWOPER certification

In Accordance w/Federal OSHA Regulation 29 CFR 1910.120(e) & (p)

And all State OSHA/EPA Regulations as well including 29 CFR 1926.65 for Construction.

This course (Version 1) is approved for 8 Contact Hours (0.8 CEUs) of continuing education per the California Department of Public Health for Registered Environmental Health Specialist (REHS) (Accreditation # 044).

Safety Unlimited, Inc., Provider #5660170-2, is accredited by the International Association for Continuing Education and Training (IACET) and is accredited to issue the IACET CEU. As an IACET Accredited Provider, Safety Unlimited, Inc. offers CEUs for its programs that qualify under the ANSI/IACET Standard. Safety Unlimited, Inc. is authorized by IACET to offer 0.8 CEUs for this program.

Julius P. Griggs
Julius P. Griggs
Instructor #892

2009175253680
Certificate Number

9/17/2020
Issue Date

ACCREDITED IACET PROVIDER

Scan this code or visit safetyunlimited.com/v to verify certificate.

SAFETY UNLIMITED, Inc.
OSHA Compliant Safety Training Since 1993

2139 Tapo St., Suite 228 Simi Valley,CA 93063
(888) 309-SAFE (7233) or 805 306-8027
https://www.safetyunlimited.com

Proof of initial certification and subsequent refresher training is NOT required to take refresher training

Certificate of Completion

This certifies that

Jasmine Rendon

has successfully completed

8 Hour HAZWOPER Refresher Training

Refresher certification does NOT necessarily indicate initial 24 or 40 Hour HAZWOPER certification

In Accordance w/Federal OSHA Regulation 29 CFR 1910.120(e) & (p)

And all State OSHA/EPA Regulations as well including 29 CFR 1926.65 for Construction.

This course (Version 3) is approved for 8 Contact Hours (0.8 CEUs) of continuing education per the California Department of Public Health for Registered Environmental Health Specialist (REHS) (Accreditation # 044).

Safety Unlimited, Inc., Provider #5660170-2, is accredited by the International Association for Continuing Education and Training (IACET) and is accredited to issue the IACET CEU. As an IACET Accredited Provider, Safety Unlimited, Inc. offers CEUs for its programs that qualify under the ANSI/IACET Standard. Safety Unlimited, Inc. is authorized by IACET to offer 0.8 CEUs for this program.

Julius P. Griggs

Julius P. Griggs
Instructor #892

2008165343306

Certificate Number

8/16/2020

Issue Date

ACCREDITED IACET PROVIDER

Scan this code or visit safetyunlimited.com/v to verify certificate.

SAFETY UNLIMITED, Inc.
OSHA Compliant Safety Training Since 1993

2139 Tapo St., Suite 228 Simi Valley,CA 93063
(888) 309-SAFE (7233) or 805 306-8027
https://www.safetyunlimited.com

Proof of initial certification and subsequent refresher training is NOT required to take refresher training

Certificate of Completion

This certifies that

Tim Sugrue

has successfully completed

OSHA 40 Hour HAZWOPER Training

Annual Refresher Training Required

In Accordance With Federal OSHA Regulation 29 CFR 1910.120(e)

And State OSHA/EPA Regulations as well including 29 CFR 1926.65(e)

This course is approved for 40 Contact Hours (4 CEUs) of continuing education per the California Department of Public Health for Registered Environmental Health Specialist (REHS) (Accreditation # 044)

Safety Unlimited, Inc., Provider #5660170-2, is accredited by the International Association for Continuing Education and Training (IACET) and is accredited to issue the IACET CEU. As an IACET Accredited Provider, Safety Unlimited, Inc. offers CEUs for its programs that qualify under the ANSI/IACET Standard. Safety Unlimited, Inc. is authorized by IACET to offer 4 CEUs for this program.

Julius P. Griggs

Julius P. Griggs
Instructor #892

2004151328039

Certificate Number

4/15/2020

Issue Date

ACCREDITED IACET PROVIDER

Scan this code or visit safetyunlimited.com/v to verify certificate.

SAFETY UNLIMITED, Inc.
OSHA Compliant Safety Training Since 1993

2139 Tapo St., Suite 228 Simi Valley,CA 93063
(888) 309-SAFE (7233) or 805 306-8027
https://www.safetyunlimited.com

Annual Refresher Training Required

State of Florida
Department of Health, Bureau of Public Health Laboratories
This is to certify that

E871136

PACE ANALYTICAL - DAYTON LLC
25 HOLIDAY DRIVE
ENGLEWOOD, OH 45322

has complied with Florida Administrative Code 64E-1,
for the examination of environmental samples in the following categories

DRINKING WATER - GROUP I UNREGULATED CONTAMINANTS, DRINKING WATER - GROUP II UNREGULATED CONTAMINANTS, DRINKING WATER - OTHER REGULATED CONTAMINANTS, DRINKING WATER - PRIMARY INORGANIC CONTAMINANTS, DRINKING WATER - SECONDARY INORGANIC CONTAMINANTS, DRINKING WATER - SYNTHETIC ORGANIC CONTAMINANTS, NON-POTABLE WATER - EXTRACTABLE ORGANICS, NON-POTABLE WATER - GENERAL CHEMISTRY, NON-POTABLE WATER - METALS, NON-POTABLE WATER - MICROBIOLOGY, NON-POTABLE WATER - PESTICIDES-HERBICIDES-PCB'S, NON-POTABLE WATER - VOLATILE ORGANICS, SOLID AND CHEMICAL MATERIALS - EXTRACTABLE ORGANICS, SOLID AND CHEMICAL MATERIALS - GENERAL CHEMISTRY, SOLID AND CHEMICAL MATERIALS - METALS, SOLID AND CHEMICAL MATERIALS - PESTICIDES-HERBICIDES-PCB'S, SOLID AND CHEMICAL MATERIALS - VOLATILE ORGANICS

Continued certification is contingent upon successful on-going compliance with the NELAC Standards and FAC Rule 64E-1 regulations. Specific methods and analytes certified are cited on the Laboratory Scope of Accreditation for this laboratory and are on file at the Bureau of Public Health Laboratories, P. O. Box 210, Jacksonville, Florida 32231. Clients and customers are urged to verify with this agency the laboratory's certification status in Florida for particular methods and analytes.

