



INVENTUM ENGINEERING

**Coke Oven Gas Pipe and Coke Oven Gas
Pipe Residuals
and
Bench Scale Testing – Coke Oven Gas Pipe
Residuals IRM Work Plans
Construction Completion Report**



**Riverview Innovation & Technology Campus
Brownfield Cleanup Program Site No. C915353**

**3875 River Road
Tonawanda, New York 14150**

November 4, 2025

**441 CARLISLE DRIVE
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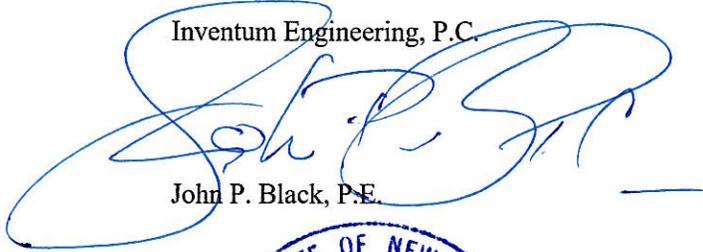


Engineering Certification

I, John P. Black, certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Construction Completion Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and DER Green Remediation (DER-31) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications

Respectfully Submitted,

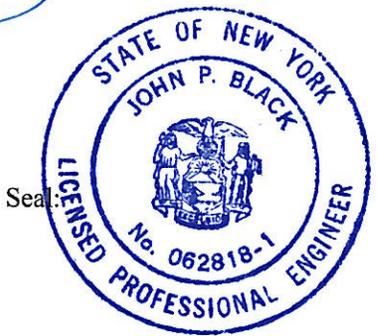
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John P. Black, P.E.

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Introduction

Inventum Engineering, P.C. (Inventum), on behalf of Riverview Innovation & Technology Campus, Inc. (Riverview), has prepared this construction completion report (CCR) for the removal, processing, and proper management of the above ground coke oven gas (COG) piping and COG piping residuals on the Riverview Brownfield Cleanup Program (BCP) Site No. C915353 located at 3875 River Road, Tonawanda, New York. Below grade COG piping was removed in accordance with the Demolition Work Plan, Section 8.9.2 Process Piping (Inventum, 2021). The COG piping included the laterals from the main pipes to process equipment, exhausters, and the former flare location. All work was performed in accordance with the approved Bench Scale Testing – Coke Oven Gas Pipe Residuals Interim Remedial Measures (IRM) Work Plan (“COG Bench Scale Testing Work Plan”) (Inventum, August 2021) and the approved Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals IRM Work Plan (“COG Work Plan”) (Inventum, October 2021). The results from the COG Bench Scale Testing Work Plan were presented in and guided the recommended actions of the COG Work Plan. This closure report addresses both work plans. The objective of this CCR is to document the safe removal of all above ground COG pipes including those that had the potential to contain materials that produced an exothermic reaction when exposed to the atmosphere.

Background

Riverview began removing out of service Coke Oven Gas (COG) pipes between the former Boiler House and Compressor Building in August 2020. The pipe removed typically contained 0- to 90-percent (by pipe cross section, estimated) COG residuals (Photographs No. 1 and No. 2). Until August 10, 2021, the residuals within the pipe were removed, managed, and the pipe was decontaminated. The pipe residuals were stockpiled on polyethylene sheeting as they were removed from COG pipes. The pipes were processed and successfully recycled with no indication of showing any characteristic of ignitability. On August 10, 2021, some of the COG residuals removed from Boiler House piping were stockpiled as usual, but then spontaneously combusted 15 minutes after exposure to the atmosphere. The local fire companies responded and extinguished the resulting fire. After the fire, the COG residuals previously removed from between the former Boiler House and Compressor Building were quenched with water and staged on the former Bag House pad in accordance with the approved workplan.

The COG pipe remaining on the property was located in the former Boiler House and on the above ground pipe racks extending from the east crossover main to the former west flare location. There was above ground COG under the former Battery which was removed and inspected after the upper portion of the Battery was removed. Below grade COG lines were not removed as part of the COG Work Plan.

Post Fire Investigation

Following the fire of August 10th, 2021, Inventum Engineering, Ontario Specialty Contracting (OSC), and the Town of Tonawanda Fire Department conducted a series of investigations and analyses to determine what caused the event and if there were any environmental impacts. The fire companies responded to the fire using water and non-fluorine foam in the fire-fighting effort. The manufacturer of the foaming agent indicated the foam product does not result in the production of any per- and polyfluoroalkyl (PFAS) substances. The NYSDEC requested soil and water testing to confirm the manufacturer’s statement. Two soil samples were collected along the likely surface water flow path between the fire and East Quench Pit, one sample of COG residuals was collected from within a quenched COG pipe, and one water sample was collected from the East Quench Pit. The approved investigation sampling can be referenced in the August 18, 2021, memorandum Sampling Activities – Post Fire Investigation. Results of the investigation did not



indicate an impact from the fire-fighting effort and foam application. The results and recommendations from the foam residual investigation can be found in the October 18, 2021, memorandum Sampling Activity Summary – Post Fire Investigation.

Bench Scale Testing

The pipe processed on August 10, 2021, contained an estimated 70- to 90- percent COG residuals (Photographs No. 1 and No. 2). The August 10th fire and subsequent bench-scale testing at Riverview revealed that some residuals in sections of the COG piping west of the compressor building pipe contained iron compounds that were capable of exothermic reactions that led to spontaneous combustion of the combustible materials from the pipes. The most probable materials were ferric iron oxide or ferric iron sulfide which generated heat as they oxidized. The increase in temperature, the hydrocarbon (fuel) in the residual, and the oxygen available outside the pipe combined to complete the fire triangle and resulted in the fire.



Fire Triangle





Photograph No.1: COG Pipe Removed March 2021.



Photograph No. 2: COG Pipe and Residual from the Compressor Building, March 2021.



A series of bench-scale tests were conducted in accordance with the approved Bench Scale Testing – Coke Oven Gas Pipe Residuals IRM Work Plan (Inventum, 2021) on August 24 and 25, 2021 to define the full-scale treatment protocols that were followed for the removal of all remaining COG pipes in the approved Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals IRM Work Plan (Inventum, 2021). Observations of the material characteristics from the bench-scale tests and from prior to, and after, the fire are noted below:

- While contained in the piping, the pipe and residual materials could be moved safely on the property. The materials in the pipe lacked sufficient oxygen and heat to combust. During the bench-scale testing, materials were moved from the sample points to the testing area over periods of 10- to 30-minutes, without incident;
- Prior to the fire event, the subject materials were staged in cut piping for no less than 13 days without incident;
- The material suspected¹ to produce the reaction had the grain-size and consistency of granular to fine silt and had a gray to black (some “shiny”, mica-like) appearance (similar to the pre-fire materials). Similar materials were recovered from the COG line during the bench-scale testing and produced no reactions;
- The material from all of the sampled pipes had the grain-size and consistency of granular to fine silt, no liquid or viscous tar like fluids were observed in the pipes;
- The material in the managed pipe sections was physically removed from the COG pipe without the use of liquids or solvents;
- The exothermic properties were not uniformly distributed through the material, but required a critical volume and contact with other combustible material to produce sufficient heat and combustion. Photograph No. 3 shows relatively small amounts of material exposed to the atmosphere that did not ignite. Photograph No. 4 shows material that did not combust. Photograph No. 5 was typical of the progression of material that did combust; very localized amounts of material heated and the heat promoted combustion of the surrounding fuel;
- The material reaction, while likely initiated at first exposure to the atmosphere, did not raise the material temperature to a degree that immediately caused ignition. The pile of material that produced the fire event was observed for more than 15 minutes and exhibited no signs of combustion. During the bench scale testing only 2 of 7 samples reacted and neither sample reacted instantaneously. One sample reacted after it was exposed to the atmosphere outside the pipe for 10 minutes. The second sample reacted after it had been exposed to the atmosphere outside of the pipe for 50 minutes;
- The five samples that did not react were left on the slab for several hours and produced no change in internal temperature;
- The fuel component of the pipe residual continued to burn until saturated to cool and extinguish the progression of the combustion;
- After burying and submerged /quenched in water, and when quenched prior to combustion, the material did not exhibit additional exothermic properties. The post-quench sample materials were allowed to dry for no less than 3 days and clearly demonstrated that following water quenching the potential for combustion had been eliminated; and

¹ While there were several observations of the materials suspected of producing the reaction, based on the August 10th fire and the observations during the bench-scale testing for purposes of all removal of COG pipe it was assumed that all residual materials in the COG pipe were capable of producing an exothermic reaction until the materials had been quenched and monitored.