Date Issued: July 19, 2019 Expiration Date: June 30, 2020

Patty A. Lewandowski, MBA, MT(ASCP)
Chief Bureau of Public Health Laboratories
DH Form 1697, 7/04
NON-TRANSFERABLE E871136-05-07/19/2019
Supersedes all previously issued certificates

Laboratory Scope of Accreditation

Attachment to Certificate #: E871136-05, expiration date June 30, 2020. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Drinking Water**

Analyte	Method/Tech	Category	Certification Type	Effective Date
1,1,1,2-Tetrachloroethane	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
1,1,1-Trichloroethane	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
1,1,2,2-Tetrachloroethane	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
1,1,2-Trichloroethane	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
1,1-Dichloroethane	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
1,1-Dichloroethylene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
1,1-Dichloropropene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
1,2,3-Trichloropropane	EPA 524.2	Other Regulated Contaminants	NELAP	6/27/2019
1,2,4-Trichlorobenzene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
1,2,4-Trimethylbenzene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
1,2-Dibromo-3-chloropropane (DBCP)	EPA 504.1	Synthetic Organic Contaminants	NELAP	7/1/2018
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 504.1	Synthetic Organic Contaminants	NELAP	7/1/2018
1,2-Dichlorobenzene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
1,2-Dichloroethane	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
1,2-Dichloropropane	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
1,3,5-Trimethylbenzene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
1,3-Dichlorobenzene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
1,3-Dichloropropene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
1,4-Dichlorobenzene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
2,2-Dichloropropane	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
2-Chlorotoluene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
4-Chlorotoluene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
4-Isopropyltoluene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Acetone	EPA 524.2	Group II Unregulated Contaminants	NELAP	7/1/2018
Alkalinity as CaCO3	SM 2320 B	Primary Inorganic Contaminants	NELAP	7/1/2018
Aluminum	EPA 200.7	Secondary Inorganic Contaminants	NELAP	7/1/2018
Benzene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Boron	EPA 200.7	Secondary Inorganic Contaminants	NELAP	7/1/2018
Bromobenzene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Bromochloromethane	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Bromodichloromethane	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Bromoform	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Carbon tetrachloride	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Chloride	SM 4500-Cl^- E	Secondary Inorganic Contaminants	NELAP	7/1/2018
Chlorine	SM 4500-Cl G	Primary Inorganic Contaminants	NELAP	7/1/2018
Chloroacetic acid	EPA 552.2	Group I Unregulated Contaminants	NELAP	7/1/2018

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/19/2019 **Expiration Date: 6/30/2020**

Laboratory Scope of Accreditation

Attachment to Certificate #: E871136-05, expiration date June 30, 2020. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Drinking Water**

Analyte	Method/Tech	Category	Certification Type	Effective Date
Chlorobenzene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Chloroethane	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Chloroform	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
cis-1,2-Dichloroethylene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
cis-1,3-Dichloropropene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Conductivity	SM 2510 B	Primary Inorganic Contaminants	NELAP	7/1/2018
Copper	EPA 200.7	Secondary Inorganic Contaminants	NELAP	7/1/2018
Dibromochloromethane	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Dibromomethane	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Dichloroacetic acid	EPA 552.2	Group I Unregulated Contaminants	NELAP	7/1/2018
Dichlorodifluoromethane	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Dichloromethane (DCM, Methylene chloride)	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Dissolved organic carbon (DOC)	SM 5310 C	Primary Inorganic Contaminants	NELAP	7/1/2018
Ethylbenzene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Hardness	SM 2340 B	Secondary Inorganic Contaminants	NELAP	7/1/2018
Iron	EPA 200.7	Secondary Inorganic Contaminants	NELAP	7/1/2018
Isopropylbenzene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Manganese	EPA 200.7	Secondary Inorganic Contaminants	NELAP	7/1/2018
Methyl bromide (Bromomethane)	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Methyl chloride (Chloromethane)	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Methyl tert-butyl ether (MTBE)	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Molybdenum	EPA 200.7	Secondary Inorganic Contaminants	NELAP	7/1/2018
Naphthalene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
n-Butylbenzene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
n-Propylbenzene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Orthophosphate as P	SM 4500-P F	Primary Inorganic Contaminants	NELAP	7/1/2018
pH	SM 4500-H+-B	Primary Inorganic Contaminants	NELAP	7/1/2018
Potassium	EPA 200.7	Secondary Inorganic Contaminants	NELAP	7/1/2018
sec-Butylbenzene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Silver	EPA 200.7	Secondary Inorganic Contaminants	NELAP	7/1/2018
Styrene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Sulfate	SM 4500 SO4-D	Secondary Inorganic Contaminants	NELAP	7/1/2018
tert-Butylbenzene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Tetrachloroethylene (Perchloroethylene)	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Toluene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Total organic carbon	SM 5310 C	Primary Inorganic Contaminants	NELAP	7/1/2018

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Issue Date: 7/19/2019 **Expiration Date: 6/30/2020**

Laboratory Scope of Accreditation

Attachment to Certificate #: E871136-05, expiration date June 30, 2020. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Drinking Water**

Analyte	Method/Tech	Category	Certification Type	Effective Date
Total trihalomethanes	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
trans-1,2-Dichloroethylene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
trans-1,3-Dichloropropene	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Trichloroacetic acid	EPA 552.2	Group I Unregulated Contaminants	NELAP	7/1/2018
Trichloroethene (Trichloroethylene)	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Xylene (total)	EPA 524.2	Other Regulated Contaminants	NELAP	7/1/2018
Zinc	EPA 200.7	Secondary Inorganic Contaminants	NELAP	7/1/2018

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Issue Date: 7/19/2019 **Expiration Date: 6/30/2020**

Laboratory Scope of Accreditation

Attachment to Certificate #: E871136-05, expiration date June 30, 2020. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Non-Potable Water**

Analyte	Method/Tech	Category	Certification Type	Effective Date
1,1,1,2-Tetrachloroethane	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,1,1,2-Tetrachloroethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,1,1-Trichloroethane	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,1,1-Trichloroethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,1,2,2-Tetrachloroethane	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,1,2,2-Tetrachloroethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,1,2-Trichloroethane	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,1,2-Trichloroethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,1-Dichloroethane	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,1-Dichloroethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,1-Dichloroethylene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,1-Dichloroethylene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,1-Dichloropropene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,1-Dichloropropene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2,3-Trichlorobenzene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,2,3-Trichlorobenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2,3-Trichloropropane	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,2,3-Trichloropropane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2,4,5-Tetrachlorobenzene	EPA 8270	Extractable Organics	NELAP	7/1/2018
1,2,4-Trichlorobenzene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,2,4-Trichlorobenzene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
1,2,4-Trichlorobenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2,4-Trichlorobenzene	EPA 8270	Extractable Organics	NELAP	7/1/2018
1,2,4-Trimethylbenzene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,2,4-Trimethylbenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2-Dibromo-3-chloropropane (DBCP)	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,2-Dibromo-3-chloropropane (DBCP)	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2-Dichlorobenzene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,2-Dichlorobenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2-Dichlorobenzene	EPA 8270	Extractable Organics	NELAP	7/1/2018
1,2-Dichloroethane	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,2-Dichloroethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2-Dichloropropane	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,2-Dichloropropane	EPA 8260	Volatile Organics	NELAP	7/1/2018

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Issue Date: 7/19/2019 **Expiration Date: 6/30/2020**

Laboratory Scope of Accreditation

Attachment to Certificate #: E871136-05, expiration date June 30, 2020. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Non-Potable Water**

Analyte	Method/Tech	Category	Certification Type	Effective Date
1,3,5-Trimethylbenzene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,3,5-Trimethylbenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,3-Dichlorobenzene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,3-Dichlorobenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,3-Dichlorobenzene	EPA 8270	Extractable Organics	NELAP	7/1/2018
1,3-Dichloropropane	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,3-Dichloropropane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,4-Dichlorobenzene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
1,4-Dichlorobenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,4-Dichlorobenzene	EPA 8270	Extractable Organics	NELAP	7/1/2018
1-Naphthylamine	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,2-Dichloropropane	EPA 624.1	Volatile Organics	NELAP	7/1/2018
2,2-Dichloropropane	EPA 8260	Volatile Organics	NELAP	7/1/2018
2,3,4,6-Tetrachlorophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,4,5-Trichlorophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,4,6-Trichlorophenol	EPA 625.1	Extractable Organics	NELAP	7/1/2018
2,4,6-Trichlorophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,4-Dichlorophenol	EPA 625.1	Extractable Organics	NELAP	7/1/2018
2,4-Dichlorophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,4-Dimethylphenol	EPA 625.1	Extractable Organics	NELAP	7/1/2018
2,4-Dimethylphenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,4-Dinitrophenol	EPA 625.1	Extractable Organics	NELAP	7/1/2018
2,4-Dinitrophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,4-Dinitrotoluene (2,4-DNT)	EPA 625.1	Extractable Organics	NELAP	7/1/2018
2,4-Dinitrotoluene (2,4-DNT)	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,6-Dichlorophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,6-Dinitrotoluene (2,6-DNT)	EPA 625.1	Extractable Organics	NELAP	7/1/2018
2,6-Dinitrotoluene (2,6-DNT)	EPA 8270	Extractable Organics	NELAP	7/1/2018
2-Chloroethyl vinyl ether	EPA 624.1	Volatile Organics	NELAP	7/1/2018
2-Chloroethyl vinyl ether	EPA 8260	Volatile Organics	NELAP	7/1/2018
2-Chloronaphthalene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
2-Chloronaphthalene	EPA 8270	Extractable Organics	NELAP	7/1/2018
2-Chlorophenol	EPA 625.1	Extractable Organics	NELAP	7/1/2018
2-Chlorophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2-Chlorotoluene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
2-Chlorotoluene	EPA 8260	Volatile Organics	NELAP	7/1/2018

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Issue Date: 7/19/2019 **Expiration Date: 6/30/2020**

Laboratory Scope of Accreditation

Attachment to Certificate #: E871136-05, expiration date June 30, 2020. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Non-Potable Water**

Analyte	Method/Tech	Category	Certification Type	Effective Date
2-Hexanone	EPA 8260	Volatile Organics	NELAP	7/1/2018
2-Methyl-4,6-dinitrophenol	EPA 625.1	Extractable Organics	NELAP	7/1/2018
2-Methyl-4,6-dinitrophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2-Methylnaphthalene	EPA 8270	Extractable Organics	NELAP	7/1/2018
2-Methylphenol (o-Cresol)	EPA 8270	Extractable Organics	NELAP	7/1/2018
2-Naphthylamine	EPA 8270	Extractable Organics	NELAP	7/1/2018
2-Nitroaniline	EPA 8270	Extractable Organics	NELAP	7/1/2018
2-Nitrophenol	EPA 625.1	Extractable Organics	NELAP	7/1/2018
2-Nitrophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
3,3'-Dichlorobenzidine	EPA 625.1	Extractable Organics	NELAP	7/1/2018
3,3'-Dimethylbenzidine	EPA 8270	Extractable Organics	NELAP	7/1/2018
3-Nitroaniline	EPA 8270	Extractable Organics	NELAP	7/1/2018
4,4'-DDD	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
4,4'-DDD	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
4,4'-DDE	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
4,4'-DDE	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
4,4'-DDT	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
4,4'-DDT	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
4-Bromophenyl phenyl ether	EPA 625.1	Extractable Organics	NELAP	7/1/2018
4-Bromophenyl phenyl ether	EPA 8270	Extractable Organics	NELAP	7/1/2018
4-Chloro-3-methylphenol	EPA 625.1	Extractable Organics	NELAP	7/1/2018
4-Chloro-3-methylphenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
4-Chlorophenyl phenylether	EPA 625.1	Extractable Organics	NELAP	7/1/2018
4-Chlorophenyl phenylether	EPA 8270	Extractable Organics	NELAP	7/1/2018
4-Chlorotoluene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
4-Chlorotoluene	EPA 8260	Volatile Organics	NELAP	7/1/2018
4-Isopropyltoluene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
4-Nitroaniline	EPA 8270	Extractable Organics	NELAP	7/1/2018
4-Nitrophenol	EPA 625.1	Extractable Organics	NELAP	7/1/2018
4-Nitrophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
Acenaphthene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Acenaphthene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Acenaphthylene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Acenaphthylene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Acetone	EPA 8260	Volatile Organics	NELAP	7/1/2018
Acetonitrile	EPA 8260	Volatile Organics	NELAP	7/1/2018

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Issue Date: 7/19/2019 **Expiration Date: 6/30/2020**

Laboratory Scope of Accreditation

Attachment to Certificate #: E871136-05, expiration date June 30, 2020. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Non-Potable Water**