- The material notably changed in appearance as it was monitored following quenching and as it progressed through a slower oxidation process, first turning black then turning to a reddish brown “rust” color.

Five of the seven COG pipe residual samples did not produce an exothermic reaction on exposure to air. Two materials were identified that were capable of producing sufficient heat to spontaneously combust. All three components of the fire triangle must have been present for this to occur. Both materials were tested by saturation with three different quench fluids. Three potential treatment protocols were evaluated:

1. Water quenching and water controlled oxidation;
2. Potassium permanganate treatment (KMnO_4 a/k/a Permanganate), and
3. FQE Chemical Pyrophoric treatments (solvent and iron reduction).

Samples that had clearly oxidized, as indicated by their reddish brown color, did not react, as anticipated. It was still not considered possible to safely assume any reddish brown COG residual has completely oxidized in the pipe, and therefore it was recommended to quench all COG residuals on site. In order to safely manage the COG pipes, residuals were continually inspected. Where present, the COG pipe residual materials were treated by quenching to eliminate the possibility that they could exhibit the characteristic of ignitability prior to ultimate management as a waste.



Photograph No. 3: Residual from Vertical COG Pipe in Boiler House

Note: Other Piles in Photograph are previous COG Pipe residual samples that did not react.





Photograph No. 4: Intermediate Stage of Bench-scale Testing – Black Oxidation Stage





Photograph No. 5: Final/Dried Bench-scale Sample – Water Quench

Note: Sample transitioned from gray-black to black, to this reddish-brown color over a period of one day.

The bench scale testing demonstrated that all three treatment methodologies tested were equally effective in the elimination of the potential to combust. Samples that produced a reaction and that were quenched with all three reagents, were monitored for one week, and produced no further exothermic properties. Because water quenching was effective without the addition of chemicals and without producing a separate new waste stream, water quenching was the selected alternative. The bench scale testing demonstrated that materials that contained exothermic properties could not be visually differentiated from inert materials. As a precaution, all COG piping on and in the Boiler House and all remaining COG Pipe in the former Production Area was assumed to potentially contain pyrophoric materials and all residuals were quenched in accordance with the Work Plan.



The testing also demonstrated that the quench water required additional treatment prior to discharge to the Town of Tonawanda POTW, as quenching extracted significant quantities of benzene, mercury and other COG compounds from the pipe residuals. Bench scale testing samples included one water sample collected from the East Quench Pit after quenching the COG pipes immediately following the fire, one water sample collected from quench water generated from the bench scale testing, and one solid sample collected from the pipe residuals after quenching. The analytical data and laboratory reports were presented in the Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals IRM Work Plan (Inventum, 2021).

At bench-scale volumes the treated solid residuals dried over a period of 3- to 5- days. After this period the samples passed the paint filter test. During full-scale treatment, the solid materials required additional drying time. Following oxidation through water quenching, the materials were moved to the former Baghouse pad to allow free liquids to drain from the solids. All collected liquids were treated and discharged to the Town of Tonawanda POTW under Permit No. 331.

Work Completed

All work related to the removal and management of COG piping and residuals was conducted in accordance with the Health and Safety Plan (HASP) and the Community Air Monitoring Plan (CAMP). All CAMP data recorded during active work is provided in Appendix C. No Hot Work or Hot Work Permits were permitted for work under the COG Work Plan. Any hot work required on structures and steel was considered only after the potentially combustible materials were removed and quenched. Locations of removed pipe and the materials management area are shown in Figure 1.

Combustion Management – Pipe Cutting Area

The materials and equipment staged for combustion management at the pipe cutting area (Boiler House and pipe racks) included:

1. A fire extinguisher staged at the pipe cutting area;
2. Inert materials including polyethylene sheeting and tape wrap were available to seal the remaining section of COG pipe as needed;
3. A nitrogen tank was available to purge the pipes if onsite measurements exceed the LEL. The Site LEL Meters were calibrated using a gas with 50 parts per million (ppm) carbon monoxide, 10 ppm hydrogen sulfide, 2.5% by volume methane (50% LEL), 18% Oxygen, and the balance made up of nitrogen; and
4. The water truck was always onsite and full.

Combustion Management – Pipe and Pipe Residuals Containment Area

1. Pipe residuals were managed and contained on the former Bag House slab. Prior to use, the former Bag House slab:
 - a. was cleared of all combustible materials,
 - b. had concrete barriers placed to prevent inadvertent traffic, and
 - c. had silt sock installed around the perimeter.
2. A pump and hose capable of quenching the COG pipe after sampling, was set in the east coke wharf.
3. A fire extinguisher was staged at the pipe cutting and materials management area;
4. The East Quench Pit was prepared to receive the COG pipe. The Quench Pit capacity was approximately 45,000 gallons and was $\frac{3}{4}$ filled with potable water prior to pipe cutting;



- a. The Quench Pit was a concrete lined sump that had collected quench water and coke fines for decades;
- b. All accumulated water was pumped, treated, and discharged to the Town of Tonawanda POTW under an approved Discharge Authorization Request in accordance with Permit No. 331.
- c. The East Quench Pit was prepared by:
 - i. pumping and treating the water to a weir tank;
 - ii. Testing the treated water and submitting the data for discharge approval;
 - iii. Removal of the residual coke fines. The fines were staged on polyethylene sheeting on the former Bag House slab. All free water released from the fines was pumped to the weir tank before treatment; and
 - iv. The East Quench Pit was inspected to confirm all pipe seals were intact.
5. The steel box secondary containment from the former aboveground storage tank ST06 was decontaminated and repurposed for materials management on site. The “Quench Box” was staged west adjacent to the former Bag House slab to receive pipe residuals before the pipes were placed in the East Quench Pit.
6. An excavator with a grapple and a front-end loader (or skid steer) capable of collecting and placing all residuals from the Quench Box onto the Bag House slab were in place throughout the quenching procedures;
7. Shears capable of cutting the pipe and moving it to the materials management area were used to remove the pipe and empty the contents into the Quench Box within 10 minutes of removal from the Boiler House or pipe rack;
8. The shear placed the pipe in the East Quench Pit after it has been emptied into the Quench Box; and
9. A downwind air monitoring station was operated within 50 feet of the downwind side of the active materials management/containment area during all active pipe management.

COG Pipe Removal

The pipe removal was time-sensitive due to the fact it may have resulted in materials being exposed to the atmosphere that had been in an oxygen free environment for decades. In addition to the OSC Staff tasked with removing the COG pipe, dedicated staff were stationed at the materials management/containment area. The following protocol was followed each day of COG pipe removal:

1. Reviewed the pipe section(s) to be removed each day to differentiate the types of piping and conduit to be removed.
2. Calculated the potential volume of residual and pipe on the Daily Planning Inventory (Daily Planning Inventories are provided in Appendix A);
3. Prepared the available capacity in the residual Quench Box;
4. Tested the LEL/O₂ at any openings to the pipe to be cut;
5. Removed each section of pipe, between 10- and 20- feet long (as required to fit within the East Quench Pit);
6. A spotter was available to ensure the remaining pipe section contents did not ignite. The spotter remained on site at the materials management area(s) for no less than 1 hour after the pipe and contents were quenched. The spotter was responsible for:
 - a. Tracking the pipe sections removed based on the daily quantities identified;
 - b. Monitoring the movement of contents from the pipe;
 - c. Monitoring the temperature of the contents exposed to the atmosphere;



- d. Monitoring the placement of the contents into the Quench Box;
 - e. Monitoring the placement of the pipe in the East Quench Pit; and
 - f. Documenting that all new pipe openings have been sealed at the end of the shift.
7. The pipe section was transferred to the materials management/containment area;
 8. To the extent possible, the pipe contents were emptied into the Quench Box;
 9. The residual contents remained submerged in the Quench Box for no less than 8 hours;
 10. Each area that could have had any pipe residual (building surfaces, pavement or slabs) was flushed with water. The flushing water was collected, treated, and discharged to the POTW;
 11. The pipe and any remaining contents were submerged in the East Quench Pit for no less than 8 hours;
 12. No less than 8-hours after the pipe residuals had been quenched, the solids were removed from the Quench Box and placed on the former Bag House slab for inspection.
 13. No less than 8-hours after the pipe has been quenched the pipe was removed from the East Quench Pit, confirmed to be free of residuals, and sheared for recycling;
 14. The sequence (9 to 14) was repeated until that day's planned pipe had been removed;
 15. After the residuals had oxidized, they were no longer capable of spontaneous combustion. The residuals were removed from the Quench Box and placed on the former Bag House slab to eliminate free liquids.
 16. After the pipe was removed from the East Quench Pit, it was stockpiled onsite for no less than two days;
 17. After the pipe had been staged after quenching for two days, the pipe was inspected, and if free of residual, sheared and shipped offsite for recycling; and
 18. For those sections of pipe not removed on a day's shift, each end of remaining pipe was sealed no more than 15 minutes after cutting to prevent introduction of air into the pipe.