Analyte	Method/Tech	Category	Certification Type	Effective Date
Acetophenone	EPA 8270	Extractable Organics	NELAP	7/1/2018
Acrolein (Propenal)	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Acrolein (Propenal)	EPA 8260	Volatile Organics	NELAP	7/1/2018
Acrylonitrile	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Acrylonitrile	EPA 8260	Volatile Organics	NELAP	7/1/2018
Aldrin	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aldrin	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Alkalinity as CaCO3	SM 2320 B	General Chemistry	NELAP	7/1/2018
Allyl chloride (3-Chloropropene)	EPA 8260	Volatile Organics	NELAP	7/1/2018
alpha-BHC (alpha-Hexachlorocyclohexane)	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
alpha-BHC (alpha-Hexachlorocyclohexane)	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
alpha-Chlordane	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aluminum	EPA 200.7	Metals	NELAP	7/1/2018
Ammonia as N	EPA 350.1	General Chemistry	NELAP	7/1/2018
Aniline	EPA 8270	Extractable Organics	NELAP	7/1/2018
Anthracene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Anthracene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Antimony	EPA 200.7	Metals	NELAP	7/1/2018
Aramite	EPA 8270	Extractable Organics	NELAP	7/1/2018
Aroclor-1016 (PCB-1016)	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1016 (PCB-1016)	EPA 8082	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1221 (PCB-1221)	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1221 (PCB-1221)	EPA 8082	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1232 (PCB-1232)	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1232 (PCB-1232)	EPA 8082	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1242 (PCB-1242)	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1242 (PCB-1242)	EPA 8082	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1248 (PCB-1248)	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1248 (PCB-1248)	EPA 8082	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1254 (PCB-1254)	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1254 (PCB-1254)	EPA 8082	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1260 (PCB-1260)	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1260 (PCB-1260)	EPA 8082	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Arsenic	EPA 200.7	Metals	NELAP	7/1/2018
Barium	EPA 200.7	Metals	NELAP	7/1/2018
Benzene	EPA 624.1	Volatile Organics	NELAP	7/1/2018

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Issue Date: 7/19/2019 **Expiration Date: 6/30/2020**

Laboratory Scope of Accreditation

Attachment to Certificate #: E871136-05, expiration date June 30, 2020. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Non-Potable Water**

Analyte	Method/Tech	Category	Certification Type	Effective Date
Benzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Benzidine	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Benzidine	EPA 8270	Extractable Organics	NELAP	7/1/2018
Benzo(a)anthracene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Benzo(a)anthracene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Benzo(a)pyrene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Benzo(a)pyrene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Benzo(b)fluoranthene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Benzo(b)fluoranthene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Benzo(g,h,i)perylene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Benzo(g,h,i)perylene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Benzo(k)fluoranthene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Benzo(k)fluoranthene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Benzoic acid	EPA 8270	Extractable Organics	NELAP	7/1/2018
Beryllium	EPA 200.7	Metals	NELAP	7/1/2018
beta-BHC (beta-Hexachlorocyclohexane)	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
beta-BHC (beta-Hexachlorocyclohexane)	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Biochemical oxygen demand	SM 5210 B	General Chemistry	NELAP	7/1/2018
bis(2-Chloroethoxy)methane	EPA 625.1	Extractable Organics	NELAP	7/1/2018
bis(2-Chloroethoxy)methane	EPA 8270	Extractable Organics	NELAP	7/1/2018
bis(2-Chloroethyl) ether	EPA 625.1	Extractable Organics	NELAP	7/1/2018
bis(2-Chloroethyl) ether	EPA 8270	Extractable Organics	NELAP	7/1/2018
Boron	EPA 200.7	Metals	NELAP	7/1/2018
Bromobenzene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Bromobenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Bromochloromethane	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Bromochloromethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
Bromodichloromethane	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Bromodichloromethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
Bromoform	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Bromoform	EPA 8260	Volatile Organics	NELAP	7/1/2018
Butyl benzyl phthalate	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Butyl benzyl phthalate	EPA 8270	Extractable Organics	NELAP	7/1/2018
Cadmium	EPA 200.7	Metals	NELAP	7/1/2018
Calcium	EPA 200.7	Metals	NELAP	7/1/2018
Carbazole	EPA 8270	Extractable Organics	NELAP	7/1/2018

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State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Non-Potable Water**

Analyte	Method/Tech	Category	Certification Type	Effective Date
Carbon tetrachloride	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Carbon tetrachloride	EPA 8260	Volatile Organics	NELAP	7/1/2018
Carbonaceous BOD (CBOD)	SM 5210 B	General Chemistry	NELAP	7/1/2018
Chemical oxygen demand	HACH 8000	General Chemistry	NELAP	7/1/2018
Chlordane (tech.)	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Chlordane (tech.)	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Chloride	SM 4500-Cl⁻ E	General Chemistry	NELAP	7/1/2018
Chlorine	SM 4500-Cl G	General Chemistry	NELAP	7/1/2018
Chlorobenzene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Chlorobenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Chloroethane	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Chloroethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
Chloroform	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Chloroform	EPA 8260	Volatile Organics	NELAP	7/1/2018
Chloroprene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Chromium	EPA 200.7	Metals	NELAP	7/1/2018
Chromium VI	SM 3500-Cr B (20th/21st/22nd Ed.)/UV-VIS	General Chemistry	NELAP	7/1/2018
Chrysene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Chrysene	EPA 8270	Extractable Organics	NELAP	7/1/2018
cis-1,2-Dichloroethylene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
cis-1,2-Dichloroethylene	EPA 8260	Volatile Organics	NELAP	7/1/2018
cis-1,3-Dichloropropene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
cis-1,3-Dichloropropene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Cobalt	EPA 200.7	Metals	NELAP	7/1/2018
Conductivity	SM 2510 B	General Chemistry	NELAP	7/1/2018
Copper	EPA 200.7	Metals	NELAP	7/1/2018
delta-BHC	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
delta-BHC	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Dibenz(a,h)anthracene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Dibenz(a,h)anthracene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Dibenzofuran	EPA 8270	Extractable Organics	NELAP	7/1/2018
Dibromochloromethane	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Dibromochloromethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
Dibromofluoromethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
Dibromomethane	EPA 624.1	Volatile Organics	NELAP	7/1/2018

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Issue Date: 7/19/2019 **Expiration Date: 6/30/2020**

Laboratory Scope of Accreditation

Attachment to Certificate #: E871136-05, expiration date June 30, 2020. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Non-Potable Water**

Analyte	Method/Tech	Category	Certification Type	Effective Date
Dibromomethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
Dichlorodifluoromethane	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Dichlorodifluoromethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
Dieldrin	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Dieldrin	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Diesel range organics (DRO)	EPA 8015	Extractable Organics	NELAP	7/1/2018
Diethyl phthalate	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Diethyl phthalate	EPA 8270	Extractable Organics	NELAP	7/1/2018
Dimethyl phthalate	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Dimethyl phthalate	EPA 8270	Extractable Organics	NELAP	7/1/2018
Di-n-butyl phthalate	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Di-n-butyl phthalate	EPA 8270	Extractable Organics	NELAP	7/1/2018
Di-n-octyl phthalate	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Di-n-octyl phthalate	EPA 8270	Extractable Organics	NELAP	7/1/2018
Endosulfan I	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Endosulfan I	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Endosulfan II	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Endosulfan II	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Endosulfan sulfate	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Endosulfan sulfate	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Endrin	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Endrin	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Endrin aldehyde	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Endrin aldehyde	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Endrin ketone	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Ethyl methacrylate	EPA 8260	Volatile Organics	NELAP	7/1/2018
Ethylbenzene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Ethylbenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Fluoranthene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Fluoranthene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Fluorene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Fluorene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Fluoride	SM 4500 F-C	General Chemistry	NELAP	7/1/2018
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018

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Laboratory Scope of Accreditation

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State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Non-Potable Water**

Analyte	Method/Tech	Category	Certification Type	Effective Date
gamma-Chlordane	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Gasoline range organics (GRO)	EPA 8015	Volatile Organics	NELAP	7/1/2018
Hardness	SM 2340 B	General Chemistry	NELAP	7/1/2018
Hardness (calc.)	EPA 200.7	Metals	NELAP	7/1/2018
Heptachlor	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Heptachlor	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Heptachlor epoxide	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Heptachlor epoxide	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Heterotrophic plate count	SIMPLATE	Microbiology	NELAP	7/1/2018
Hexachlorobenzene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Hexachlorobenzene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Hexachlorobutadiene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Hexachlorobutadiene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Hexachlorobutadiene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Hexachlorobutadiene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Hexachlorocyclopentadiene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Hexachlorocyclopentadiene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Hexachloroethane	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Hexachloroethane	EPA 8270	Extractable Organics	NELAP	7/1/2018
Indeno(1,2,3-cd)pyrene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Indeno(1,2,3-cd)pyrene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Iodomethane (Methyl iodide)	EPA 8260	Volatile Organics	NELAP	7/1/2018
Iron	EPA 200.7	Metals	NELAP	7/1/2018
Isophorone	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Isophorone	EPA 8270	Extractable Organics	NELAP	7/1/2018
Isopropylbenzene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Isopropylbenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Isosafrole	EPA 8270	Extractable Organics	NELAP	7/1/2018
Kjeldahl nitrogen - total	SM 4500-NorgD	General Chemistry	NELAP	7/1/2018
Lead	EPA 200.7	Metals	NELAP	7/1/2018
Lead	EPA 6010	Metals	NELAP	4/4/2019
Lithium	EPA 200.7	Metals	NELAP	7/1/2018
Magnesium	EPA 200.7	Metals	NELAP	7/1/2018
Manganese	EPA 200.7	Metals	NELAP	7/1/2018
Mercury	EPA 245.1	Metals	NELAP	7/1/2018
Mercury	EPA 7470	Metals	NELAP	7/1/2018

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E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Non-Potable Water**

Analyte	Method/Tech	Category	Certification Type	Effective Date
Methoxychlor	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Methyl bromide (Bromomethane)	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Methyl bromide (Bromomethane)	EPA 8260	Volatile Organics	NELAP	7/1/2018
Methyl chloride (Chloromethane)	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Methyl chloride (Chloromethane)	EPA 8260	Volatile Organics	NELAP	7/1/2018
Methyl methacrylate	EPA 8260	Volatile Organics	NELAP	7/1/2018
Methyl tert-butyl ether (MTBE)	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Methyl tert-butyl ether (MTBE)	EPA 8260	Volatile Organics	NELAP	7/1/2018
Methylene chloride	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Methylene chloride	EPA 8260	Volatile Organics	NELAP	7/1/2018
Molybdenum	EPA 200.7	Metals	NELAP	7/1/2018
Naphthalene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Naphthalene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Naphthalene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Naphthalene (without SIM)	EPA 624.1	Volatile Organics	NELAP	7/1/2018
n-Butylbenzene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
n-Butylbenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Nickel	EPA 200.7	Metals	NELAP	7/1/2018
Nitrate	SM 4500-NO3 F	General Chemistry	NELAP	7/1/2018
Nitrate-nitrite	SM 4500-NO3 F	General Chemistry	NELAP	7/1/2018
Nitrite	SM 4500-NO3 F	General Chemistry	NELAP	7/1/2018
Nitrobenzene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Nitrobenzene	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitrosodiethylamine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitrosodimethylamine	EPA 625.1	Extractable Organics	NELAP	7/1/2018
n-Nitrosodimethylamine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitroso-di-n-butylamine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitrosodi-n-propylamine	EPA 625.1	Extractable Organics	NELAP	7/1/2018
n-Nitrosodi-n-propylamine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitrosodiphenylamine	EPA 625.1	Extractable Organics	NELAP	6/27/2019
n-Nitrosodiphenylamine	EPA 8270	Extractable Organics	NELAP	6/27/2019
n-Nitrosomethylethylamine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitrosomorpholine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitrosopiperidine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitrosopyrrolidine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Propylbenzene	EPA 624.1	Volatile Organics	NELAP	7/1/2018

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State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Non-Potable Water**