COG Pipe Residuals Management

The COG pipe residuals were removed from the Quench Pit and Quench Box and staged on the former Bag House slab in fall of 2021 and 2022. The residuals were isolated from other solid materials temporarily staged on the slab, if any. The piles were surrounded with silt socks and allowed to freely drain. The ground surface surrounding the slab was graded to drain leachate south into the East Quench Pit. The quench pit water was pretreated through a weir tank, granular activated carbon (GAC), and filtration before discharge to the POTW.

COG Pipe Residual Sampling - Dry, Unquenched

One characterization sample of dry COG residuals was collected directly from the COG pipe on the eastern end of the former pipe rack. The COG residuals were tested for the following parameters:

- TCL VOCs (8260; bulk jar);
- TCL SVOCs (8270);
- TAL Metals (6010);
- Total Sulfur (7471);
- Mercury (7471);
- PCBs (8082);
- Cyanide (9012);
- BTU
- HazCat: Ignitability, Reactivity, Corrosivity;
- Full TCLP;

The sample collected from the dry unquenched COG pipe residuals did not contain detectable VOCs and contained the SVOC naphthalene at 479,000,000 ug/kg. It should be noted that the samples results had elevated detection limits that may have prevented VOCs that were present in the residuals from being detected. This is further supported by the presence of several VOCs detected in the quench water samples collected for the bench scale testing following the COG piping fire.

The sample contained various metals, and after naphthalene, the most prominent constituent detected was sulfur with a concentration of 110,000 mg/kg. The sample contained 94.6 mg/kg of mercury and 287 mg/kg of cyanide. The residuals produced a pH of 6.77. The sample exhibited the characteristic of toxicity for the pesticide Endrin (D012), a result not typically seen in the BCP site characterization samples. While all below the TCLP limits, the leachate also contained detections of cresols, pyridine, chlordane, and lindane. Analytical results are presented in Table 1.

COG Pipe Residual Sampling - First Quenched Sample

After the Quench Pit was dredged in the fall of 2021, one composite sample of quenched COG pipe residuals was collected in November 2022 and tested for the following waste profile parameters:

- Full TCLP;
- PCBs (8082);
- TAL Metals (6010);
- Mercury (7471);
- 1-4 Dioxane (8270);
- BTU;
- HazCat: Ignitability, Reactivity, Corrosivity;



- Paint Filter.

The sample was collected from the quenched COG residuals for disposal characterization. The sample of material was not characteristically hazardous nor was it ignitable, reactive, or corrosive. The sample did not contain detectable concentrations of PCBs or 1-4 Dioxane. The sample contained 1.21 mg/kg of mercury. The sample contained various metals dominated by iron (4,540 mg/kg). The sample passed the paint filter test, indicating its suitability for transportation to a waste facility. Analytical results are presented in Table 2. The results from this analysis were used for the approved waste profile M22-3419 (Appendix B).

COG Pipe Residual Sampling - Second Quenched Sample

After the Quench Pit was dredged in 2022 one composite sample of the quenched COG pipe residuals was collected and tested for the following waste profile parameters:

- TCL VOCs (8260; bulk jar);
- TCL SVOCs (8270);
- Total Sulfur (7471);
- Mercury (7471);
- TAL Metals (6010);
- Cyanide (9012);
- Ammonia (350.1);
- Full TCLP;
- PCBs (8082); and
- HazCat: Ignitability, Reactivity, Corrosivity;
- Paint Filter;
- Percent Moisture;
- BTU.

The sample collected from the quenched COG pipe residuals did not contain detectable VOCs and contained the SVOC naphthalene at 52,000,000 ug/kg. It should be noted that the sample results had elevated detection limits that may have prevented VOCs that were present in the residuals from being detected. This is further supported by the presence of several VOCs detected in the quench water samples collected for the bench scale testing following the COG piping fire.

The sample contained various metals and was still dominated by sulfur with a concentration of 385,000 mg/kg. The sample contained 139 mg/kg of mercury and 320 mg/kg of cyanide. The residuals produced a pH of 7.47. After quenching, the sample did not exhibit characteristics of hazardous waste with nearly all TCLP parameters not detected. The SVOC cresols (as m,p,o-cresol) and herbicide 2,4-D (Dichlorophenoxyacetic Acid) were detected below TCLP limits in the leachate. The COG pipe residuals were sufficiently dry to pass paint filter. Analytical results are provided in Table 3. The results from this analysis were used for the approved waste profile M23-3540 (Appendix B).

COG Pipe Residual Sampling - Grossly Contaminated Pipe

One sample of tar-like residuals was collected from a COG pipe removed from the Battery. The material was extremely viscous, black, and unable to be removed from the pipe by reasonable means. Pipe containing these residuals was considered grossly contaminated. Analytical results from this sample were used for the



waste profile for disposal by microencapsulation with Michigan Disposal Waste Treatment in Belleville, Michigan. The sample was analyzed for the following waste profile parameters:

- TCL VOCs (8260; bulk jar);
- TCL SVOCs (8270);
- Mercury (7471);
- TAL Metals (6010);
- Cyanide (9012);
- Ammonia (350.1);
- Full TCLP;
- PCBs (8082); and
- HazCat: Ignitability, Reactivity, Corrosivity;
- Paint Filter;
- Percent Moisture;
- BTU.

The sample was characteristically hazardous for benzene (D018) at a concentration of 6,780 ug/L (vs. 500 ug/L). The sample contained concentrations of BTEX compounds and was dominated by the SVOC naphthalene (24,300,000 ug/kg). The results indicated that the sample was not corrosive, ignitable, or reactive. The sample contained 530 mg/kg of ammonia, 259 mg/kg of cyanide, and 8.87 mg/kg of mercury. The sample contained 10,100 BTU/lb. Analytical results are presented in Table 4.

COG Pipe Quench Water Sampling

The leachate recovered from the COG residual pile was directed to the quench pit with the pipe rinse water. Both the quench pit and quench box were pumped through GAC and bag filters to a weir tank. An existing POTW authorization had been approved for the discharge of treated water from the pits and sumps on site. The treated water from the weir tank was tested for constituents of concern including VOCs, Metals, and Mercury. Analytes did not exceed permit effluent limits and the water was discharged in accordance with Permit No. 331 to the Town of Tonawanda POTW. Approximately 60,000 gallons were treated and discharged to the POTW. The analytical data is presented in Table 5.

Quench Pit Cleaning

After dewatering, the Quench Pit was cleaned and inspected in April 2023. COG residuals were removed with an excavator and added to the residual stockpile on the baghouse pad. The Quench Pit was washed with potable water and vacuumed with a Ditch Witch. The Ditch Witch was drained, and the water was treated through the Groundwater Treatment System (Photograph No. 19 through 21).

The Quench Pit was approximately 50-feet long, 10-feet wide, and 12-feet deep with a capacity of 45,000 gallons. The concrete was in moderate to poor condition with cracks noted along the southern wall and deteriorated joints on all four walls that allowed groundwater to seep into the pit (Photograph No. 22 through 24). The Quench Pit was demolished to a proposed design grade of 602 feet above mean sea level (AMSL) and backfilled in accordance with the approved Pits and Wharfs Import Request (Inventory, December 2022).



Quenched COG Pipe Residual Disposal

The quenched COG pipe residuals were shipped during two timeframes. The Quench Pit was dredged in fall of 2021. The residuals were placed on and under polyethylene sheeting on the baghouse pad and sampled for disposal characteristics (See COG Pipe Residual Sample Results or Table 1). Waste profile M22-3419 was approved for disposal as non-hazardous solid waste with Modern Landfill. Approximately 125 tons were shipped from May 19 to May 20, 2022. The waste profile and associated manifests are provided in Appendix B.

The Quench Pit was dredged again in the fall of 2022. The residuals were placed on and under polyethylene sheeting on the baghouse pad and sampled for disposal characteristics (See COG Pipe Residual Sample Results or Table 2). Waste profile M23-3540 was approved for disposal of the residuals as non-hazardous solid waste with Modern Landfill. A total of 56.5 tons of COG pipe residuals were shipped from the BCP site for disposal in April 2023. The waste profile and associated manifests are provided in Appendix B.