Analyte	Method/Tech	Category	Certification Type	Effective Date
n-Propylbenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Oil & Grease	EPA 1664A	General Chemistry	NELAP	7/1/2018
Organic nitrogen	TKN minus AMMONIA	General Chemistry	NELAP	7/1/2018
Orthophosphate as P	SM 4500-P F	General Chemistry	NELAP	7/1/2018
o-Toluidine	EPA 8270	Extractable Organics	NELAP	7/1/2018
Oxygen, dissolved	SM 4500-O G	General Chemistry	NELAP	7/1/2018
o-Xylene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
o-Xylene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Pentachlorophenol	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Pentachlorophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
pH	SM 4500-H+-B	General Chemistry	NELAP	7/1/2018
Phenanthrene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Phenanthrene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Phenol	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Phenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
Phosphorus, total	EPA 200.7	Metals	NELAP	7/1/2018
Potassium	EPA 200.7	Metals	NELAP	7/1/2018
Pyrene	EPA 625.1	Extractable Organics	NELAP	7/1/2018
Pyrene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Pyridine	EPA 8270	Extractable Organics	NELAP	7/1/2018
Residue-filterable (TDS)	SM 2540 C	General Chemistry	NELAP	7/1/2018
Residue-nonfilterable (TSS)	SM 2540 D	General Chemistry	NELAP	7/1/2018
Residue-total	SM 2540 B	General Chemistry	NELAP	7/1/2018
Residue-volatile	SM 2540 E	General Chemistry	NELAP	7/1/2018
Safrole	EPA 8270	Extractable Organics	NELAP	7/1/2018
sec-Butylbenzene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
sec-Butylbenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Selenium	EPA 200.7	Metals	NELAP	7/1/2018
Silica as SiO2	EPA 200.7	Metals	NELAP	7/1/2018
Silver	EPA 200.7	Metals	NELAP	7/1/2018
Sodium	EPA 200.7	Metals	NELAP	7/1/2018
Strontium	EPA 200.7	Metals	NELAP	7/1/2018
Styrene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Styrene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Sulfate	SM 4500-SO4 C (18th,19th,20th Ed.)/GRAV	General Chemistry	NELAP	7/1/2018
Sulfide	SM 4500-S D/UV-VIS	General Chemistry	NELAP	7/1/2018

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Laboratory Scope of Accreditation

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State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Non-Potable Water**

Analyte	Method/Tech	Category	Certification Type	Effective Date
tert-Butylbenzene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
tert-Butylbenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Tetrachloroethylene (Perchloroethylene)	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Tetrachloroethylene (Perchloroethylene)	EPA 8260	Volatile Organics	NELAP	7/1/2018
Thallium	EPA 200.7	Metals	NELAP	7/1/2018
Tin	EPA 200.7	Metals	NELAP	7/1/2018
Titanium	EPA 200.7	Metals	NELAP	7/1/2018
Toluene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Toluene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Total cyanide	EPA 335.4	General Chemistry	NELAP	7/1/2018
Total organic carbon	SM 5310 C	General Chemistry	NELAP	7/1/2018
Total phenolics	EPA 420.4	General Chemistry	NELAP	7/1/2018
Toxaphene (Chlorinated camphene)	EPA 608.3	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Toxaphene (Chlorinated camphene)	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
trans-1,2-Dichloroethylene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
trans-1,2-Dichloroethylene	EPA 8260	Volatile Organics	NELAP	7/1/2018
trans-1,3-Dichloropropene	EPA 624.1	Volatile Organics	NELAP	7/1/2018
trans-1,3-Dichloropropene	EPA 8260	Volatile Organics	NELAP	7/1/2018
trans-1,4-Dichloro-2-butene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Trichloroethene (Trichloroethylene)	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Trichloroethene (Trichloroethylene)	EPA 8260	Volatile Organics	NELAP	7/1/2018
Trichlorofluoromethane	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Trichlorofluoromethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
Vanadium	EPA 200.7	Metals	NELAP	7/1/2018
Vinyl acetate	EPA 8260	Volatile Organics	NELAP	7/1/2018
Vinyl chloride	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Vinyl chloride	EPA 8260	Volatile Organics	NELAP	7/1/2018
Xylene (total)	EPA 624.1	Volatile Organics	NELAP	7/1/2018
Xylene (total)	EPA 8260	Volatile Organics	NELAP	7/1/2018
Zinc	EPA 200.7	Metals	NELAP	7/1/2018

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State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Solid and Chemical Materials**

Analyte	Method/Tech	Category	Certification Type	Effective Date
1,1,1,2-Tetrachloroethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,1,1-Trichloroethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,1,2,2-Tetrachloroethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,1,2-Trichloroethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,1-Dichloroethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,1-Dichloroethylene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,1-Dichloropropene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2,3-Trichloropropane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2,4,5-Tetrachlorobenzene	EPA 8270	Extractable Organics	NELAP	7/1/2018
1,2,4-Trichlorobenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2,4-Trimethylbenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2-Dibromo-3-chloropropane (DBCP)	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2-Dichlorobenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2-Dichlorobenzene	EPA 8270	Extractable Organics	NELAP	7/1/2018
1,2-Dichloroethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,2-Dichloropropane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,3,5-Trimethylbenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,3,5-Trinitrobenzene (1,3,5-TNB)	EPA 8270	Extractable Organics	NELAP	7/1/2018
1,3-Dichlorobenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,3-Dichlorobenzene	EPA 8270	Extractable Organics	NELAP	7/1/2018
1,3-Dichloropropane	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,4-Dichlorobenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,4-Dichlorobenzene	EPA 8270	Extractable Organics	NELAP	7/1/2018
1,4-Dioxane (1,4-Diethyleneoxide)	EPA 8260	Volatile Organics	NELAP	7/1/2018
1,4-Naphthoquinone	EPA 8270	Extractable Organics	NELAP	7/1/2018
1-Naphthylamine	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,2-Dichloropropane	EPA 8260	Volatile Organics	NELAP	7/1/2018
2,3,4,6-Tetrachlorophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,4,5-Trichlorophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,4,6-Trichlorophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,4-Dichlorophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,4-Dimethylphenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,4-Dinitrophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,4-Dinitrotoluene (2,4-DNT)	EPA 8270	Extractable Organics	NELAP	7/1/2018

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State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Solid and Chemical Materials**