COG Pipe Disposal and Recycling

The piping immediately connected to, and determined to contain, COG residuals capable of spontaneous combustion was quenched in the quench pit. This piping was shipped for recycling with Niagara Metals on July 28, September 1, and October 20, 2022 totaling 51.16 tons. Approximately 5,600 feet of additional COG pipe were removed in accordance with the Work Plan. All but 23 tons of COG pipe were safely sheared and recycled with Niagara Metals.

One load, or approximately 23 tons, of COG pipe was grossly contaminated. The sections of COG pipe removed from some areas of the former Battery contained black, highly viscous, tar-like residuals unable to be removed by reasonable effort. These residuals had different physical characteristics from those typically found in other COG lines. A sample of the residuals was collected in March 2022 and analyzed for waste disposal parameters. The sample results indicated the characteristic of toxicity for benzene (D018). Analytical results are provided in Table 4. Based on these sample results, Michigan Disposal Waste Treatment of Belleville, Michigan approved a waste profile for grossly contaminated steel to be disposed as characteristically hazardous waste by microencapsulation. This material was transported and disposed at Michigan Disposal Waste Treatment in November 2022. The waste manifest is provided in Appendix B under manifest number 017760941FLE.



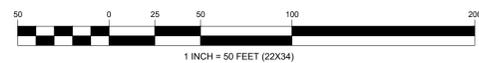
Figure





- LEGEND**
- COG PIPE REMOVED PRE-FIRE
 - COG PIPE REMOVED POST-FIRE
 - FORMER BUILDINGS

D



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FIGURE 1
 DRAWING NUMBER
 COG CCR

Tables





Table 1
Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
Riverview Innovation & Technology Campus, Inc.,
Tonawanda, New York

Analytes	SAMPLE ID:		SD-RACKCOG-08252021	
	COLLECTION DATE:		8/25/2021	
	LAB REPORT:		213873	
	WASTE CODE:		D012	
	DESCRIPTION:		Dry Unquenched COG Pipe Residuals	
	EPA TCLP	UNITS		
SW8260C				
1,1,1-Trichloroethane (TCA)		ug/kg	<41700	U
1,1,2,2-Tetrachloroethane		ug/kg	<41700	U
1,1,2-Trichloroethane		ug/kg	<41700	U
1,1-Dichloroethane		ug/kg	<41700	U
1,1-Dichloroethene		ug/kg	<41700	U
1,2,3-Trichlorobenzene		ug/kg	<104000	U
1,2,4-Trichlorobenzene		ug/kg	<104000	U
1,2,4-Trimethylbenzene		ug/kg	<41700	U
1,2-Dibromo-3-Chloropropane		ug/kg	<208000	U
1,2-Dibromoethane (Ethylene Dibromide)		ug/kg	<41700	U
1,2-Dichlorobenzene		ug/kg	<41700	U
1,2-Dichloroethane		ug/kg	<41700	U
1,2-Dichloropropane		ug/kg	<41700	U
1,3-Dichlorobenzene		ug/kg	<41700	U
1,3,5-Trimethylbenzene		ug/kg	<41700	U
1,4-Dichlorobenzene		ug/kg	<41700	U
1,4-Dioxane (P-Dioxane)		ug/kg	<208000	U
Methyl Ethyl Ketone (2-Butanone)		ug/kg	<208000	U
2-Hexanone		ug/kg	<104000	U
4-Isopropyltoluene		ug/kg	<41700	U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)		ug/kg	<104000	U
Acetone		ug/kg	<208000	U
Benzene		ug/kg	<41700	U
Bromochloromethane		ug/kg	<104000	U
Bromodichloromethane		ug/kg	<41700	U
Bromoform		ug/kg	<104000	U
Bromomethane		ug/kg	<41700	U
Carbon Disulfide		ug/kg	<41700	U
Carbon Tetrachloride		ug/kg	<41700	U
Chlorobenzene		ug/kg	<41700	U
Chloroethane		ug/kg	<41700	U
Chloroform		ug/kg	<41700	U
Chloromethane		ug/kg	<41700	U
Cyclohexane		ug/kg	<208000	U
Dibromochloromethane		ug/kg	<41700	U
Dichlorodifluoromethane		ug/kg	<41700	U
Methylene Chloride (Dichloromethane)		ug/kg	<104000	U
Ethylbenzene		ug/kg	<41700	U
Isopropylbenzene (Cumene)		ug/kg	<41700	U
Methyl Acetate		ug/kg	<41700	U
Tert-Butyl Methyl Ether		ug/kg	<41700	U
Methylcyclohexane		ug/kg	<41700	U
Naphthalene		ug/kg	35200000	E
n-Butylbenzene		ug/kg	<41700	U



Table 1
Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
Riverview Innovation & Technology Campus, Inc.,
Tonawanda, New York

	SAMPLE ID: SD-RACKCOG-08252021	
	COLLECTION DATE: 8/25/2021	
	LAB REPORT: 213873	
N-Propylbenzene	ug/kg	<41700 U
Sec-Butylbenzene	ug/kg	<41700 U
Styrene	ug/kg	<104000 U
tert-Butylbenzene	ug/kg	<41700 U
Tetrachloroethylene (PCE)	ug/kg	<41700 U
Toluene	ug/kg	<41700 U
Trichloroethylene (TCE)	ug/kg	<41700 U
Trichlorofluoromethane	ug/kg	<41700 U
Vinyl Chloride	ug/kg	<41700 U
Cis-1,2-Dichloroethylene	ug/kg	<41700 U
Cis-1,3-Dichloropropene	ug/kg	<41700 U
m,p-Xylene	ug/kg	<41700 U
O-Xylene (1,2-Dimethylbenzene)	ug/kg	<41700 U
Trans-1,2-Dichloroethene	ug/kg	<41700 U
Trans-1,3-Dichloropropene	ug/kg	<4170 U
Xylenes, Totals	ug/kg	<41700 U
SW8270D		
1,1-Biphenyl	ug/kg	<19400000 U
1,2,4,5-Tetrachlorobenzene	ug/kg	<19400000 U
2,3,4,6-Tetrachlorophenol	ug/kg	<19400000 U
2,4,5-Trichlorophenol	ug/kg	<19400000 U
2,4,6-Trichlorophenol	ug/kg	<19400000 U
2,4-Dichlorophenol	ug/kg	<19400000 U
2,4-Dimethylphenol	ug/kg	<19400000 U
2,4-Dinitrophenol	ug/kg	<77700000 U
2,4-Dinitrotoluene	ug/kg	<19400000 U
2,6-Dinitrotoluene	ug/kg	<19400000 U
2-Chloronaphthalene	ug/kg	<19400000 U
2-Chlorophenol	ug/kg	<19400000 U
2-Methylnaphthalene	ug/kg	<19400000 U
2-Methylphenol (O-Cresol)	ug/kg	<19400000 U
2-Nitroaniline	ug/kg	<19400000 U
2-Nitrophenol	ug/kg	<19400000 U
3,3'-Dichlorobenzidine	ug/kg	<19400000 U
Cresols, M & P (3&4-Methylphenol)	ug/kg	<19400000 U
3-Nitroaniline	ug/kg	<19400000 U
4,6-Dinitro-2-Methylphenol	ug/kg	<38800000 U
4-Bromophenyl Phenyl Ether	ug/kg	<19400000 U
4-Chloro-3-Methylphenol	ug/kg	<19400000 U
4-Chloroaniline	ug/kg	<19400000 U
4-Chlorophenyl Phenyl Ether	ug/kg	<19400000 U
4-Nitroaniline	ug/kg	<19400000 U
4-Nitrophenol	ug/kg	<19400000 U
Acenaphthene	ug/kg	<19400000 U
Acenaphthylene	ug/kg	<19400000 U
Acetophenone	ug/kg	<19400000 U
Anthracene	ug/kg	<19400000 U
Atrazine	ug/kg	<19400000 U
Benzo(A)Anthracene	ug/kg	<19400000 U



Table 1
 Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
 Riverview Innovation & Technology Campus, Inc.,
 Tonawanda, New York