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,6-Dichlorophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2,6-Dinitrotoluene (2,6-DNT)	EPA 8270	Extractable Organics	NELAP	7/1/2018
2-Butanone (Methyl ethyl ketone, MEK)	EPA 8260	Volatile Organics	NELAP	7/1/2018
2-Chloroethyl vinyl ether	EPA 8260	Volatile Organics	NELAP	7/1/2018
2-Chloronaphthalene	EPA 8270	Extractable Organics	NELAP	7/1/2018
2-Chlorophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
2-Chlorotoluene	EPA 8260	Volatile Organics	NELAP	7/1/2018
2-Methylnaphthalene	EPA 8270	Extractable Organics	NELAP	7/1/2018
2-Methylphenol (o-Cresol)	EPA 8270	Extractable Organics	NELAP	7/1/2018
2-Naphthylamine	EPA 8270	Extractable Organics	NELAP	7/1/2018
2-Nitroaniline	EPA 8270	Extractable Organics	NELAP	7/1/2018
2-Nitrophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
3,3'-Dichlorobenzidine	EPA 8270	Extractable Organics	NELAP	7/1/2018
3,3'-Dimethoxybenzidine	EPA 8270	Extractable Organics	NELAP	7/1/2018
3-Methylcholanthrene	EPA 8270	Extractable Organics	NELAP	7/1/2018
3-Nitroaniline	EPA 8270	Extractable Organics	NELAP	7/1/2018
4,4'-DDD	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
4,4'-DDE	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
4,4'-DDT	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
4-Bromophenyl phenyl ether	EPA 8270	Extractable Organics	NELAP	7/1/2018
4-Chloro-3-methylphenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
4-Chloroaniline	EPA 8270	Extractable Organics	NELAP	7/1/2018
4-Chlorophenyl phenylether	EPA 8270	Extractable Organics	NELAP	7/1/2018
4-Chlorotoluene	EPA 8260	Volatile Organics	NELAP	7/1/2018
4-Methylphenol (p-Cresol)	EPA 8270	Extractable Organics	NELAP	7/1/2018
4-Nitroaniline	EPA 8270	Extractable Organics	NELAP	7/1/2018
4-Nitrophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
7,12-Dimethylbenz(a) anthracene	EPA 8270	Extractable Organics	NELAP	7/1/2018
a,a-Dimethylphenethylamine	EPA 8270	Extractable Organics	NELAP	7/1/2018
Acenaphthene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Acenaphthylene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Acetone	EPA 8260	Volatile Organics	NELAP	7/1/2018
Acetonitrile	EPA 8260	Volatile Organics	NELAP	7/1/2018
Acetophenone	EPA 8270	Extractable Organics	NELAP	7/1/2018
Acrolein (Propenal)	EPA 8260	Volatile Organics	NELAP	7/1/2018
Acrylonitrile	EPA 8260	Volatile Organics	NELAP	7/1/2018

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Issue Date: 7/19/2019 **Expiration Date: 6/30/2020**

Laboratory Scope of Accreditation

Attachment to Certificate #: E871136-05, expiration date June 30, 2020. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Solid and Chemical Materials**

Analyte	Method/Tech	Category	Certification Type	Effective Date
Aldrin	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Allyl chloride (3-Chloropropene)	EPA 8260	Volatile Organics	NELAP	7/1/2018
alpha-BHC (alpha-Hexachlorocyclohexane)	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
alpha-Chlordane	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aluminum	EPA 6010	Metals	NELAP	7/1/2018
Aniline	EPA 8270	Extractable Organics	NELAP	7/1/2018
Anthracene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Antimony	EPA 6010	Metals	NELAP	7/1/2018
Aramite	EPA 8270	Extractable Organics	NELAP	7/1/2018
Aroclor-1016 (PCB-1016)	EPA 8082	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1221 (PCB-1221)	EPA 8082	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1232 (PCB-1232)	EPA 8082	Pesticides-Herbicides-PCB's	NELAP	7/19/2019
Aroclor-1242 (PCB-1242)	EPA 8082	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1248 (PCB-1248)	EPA 8082	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1254 (PCB-1254)	EPA 8082	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Aroclor-1260 (PCB-1260)	EPA 8082	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Arsenic	EPA 6010	Metals	NELAP	7/1/2018
Barium	EPA 6010	Metals	NELAP	7/1/2018
Benzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Benzidine	EPA 8270	Extractable Organics	NELAP	7/1/2018
Benzo(a)anthracene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Benzo(a)pyrene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Benzo(b)fluoranthene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Benzo(g,h,i)perylene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Benzo(k)fluoranthene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Benzoic acid	EPA 8270	Extractable Organics	NELAP	7/1/2018
Beryllium	EPA 6010	Metals	NELAP	7/1/2018
beta-BHC (beta-Hexachlorocyclohexane)	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
bis(2-Chloroethoxy)methane	EPA 8270	Extractable Organics	NELAP	7/1/2018
bis(2-Chloroethyl) ether	EPA 8270	Extractable Organics	NELAP	7/1/2018
Boron	EPA 6010	Metals	NELAP	7/1/2018
Bromobenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Bromochloromethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
Bromodichloromethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
Bromoform	EPA 8260	Volatile Organics	NELAP	7/1/2018
Butyl benzyl phthalate	EPA 8270	Extractable Organics	NELAP	7/1/2018

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State Laboratory ID: **E871136** EPA Lab Code: **OH00188** **(937) 832-8292**

E871136
Pace Analytical - Dayton LLC
25 Holiday Drive
Englewood, OH 45322

Matrix: **Solid and Chemical Materials**

Analyte	Method/Tech	Category	Certification Type	Effective Date
Cadmium	EPA 6010	Metals	NELAP	7/1/2018
Calcium	EPA 6010	Metals	NELAP	7/1/2018
Carbazole	EPA 8270	Extractable Organics	NELAP	7/1/2018
Carbon disulfide	EPA 8260	Volatile Organics	NELAP	7/1/2018
Carbon tetrachloride	EPA 8260	Volatile Organics	NELAP	7/1/2018
Chlordane (tech.)	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Chlorobenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Chloroethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
Chloroform	EPA 8260	Volatile Organics	NELAP	7/1/2018
Chloroprene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Chromium	EPA 6010	Metals	NELAP	7/1/2018
Chrysene	EPA 8270	Extractable Organics	NELAP	7/1/2018
cis-1,2-Dichloroethylene	EPA 8260	Volatile Organics	NELAP	7/1/2018
cis-1,3-Dichloropropene	EPA 8260	Volatile Organics	NELAP	7/1/2018
cis-1,4-Dichloro-2-butene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Cobalt	EPA 6010	Metals	NELAP	7/1/2018
Copper	EPA 6010	Metals	NELAP	7/1/2018
Corrosivity (pH)	EPA 9040	General Chemistry	NELAP	7/1/2018
Cyclohexane	EPA 8260	Volatile Organics	NELAP	7/1/2018
delta-BHC	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Dibenz(a,h)anthracene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Dibenzofuran	EPA 8270	Extractable Organics	NELAP	7/1/2018
Dibromochloromethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
Dibromomethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
Dichlorodifluoromethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
Dieldrin	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Diethyl ether	EPA 8260	Volatile Organics	NELAP	7/1/2018
Diethyl phthalate	EPA 8270	Extractable Organics	NELAP	7/1/2018
Dimethyl phthalate	EPA 8270	Extractable Organics	NELAP	7/1/2018
Di-n-butyl phthalate	EPA 8270	Extractable Organics	NELAP	7/1/2018
Di-n-octyl phthalate	EPA 8270	Extractable Organics	NELAP	7/1/2018
Endosulfan I	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Endosulfan II	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Endosulfan sulfate	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Endrin	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Endrin aldehyde	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018