	SAMPLE ID:		SD-RACKCOG-08252021	
	COLLECTION DATE:		8/25/2021	
	LAB REPORT:		213873	
Benzaldehyde	ug/kg	<19400000	U	
Benzo(A)Pyrene	ug/kg	<19400000	U	
Benzo(B)Fluoranthene	ug/kg	<19400000	U	
Benzo(G,H,I)Perylene	ug/kg	<19400000	U	
Benzo(K)Fluoranthene	ug/kg	<19400000	U	
Biphenyl (Diphenyl)	ug/kg	<19400000	U	
Bis(2-Chloroisopropyl) Ether	ug/kg	<19400000	U	
Bis(2-Chloroethoxy) Methane	ug/kg	<19400000	U	
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	ug/kg	<19400000	U	
Bis(2-Ethylhexyl) Phthalate	ug/kg	<19400000	U	
Benzyl Butyl Phthalate	ug/kg	<19400000	U	
Caprolactam	ug/kg	<19400000	U	
Carbazole	ug/kg	<19400000	U	
Chrysene	ug/kg	<19400000	U	
Di-N-Butyl Phthalate	ug/kg	<19400000	U	
Di-N-Octylphthalate	ug/kg	<19400000	U	
Dibenz(A,H)Anthracene	ug/kg	<19400000	U	
Dibenzofuran	ug/kg	<19400000	U	
Diethyl Phthalate	ug/kg	<19400000	U	
Dimethyl Phthalate	ug/kg	<19400000	U	
Fluoranthene	ug/kg	<19400000	U	
Fluorene	ug/kg	<19400000	U	
Hexachlorobenzene	ug/kg	<19400000	U	
Hexachlorobutadiene	ug/kg	<19400000	U	
Hexachlorocyclopentadiene	ug/kg	<77700000	U	
Hexachloroethane	ug/kg	<19400000	U	
Indeno(1,2,3-C,D)Pyrene	ug/kg	<19400000	U	
Isophorone	ug/kg	<19400000	U	
N-Nitrosodi-N-Propylamine	ug/kg	<19400000	U	
N-Nitrosodiphenylamine	ug/kg	<19400000	U	
Naphthalene	ug/kg	47900000		
Nitrobenzene	ug/kg	<19400000	U	
Pentachlorophenol	ug/kg	<38800000	U	
Phenanthrene	ug/kg	<19400000	U	
Phenol	ug/kg	<19400000	U	
Pyrene	ug/kg	<19400000	U	



Table 1
 Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
 Riverview Innovation & Technology Campus, Inc.,
 Tonawanda, New York

		SAMPLE ID:		SD-RACKCOG-08252021
		COLLECTION DATE:		8/25/2021
		LAB REPORT:		213873
SW6010				
Aluminum		mg/kg	24.1	DM
Antimony		mg/kg	<2.97	U
Arsenic		mg/kg	1.89	
Barium		mg/kg	<4.95	U
Beryllium		mg/kg	<0.248	U
Cadmium		mg/kg	1.56	D
Calcium		mg/kg	<124	U
Chromium, Total		mg/kg	10.2	D
Cobalt		mg/kg	<2.48	U
Copper		mg/kg	2.77	D
Iron		mg/kg	23900	D
Lead		mg/kg	17.6	D
Magnesium		mg/kg	<124	U
Manganese		mg/kg	374	DM
Nickel		mg/kg	<1.98	U
Potassium		mg/kg	<124	U
Selenium		mg/kg	<0.990	U
Silver		mg/kg	<0.495	M
Sodium		mg/kg	<124	U
Sulfur		mg/kg	110000	A
Thallium		mg/kg	<1.24	U
Vanadium		mg/kg	15.8	DM
Zinc		mg/kg	14.1	B
SW7471				
Mercury		mg/kg	94.6	
8082A				
PCB-1016 (Aroclor 1016)		mg/kg	<2.79	U
PCB-1221 (Aroclor 1221)		mg/kg	<2.79	U
PCB-1232 (Aroclor 1232)		mg/kg	<2.79	U
PCB-1242 (Aroclor 1242)		mg/kg	<2.79	U
PCB-1248 (Aroclor 1248)		mg/kg	<2.79	U
PCB-1254 (Aroclor 1254)		mg/kg	<2.79	U
PCB-1260 (Aroclor 1260)		mg/kg	<2.79	U
Nitrogen, Ammonia (As N)		mg/kg	NS	
SW9012B				
Cyanide		mg/kg	287	
SOLIDS				
Total Solids		%	33.9	
SW9045D				
pH		ph units	6.77	



Table 1
 Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
 Riverview Innovation & Technology Campus, Inc.,
 Tonawanda, New York

		SAMPLE ID:		SD-RACKCOG-08252021	
		COLLECTION DATE:		8/25/2021	
		LAB REPORT:		213873	
TCLP - SW8260C					
1,2-Dichloroethane	500	ug/l	<200	U	
Chlorobenzene	100000	ug/l	<200	U	
Tetrachloroethylene (PCE)	700	ug/l	<1000	U	
Carbon Tetrachloride	500	ug/l	<200	U	
Chloroform	6000	ug/l	<200	U	
Benzene	500	ug/l	<200	U	
Vinyl Chloride	200	ug/l	<200	U	
1,1-Dichloroethene	700	ug/l	<200	U	
Methyl Ethyl Ketone (2-Butanone)	200000	ug/l	<200	U	
Trichloroethylene (TCE)	500	ug/l	<200	U	
TCLP - SW8270D					
1,4-Dichlorobenzene	7500	ug/l	<50.0	U	
2,4,5-Trichlorophenol	400000	ug/l	<50.0	U	
2,4,6-Trichlorophenol	2000	ug/l	<50.0	U	
2,4-Dinitrotoluene	130	ug/l	<50.0	U	
Cresols, (as m,p,o-Cresol)	20000	ug/l	679		
Hexachlorobenzene	130	ug/l	<50.0	U	
Hexachlorobutadiene	500	ug/l	<50.0	U	
Hexachloroethane	3000	ug/l	<50.0	U	
Nitrobenzene	2000	ug/l	<50.0	U	
Pentachlorophenol	100000	ug/l	<100	U	
Pyridine	5000	ug/l	38.3	J	
TCLP- SW7470					
Mercury	0.2	mg/L	<0.00200	U	
TCLP - SW6010					
Arsenic	5	mg/L	<0.500	U	
Barium	100	mg/L	<0.500	U	
Cadmium	1	mg/L	<0.0250	U	
Chromium, Total	5	mg/L	<0.500	U	
Lead	5	mg/L	<0.500	U	
Selenium	1	mg/L	<0.200	U	
Silver	5	mg/L	<0.500	U	



Table 1
 Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
 Riverview Innovation & Technology Campus, Inc.,
 Tonawanda, New York

		SAMPLE ID:		SD-RACKCOG-08252021	
		COLLECTION DATE:		8/25/2021	
		LAB REPORT:		213873	
TCLP - 8081B					
Chlordane	30	ug/L	12.4		
Endrin	20	ug/L	48.6		
Gamma Bhc (Lindane)	400	ug/L	145		JP
Heptachlor	8	ug/L	<20.0		U
Heptachlor Epoxide	8	ug/L	<20.0		U
Methoxychlor	10000	ug/L	<20.0		U
Toxaphene	500	ug/L	<400		U
TCLP- SW8151A					
2,4-D (Dichlorophenoxyacetic Acid)	10	mg/L	<0.050		U
Silvex (2,4,5-TP)	1	mg/L	<0.050		U
Ignitability EPA 1030					
Ignitability		mm/sec	NS		
SW7.3.3.2					
Reactive Cyanide		mg/kg	1.4		
SW7.3.4.2					
Sulfide Reactive		mg/kg	20		
SW1010					
Flash Point	70	deg C	>70		
ASTM D5865-04 BTUS/High Heat Value					
BTU (As Received)		BTU/lb	12000		
Notes:					
NS = Not Sampled					
NC = Not Calculable					
Bold = Analyte was detected					
" <" = Analyzed for but detected at or above the quantitation limit					
J = Analyte detected below quantitation limit					



Table 2
 Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
 Riverview Innovation & Technology Campus, Inc.,
 Tonawanda, New York

Analytes	SAMPLE ID:		SD-QUENCH-11102021	
	COLLECTION DATE:		11/10/2021	
	LAB REPORT:		215123	
	WASTE CODE:		None	
	DESCRIPTION:		First Quenched COG Pipe Residuals - Disposal Characterization	
	EPA TCLP	UNITS		
SW8270D				
1,4-Dioxane		ug/kg	<27.3	U
SW6010				
Aluminum		mg/kg	1570	
Antimony		mg/kg	<2.88	U
Arsenic		mg/kg	2.71	
Barium		mg/kg	23.9	
Beryllium		mg/kg	0.168	J
Cadmium		mg/kg	<0.240	U
Calcium		mg/kg	1250	
Chromium, Total		mg/kg	3.41	
Cobalt		mg/kg	1.87	J
Copper		mg/kg	9.46	
Iron		mg/kg	4540	
Lead		mg/kg	3.04	
Magnesium		mg/kg	198	
Manganese		mg/kg	46.1	
Nickel		mg/kg	2.56	
Potassium		mg/kg	245	
Selenium		mg/kg	0.760	J
Silver		mg/kg	<0.481	U
Sodium		mg/kg	92.4	J
Thallium		mg/kg	<1.20	U
Vanadium		mg/kg	3.68	
Zinc		mg/kg	8.33	
SW7471				
Mercury		mg/kg	1.21	



Table 2
Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
Riverview Innovation & Technology Campus, Inc.,
Tonawanda, New York

Analytes	SAMPLE ID:		SD-QUENCH-11102021	
	COLLECTION DATE:		11/10/2021	
	LAB REPORT:		215123	
	WASTE CODE:		None	
	DESCRIPTION:		First Quenched COG Pipe Residuals - Disposal Characterization	
	EPA TCLP	UNITS		
8082A				
PCB-1016 (Aroclor 1016)		mg/kg	<0.0273	U
PCB-1221 (Aroclor 1221)		mg/kg	<0.0273	U
PCB-1232 (Aroclor 1232)		mg/kg	<0.0273	U
PCB-1242 (Aroclor 1242)		mg/kg	<0.0273	U
PCB-1248 (Aroclor 1248)		mg/kg	<0.0273	U
PCB-1254 (Aroclor 1254)		mg/kg	<0.0273	U
PCB-1260 (Aroclor 1260)		mg/kg	<0.0273	U
SW9045D				
pH		ph units	7.83	
TCLP - SW8260C				
1,2-Dichloroethane	500	ug/l	<20.0	U
Chlorobenzene	100000	ug/l	<20.0	U
Tetrachloroethylene (PCE)	700	ug/l	<20.0	U
Carbon Tetrachloride	500	ug/l	<20.0	U
Chloroform	6000	ug/l	<20.0	U
Benzene	500	ug/l	<20.0	U
Vinyl Chloride	200	ug/l	<20.0	U
1,1-Dichloroethene	700	ug/l	<20.0	U
Methyl Ethyl Ketone (2-Butanone)	200000	ug/l	<100	U
Trichloroethylene (TCE)	500	ug/l	<20.0	U
TCLP - SW8270D				
1,4-Dichlorobenzene	7500	ug/l	<40.0	U
2,4,5-Trichlorophenol	400000	ug/l	<40.0	U
2,4,6-Trichlorophenol	2000	ug/l	<40.0	U
2,4-Dinitrotoluene	130	ug/l	<40.0	U
Cresols, (as m,p,o-Cresol)	20000	ug/l	<80.0	U
Hexachlorobenzene	130	ug/l	<40.0	U
Hexachlorobutadiene	500	ug/l	<40.0	U
Hexachloroethane	3000	ug/l	<40.0	U
Nitrobenzene	2000	ug/l	<40.0	U
Pentachlorophenol	100000	ug/l	<80.0	U
Pyridine	5000	ug/l	<40.0	U



Table 2
 Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
 Riverview Innovation & Technology Campus, Inc.,
 Tonawanda, New York

Analytes	SAMPLE ID:		SD-QUENCH-11102021	
	COLLECTION DATE:		11/10/2021	
	LAB REPORT:		215123	
	WASTE CODE:		None	
	DESCRIPTION:		First Quenched COG Pipe Residuals - Disposal Characterization	
	EPA TCLP	UNITS		
TCLP- SW7470				
Mercury	0.2	mg/L	<0.00200	U
TCLP - SW6010				
Arsenic	5	mg/L	<0.500	U
Barium	100	mg/L	0.366	
Cadmium	1	mg/L	<0.0250	U
Chromium, Total	5	mg/L	<0.500	U
Lead	5	mg/L	<0.500	U
Selenium	1	mg/L	<0.200	U
Silver	5	mg/L	<0.500	U
TCLP - 8081B				
Chlordane	30	ug/L	<2.00	U
Endrin	20	ug/L	<1.00	U
Gamma Bhc (Lindane)	400	ug/L	<1.00	U
Heptachlor	8	ug/L	<1.00	U
Heptachlor Epoxide	8	ug/L	<1.00	U
Methoxychlor	10000	ug/L	<1.00	U
Toxaphene	500	ug/L	<20.0	U



Table 2
 Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
 Riverview Innovation & Technology Campus, Inc.,
 Tonawanda, New York

Analytes	SAMPLE ID:		SD-QUENCH-11102021	
	COLLECTION DATE:		11/10/2021	
	LAB REPORT:		215123	
	WASTE CODE:		None	
	DESCRIPTION:		First Quenched COG Pipe Residuals - Disposal Characterization	
	EPA TCLP	UNITS		
TCLP- SW8151A				
2,4-D (Dichlorophenoxyacetic Acid)	10	mg/L	<0.050	U
Silvex (2,4,5-TP)	1	mg/L	<0.050	U
Ignitability EPA 1030				
Ignitability		mm/sec	No Burn	
SW7.3.3.2				
Reactive Cyanide		ug/g	<1.0	U
SW7.3.4.2				
Sulfide Reactive		ug/g	11	
ASTM D5865-04 BTUS/High Heat Vali				
BTU (As Received)		BTU/lb	8750	
Notes:				
NS = Not Sampled				
NC = Not Calculable				
Bold = Analyte was detected				
"<" = Analyzed for but detected at or above the quantitation limit				
J= Analyte detected below quantitation limit				



Table 3
 Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
 Riverview Innovation & Technology Campus, Inc.,
 Tonawanda, New York

Analytes	SAMPLE ID:		COG-RESIDUALS-10252022	
	COLLECTION DATE:		10/25/2022	
	LAB REPORT:		225097	
	WASTE CODE:		None	
	DESCRIPTION:		Second Quenched COG Pipe Residuals - Disposal Characterization	
	EPA TCLP	UNITS		
SW8260C				
1,1,1-Trichloroethane (TCA)		ug/kg	<89300	U
1,1,2,2-Tetrachloroethane		ug/kg	<89300	U
1,1,2-Trichloroethane		ug/kg	<89300	U
1,1-Dichloroethane		ug/kg	<89300	U
1,1-Dichloroethene		ug/kg	<89300	U
1,2,3-Trichlorobenzene		ug/kg	<223000	U
1,2,4-Trimethylbenzene		ug/kg	<89300	U
1,2,4-Trichlorobenzene		ug/kg	<223000	U
1,2-Dibromo-3-Chloropropane		ug/kg	<446000	U
1,2-Dibromoethane (Ethylene Dibromide)		ug/kg	<89300	U
1,2-Dichlorobenzene		ug/kg	<89300	U
1,2-Dichloroethane		ug/kg	<89300	U
1,2-Dichloropropane		ug/kg	<89300	U
1,3-Dichlorobenzene		ug/kg	<89300	U
1,3,5-trimethylbenzene		ug/kg	<89300	U
1,4-Dichlorobenzene		ug/kg	<89300	U
1,4-Dioxane (P-Dioxane)		ug/kg	<446000	U
Methyl Ethyl Ketone (2-Butanone)		ug/kg	<446000	U
2-Hexanone		ug/kg	<223000	U
4-Isopropyltoluene		ug/kg	<89300	U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)		ug/kg	<223000	U
Acetone		ug/kg	<446000	U
Benzene		ug/kg	<89300	U
Bromochloromethane		ug/kg	<223000	U
Bromodichloromethane		ug/kg	<89300	U
Bromoform		ug/kg	<223000	U
Bromomethane		ug/kg	<89300	U
Carbon Disulfide		ug/kg	<89300	U
Carbon Tetrachloride		ug/kg	<89300	U
Chlorobenzene		ug/kg	<89300	U
Chloroethane		ug/kg	<89300	U
Chloroform		ug/kg	<89300	U
Chloromethane		ug/kg	<89300	U
Cyclohexane		ug/kg	<446000	U
Dibromochloromethane		ug/kg	<89300	U
Dichlorodifluoromethane		ug/kg	<89300	U



Table 3
Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
Riverview Innovation & Technology Campus, Inc.,
Tonawanda, New York