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Matrix: **Solid and Chemical Materials**

Analyte	Method/Tech	Category	Certification Type	Effective Date
Endrin ketone	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Ethyl acetate	EPA 8260	Volatile Organics	NELAP	7/1/2018
Ethyl methanesulfonate	EPA 8270	Extractable Organics	NELAP	7/1/2018
Ethylbenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Fluoranthene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Fluorene	EPA 8270	Extractable Organics	NELAP	7/1/2018
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
gamma-Chlordane	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Heptachlor	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Heptachlor epoxide	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Hexachlorobenzene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Hexachlorobutadiene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Hexachlorobutadiene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Hexachlorocyclopentadiene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Hexachloroethane	EPA 8270	Extractable Organics	NELAP	7/1/2018
Indeno(1,2,3-cd)pyrene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Iodomethane (Methyl iodide)	EPA 8260	Volatile Organics	NELAP	7/1/2018
Iron	EPA 6010	Metals	NELAP	7/1/2018
Isobutyl alcohol (2-Methyl-1-propanol)	EPA 8260	Volatile Organics	NELAP	7/1/2018
Isopropylbenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Isosafrole	EPA 8270	Extractable Organics	NELAP	7/1/2018
Lead	EPA 6010	Metals	NELAP	7/1/2018
Lithium	EPA 6010	Metals	NELAP	7/1/2018
Magnesium	EPA 6010	Metals	NELAP	7/1/2018
Manganese	EPA 6010	Metals	NELAP	7/1/2018
Mercury	EPA 6010	Metals	NELAP	7/1/2018
Mercury	EPA 7471	Metals	NELAP	7/1/2018
Methacrylonitrile	EPA 8260	Volatile Organics	NELAP	7/1/2018
Methoxychlor	EPA 8081	Pesticides-Herbicides-PCB's	NELAP	7/1/2018
Methyl acetate	EPA 8260	Volatile Organics	NELAP	7/1/2018
Methyl acrylate	EPA 8260	Volatile Organics	NELAP	7/1/2018
Methyl bromide (Bromomethane)	EPA 8260	Volatile Organics	NELAP	7/1/2018
Methyl chloride (Chloromethane)	EPA 8260	Volatile Organics	NELAP	7/1/2018
Methyl methacrylate	EPA 8260	Volatile Organics	NELAP	7/1/2018
Methyl methanesulfonate	EPA 8270	Extractable Organics	NELAP	7/1/2018
Methyl tert-butyl ether (MTBE)	EPA 8260	Volatile Organics	NELAP	7/1/2018

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Matrix: **Solid and Chemical Materials**

Analyte	Method/Tech	Category	Certification Type	Effective Date
Methylcyclohexane	EPA 8260	Volatile Organics	NELAP	7/1/2018
Methylene chloride	EPA 8260	Volatile Organics	NELAP	7/1/2018
Molybdenum	EPA 6010	Metals	NELAP	7/1/2018
Naphthalene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Naphthalene	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Butyl alcohol	EPA 8260	Volatile Organics	NELAP	7/1/2018
n-Butylbenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Nickel	EPA 6010	Metals	NELAP	7/1/2018
Nitrobenzene	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitrosodiethylamine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitrosodimethylamine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitroso-di-n-butylamine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitrosodi-n-propylamine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitrosodiphenylamine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitrosomethylethylamine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitrosomorpholine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitrosopiperidine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Nitrosopyrrolidine	EPA 8270	Extractable Organics	NELAP	7/1/2018
n-Propylbenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
o-Toluidine	EPA 8270	Extractable Organics	NELAP	7/1/2018
Pentachlorobenzene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Pentachloronitrobenzene (Quintozene)	EPA 8270	Extractable Organics	NELAP	7/1/2018
Pentachlorophenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
pH	EPA 9045	General Chemistry	NELAP	7/1/2018
Phenanthrene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Phenol	EPA 8270	Extractable Organics	NELAP	7/1/2018
Phosphorus, total	EPA 6010	Metals	NELAP	7/1/2018
p-Isopropyltoluene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Potassium	EPA 6010	Metals	NELAP	7/1/2018
Pyrene	EPA 8270	Extractable Organics	NELAP	7/1/2018
Pyridine	EPA 8270	Extractable Organics	NELAP	7/1/2018
Residue-fixed	SM 2540 G	General Chemistry	NELAP	7/1/2018
Residue-total	SM 2540 G	General Chemistry	NELAP	7/1/2018
Residue-volatile	SM 2540 G	General Chemistry	NELAP	7/1/2018
Safrole	EPA 8270	Extractable Organics	NELAP	7/1/2018
sec-Butylbenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018

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Matrix: **Solid and Chemical Materials**

Analyte	Method/Tech	Category	Certification Type	Effective Date
Selenium	EPA 6010	Metals	NELAP	7/1/2018
Silver	EPA 6010	Metals	NELAP	7/1/2018
Sodium	EPA 6010	Metals	NELAP	7/1/2018
Strontium	EPA 6010	Metals	NELAP	7/1/2018
Styrene	EPA 8260	Volatile Organics	NELAP	7/1/2018
tert-Butylbenzene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Tetrachloroethylene (Perchloroethylene)	EPA 8260	Volatile Organics	NELAP	7/1/2018
Thallium	EPA 6010	Metals	NELAP	7/1/2018
Tin	EPA 6010	Metals	NELAP	7/1/2018
Titanium	EPA 6010	Metals	NELAP	7/1/2018
Toluene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Toxicity Characteristic Leaching Procedure	EPA 1311	General Chemistry	NELAP	7/1/2018
trans-1,2-Dichloroethylene	EPA 8260	Volatile Organics	NELAP	7/1/2018
trans-1,3-Dichloropropene	EPA 8260	Volatile Organics	NELAP	7/1/2018
trans-1,4-Dichloro-2-butene	EPA 8260	Volatile Organics	NELAP	7/1/2018
Trichloroethene (Trichloroethylene)	EPA 8260	Volatile Organics	NELAP	7/1/2018
Trichlorofluoromethane	EPA 8260	Volatile Organics	NELAP	7/1/2018
Vanadium	EPA 6010	Metals	NELAP	7/1/2018
Vinyl acetate	EPA 8260	Volatile Organics	NELAP	7/1/2018
Vinyl chloride	EPA 8260	Volatile Organics	NELAP	7/1/2018
Xylene (total)	EPA 8260	Volatile Organics	NELAP	7/1/2018
Zinc	EPA 6010	Metals	NELAP	7/1/2018

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