Analytes	SAMPLE ID:		COG-RESIDUALS-10252022	
	COLLECTION DATE:		10/25/2022	
	LAB REPORT:		225097	
	WASTE CODE:		None	
	DESCRIPTION:		Second Quenched COG Pipe Residuals - Disposal Characterization	
	EPA TCLP	UNITS		
Methylene Chloride (Dichloromethane)		ug/kg	<223000	U
Ethylbenzene		ug/kg	<89300	U
Isopropylbenzene (Cumene)		ug/kg	<89300	U
Methyl Acetate		ug/kg	<89300	U
Tert-Butyl Methyl Ether		ug/kg	<89300	U
Methylcyclohexane		ug/kg	<89300	U
Naphthalene		ug/kg	52000000	
n-Butylbenzene		ug/kg	<89300	U
N-Propylbenzene		ug/kg	<89300	U
sec-Butylbenzene		ug/kg	<89300	U
Styrene		ug/kg	<223000	U
tert-Butylbenzene		ug/kg	<89300	U
Tetrachloroethylene (PCE)		ug/kg	<89300	U
Toluene		ug/kg	<89300	U
Trichloroethylene (TCE)		ug/kg	<89300	U
Trichlorofluoromethane		ug/kg	<89300	U
Vinyl Chloride		ug/kg	<89300	U
Cis-1,2-Dichloroethylene		ug/kg	<89300	U
Cis-1,3-Dichloropropene		ug/kg	<89300	U
m,p-Xylene		ug/kg	<89300	U
O-Xylene (1,2-Dimethylbenzene)		ug/kg	<89300	U
Trans-1,2-Dichloroethene		ug/kg	<89300	U
Trans-1,3-Dichloropropene		ug/kg	<89300	U
Xylenes, Total		ug/kg	<89300	U
SW8270D				
1,1-Biphenyl		ug/kg	<1400000	U
1,2,4,5-Tetrachlorobenzene		ug/kg	<1400000	U
2,3,4,6-Tetrachlorophenol		ug/kg	<1400000	U
2,4,5-Trichlorophenol		ug/kg	<1400000	U
2,4,6-Trichlorophenol		ug/kg	<1400000	U
2,4-Dichlorophenol		ug/kg	<1400000	U
2,4-Dimethylphenol		ug/kg	<1400000	U
2,4-Dinitrophenol		ug/kg	<5620000	U
2,4-Dinitrotoluene		ug/kg	<1400000	U
2,6-Dinitrotoluene		ug/kg	<1400000	U
2-Chloronaphthalene		ug/kg	<1400000	U



Table 3
Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
Riverview Innovation & Technology Campus, Inc.,
Tonawanda, New York

Analytes	SAMPLE ID:		COG-RESIDUALS-10252022	
	COLLECTION DATE:		10/25/2022	
	LAB REPORT:		225097	
	WASTE CODE:		None	
	DESCRIPTION:		Second Quenched COG Pipe Residuals - Disposal Characterization	
	EPA TCLP	UNITS		
2-Chlorophenol		ug/kg	<1400000	U
2-Methylnaphthalene		ug/kg	<1400000	U
2-Methylphenol (O-Cresol)		ug/kg	<1400000	U
2-Nitroaniline		ug/kg	<1400000	U
2-Nitrophenol		ug/kg	<1400000	U
3,3'-Dichlorobenzidine		ug/kg	<1400000	U
Cresols, M & P (3&4-Methylphenol)		ug/kg	<1400000	U
3-Nitroaniline		ug/kg	<1400000	U
4,6-Dinitro-2-Methylphenol		ug/kg	<1880000	U
4-Bromophenyl Phenyl Ether		ug/kg	<1400000	U
4-Chloro-3-Methylphenol		ug/kg	<1400000	U
4-Chloroaniline		ug/kg	<1400000	U
4-Chlorophenyl Phenyl Ether		ug/kg	<1400000	U
4-Nitroaniline		ug/kg	<1400000	U
4-Nitrophenol		ug/kg	<1400000	U
Acenaphthene		ug/kg	<1400000	U
Acenaphthylene		ug/kg	<1400000	U
Acetophenone		ug/kg	<1400000	U
Anthracene		ug/kg	<1400000	U
Atrazine		ug/kg	<1400000	U
Benzo(A)Anthracene		ug/kg	<1400000	U
Benzaldehyde		ug/kg	<1400000	U
Benzo(A)Pyrene		ug/kg	<1400000	U
Benzo(B)Fluoranthene		ug/kg	<1400000	U
Benzo(G,H,I)Perylene		ug/kg	<1400000	U
Benzo(K)Fluoranthene		ug/kg	<1400000	U
Biphenyl (Diphenyl)		ug/kg	<1400000	U
Bis(2-Chloroisopropyl) Ether		ug/kg	<1400000	U
Bis(2-Chloroethoxy) Methane		ug/kg	<1400000	U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)		ug/kg	<1400000	U
Bis(2-Ethylhexyl) Phthalate		ug/kg	<1400000	U
Benzyl Butyl Phthalate		ug/kg	<1400000	U
Caprolactam		ug/kg	<1400000	U
Carbazole		ug/kg	<1400000	U
Chrysene		ug/kg	<1400000	U
Di-N-Butyl Phthalate		ug/kg	<1400000	U
Di-N-Octylphthalate		ug/kg	<1400000	U



Table 3
 Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
 Riverview Innovation & Technology Campus, Inc.,
 Tonawanda, New York

Analytes	SAMPLE ID:		COG-RESIDUALS-10252022	
	COLLECTION DATE:		10/25/2022	
	LAB REPORT:		225097	
	WASTE CODE:		None	
	DESCRIPTION:		Second Quenched COG Pipe Residuals - Disposal Characterization	
	EPA TCLP	UNITS		
Dibenz(A,H)Anthracene		ug/kg	<1400000	U
Dibenzofuran		ug/kg	<1400000	U
Diethyl Phthalate		ug/kg	<1400000	U
Dimethyl Phthalate		ug/kg	<1400000	U
Fluoranthene		ug/kg	<1400000	U
Fluorene		ug/kg	<1400000	U
Hexachlorobenzene		ug/kg	<1400000	U
Hexachlorobutadiene		ug/kg	<1400000	U
Hexachlorocyclopentadiene		ug/kg	<5620000	U
Hexachloroethane		ug/kg	<1400000	U
Indeno(1,2,3-C,D)Pyrene		ug/kg	<1400000	U
Isophorone		ug/kg	<1400000	U
N-Nitrosodi-N-Propylamine		ug/kg	<1400000	U
N-Nitrosodiphenylamine		ug/kg	<1400000	U
Naphthalene		ug/kg	52000000	
Nitrobenzene		ug/kg	<1400000	U
Pentachlorophenol		ug/kg	<2810000	U
Phenanthrene		ug/kg	<1400000	U
Phenol		ug/kg	<1400000	U
Pyrene		ug/kg	<1400000	U
SW6010				
Aluminum		mg/kg	NS	
Antimony		mg/kg	NS	
Arsenic		mg/kg	11.8	
Barium		mg/kg	22.1	
Beryllium		mg/kg	NS	
Cadmium		mg/kg	0.996	
Calcium		mg/kg	NS	
Chromium, Total		mg/kg	16.9	
Cobalt		mg/kg	<0.245	U
Copper		mg/kg	25.1	
Iron		mg/kg	NS	
Lead		mg/kg	59.1	
Magnesium		mg/kg	NS	
Manganese		mg/kg	371	
Nickel		mg/kg	8.02	



Table 3
 Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
 Riverview Innovation & Technology Campus, Inc.,
 Tonawanda, New York

Analytes	SAMPLE ID:		COG-RESIDUALS-10252022	
	COLLECTION DATE:		10/25/2022	
	LAB REPORT:		225097	
	WASTE CODE:		None	
	DESCRIPTION:		Second Quenched COG Pipe Residuals - Disposal Characterization	
	EPA TCLP	UNITS		
Potassium		mg/kg	NS	
Selenium		mg/kg	4.88	
Silver		mg/kg	1.02	
Sodium		mg/kg	NS	
Sulfur		mg/kg	385000	A
Thallium		mg/kg	NS	
Vanadium		mg/kg	NS	
Zinc		mg/kg	62.7	
SW7471				
Mercury		mg/kg	139	
8082A				
PCB-1016 (Aroclor 1016)		mg/kg	<4.06	U
PCB-1221 (Aroclor 1221)		mg/kg	<4.06	U
PCB-1232 (Aroclor 1232)		mg/kg	<4.06	U
PCB-1242 (Aroclor 1242)		mg/kg	<4.06	U
PCB-1248 (Aroclor 1248)		mg/kg	<4.06	U
PCB-1254 (Aroclor 1254)		mg/kg	<4.06	U
PCB-1260 (Aroclor 1260)		mg/kg	<4.06	U
8081B Pesticides				
P,P'-DDD		ug/kg		
P,P'-DDE		ug/kg		
P,P'-DDT		ug/kg		
Aldrin		ug/kg		
Dieldrin		ug/kg		
Alpha Endosulfan		ug/kg		
Beta Endosulfan		ug/kg		
Endosulfan Sulfate		ug/kg		
Endrin		ug/kg		
Endrin Aldehyde		ug/kg		
Endrin Ketone		ug/kg		
Heptachlor		ug/kg		
Heptachlor Epoxide		ug/kg		
Methoxychlor		ug/kg		
Toxaphene		ug/kg		



Table 3
 Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
 Riverview Innovation & Technology Campus, Inc.,
 Tonawanda, New York

Analytes	SAMPLE ID:		COG-RESIDUALS-10252022	
	COLLECTION DATE:		10/25/2022	
	LAB REPORT:		225097	
	WASTE CODE:		None	
	DESCRIPTION:		Second Quenched COG Pipe Residuals - Disposal Characterization	
	EPA TCLP	UNITS		
Alpha Bhc (Alpha Hexachlorocyclohexane)		ug/kg		
cis-Chlordane		ug/kg		
Beta Bhc (Beta Hexachlorocyclohexane)		ug/kg		
Delta BHC (Delta Hexachlorocyclohexane)		ug/kg		
Gamma Bhc (Lindane)		ug/kg		
Chlordane (Technical)		ug/kg		
SW8151A Herbicides				
Acetic acid, (2,4,5-trichlorophenoxy)-		ug/kg		
Silvex (2,4,5-TP)		ug/kg		
2,4-D (Dichlorophenoxyacetic Acid)		ug/kg		
Dicamba		ug/kg		
E350.1M				
Nitrogen, Ammonia (As N)		mg/kg	<2000	U
SW9012B				
Cyanide		mg/kg	320	
SOLIDS				
Total Solids		%	67	
SW9045D				
pH		ph units	7.47	
TCLP - SW8260C				
1,2-Dichloroethane	500	ug/l	<200	U
Chlorobenzene	100000	ug/l	<200	U
Tetrachloroethylene (PCE)	700	ug/l	<1000	U
Carbon Tetrachloride	500	ug/l	<200	U
Chloroform	6000	ug/l	<200	U
Benzene	500	ug/l	<200	U
Vinyl Chloride	200	ug/l	<200	U
1,1-Dichloroethene	700	ug/l	<200	U
Methyl Ethyl Ketone (2-Butanone)	200000	ug/l	<200	U
Trichloroethylene (TCE)	500	ug/l	<200	U



Table 3
Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
Riverview Innovation & Technology Campus, Inc.,
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Analytes	SAMPLE ID:		COG-RESIDUALS-10252022	
	COLLECTION DATE:		10/25/2022	
	LAB REPORT:		225097	
	WASTE CODE:		None	
	DESCRIPTION:		Second Quenched COG Pipe Residuals - Disposal Characterization	
	EPA TCLP	UNITS		
<u>TCLP - SW8270D</u>				
1,4-Dichlorobenzene	7500	ug/l	<40.0	U
2,4,5-Trichlorophenol	400000	ug/l	<40.0	U
2,4,6-Trichlorophenol	2000	ug/l	<40.0	U
2,4-Dinitrotoluene	130	ug/l	<40.0	U
Cresols, (as m,p,o-Cresol)	20000	ug/l	102	
Hexachlorobenzene	130	ug/l	<40.0	U
Hexachlorobutadiene	500	ug/l	<40.0	U
Hexachloroethane	3000	ug/l	<40.04	U
Nitrobenzene	2000	ug/l	<40.0	U
Pentachlorophenol	100000	ug/l	<80.0	U
Pyridine	5000	ug/l	<40.0	U
<u>TCLP- SW7470</u>				
Mercury	0.2	mg/L	<0.00200	U
<u>TCLP - SW6010</u>				
Arsenic	5	mg/L	<0.500	U
Barium	100	mg/L	<0.500	U
Cadmium	1	mg/L	<0.0250	U
Chromium, Total	5	mg/L	<0.500	U
Lead	5	mg/L	<0.500	U
Selenium	1	mg/L	<0.200	U
Silver	5	mg/L	<0.500	U
<u>TCLP - 8081B</u>				
Chlordane	30	ug/L	<10	U
Endrin	20	ug/L	<2.0	U
Gamma Bhc (Lindane)	400	ug/L	<2.0	U
Heptachlor	8	ug/L	<2.0	U
Heptachlor Epoxide	8	ug/L	<2.0	U
Methoxychlor	10000	ug/L	<10	U
Toxaphene	500	ug/L	<20	U



Table 3
 Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
 Riverview Innovation & Technology Campus, Inc.,
 Tonawanda, New York

Analytes	SAMPLE ID:		COG-RESIDUALS-10252022	
	COLLECTION DATE:		10/25/2022	
	LAB REPORT:		225097	
	WASTE CODE:		None	
	DESCRIPTION:		Second Quenched COG Pipe Residuals - Disposal Characterization	
	EPA TCLP	UNITS		
<u>TCLP- SW8151A</u>				
2,4-D (Dichlorophenoxyacetic Acid)	10	mg/L	0.53	
Silvex (2,4,5-TP)	1	mg/L	<0.050	U
<u>Ignitability EPA 1030</u>				
Ignitability		mm/sec	No Burn	
<u>SW7.3.3.2</u>				
Reactive Cyanide		mg/kg	<1.0	U
<u>SW7.3.4.2</u>				
Sulfide Reactive		mg/kg	<10	U
<u>SW1010</u>				
Flash Point	70	deg C	NS	
<u>ASTM D5865-04 BTUS/High Heat Value</u>				
BTU (As Received)		BTU/lb	2700	
Notes:				
NS = Not Sampled				
NC = Not Calculable				
Bold = Analyte was detected				
" < " = Analyzed for but detected at or above the quantitation limit				
J = Analyte detected below quantitation limit				



Table 4
Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
Riverview Innovation & Technology Campus, Inc.,
Tonawanda, New York

Analytes	SAMPLE ID:		COGTAR-03172022	
	COLLECTION DATE:		3/17/2022	
	LAB REPORT:		221148	
	WASTE CODE:		D018	
	DESCRIPTION:		Grossly Contaminated COG	
	EPA TCLP	UNITS	Pipes from Battery - Microencapsulation	
SW8260C				
1,1,1-Trichloroethane (TCA)		ug/kg	<6300	U
1,1,2,2-Tetrachloroethane		ug/kg	<6300	U
1,1,2-Trichloroethane		ug/kg	<6300	U
1,1-Dichloroethane		ug/kg	<6300	U
1,1-Dichloroethene		ug/kg	<6300	U
1,2,3-Trichlorobenzene		ug/kg	<15700	U
1,2,4-Trimethylbenzene		ug/kg	75900	
1,2,4-Trichlorobenzene		ug/kg	<15700	U
1,2-Dibromo-3-Chloropropane		ug/kg	<31500	U
1,2-Dibromoethane (Ethylene Dibromide)		ug/kg	<6300	U
1,2-Dichlorobenzene		ug/kg	<6300	U
1,2-Dichloroethane		ug/kg	<6300	U
1,2-Dichloropropane		ug/kg	<6300	U
1,3-Dichlorobenzene		ug/kg	<6300	U
1,3,5-trimethylbenzene		ug/kg	48500	
1,4-Dichlorobenzene		ug/kg	<6300	U
1,4-Dioxane (P-Dioxane)		ug/kg	<31500	U
Methyl Ethyl Ketone (2-Butanone)		ug/kg	<31500	U
2-Hexanone		ug/kg	<15700	U
4-Isopropyltoluene		ug/kg	<6300	U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)		ug/kg	<15700	U
Acetone		ug/kg	<31500	U
Benzene		ug/kg	406000	
Bromochloromethane		ug/kg	<15700	U
Bromodichloromethane		ug/kg	<6300	U
Bromoform		ug/kg	<15700	U
Bromomethane		ug/kg	<6300	U
Carbon Disulfide		ug/kg	12300	
Carbon Tetrachloride		ug/kg	<6300	U
Chlorobenzene		ug/kg	<6300	U
Chloroethane		ug/kg	<6300	U
Chloroform		ug/kg	<6300	U
Chloromethane		ug/kg	<6300	U
Cyclohexane		ug/kg	<31500	U
Dibromochloromethane		ug/kg	<6300	U
Dichlorodifluoromethane		ug/kg	<6300	U



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Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
Riverview Innovation & Technology Campus, Inc.,
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Analytes	SAMPLE ID:		COGTAR-03172022	
	COLLECTION DATE:		3/17/2022	
	LAB REPORT:		221148	
	WASTE CODE:		D018	
	DESCRIPTION:		Grossly Contaminated COG Pipes from Battery - Microencapsulation	
	EPA TCLP	UNITS		
Methylene Chloride (Dichloromethane)		ug/kg	<15700	U
Ethylbenzene		ug/kg	10400	
Isopropylbenzene (Cumene)		ug/kg	<6300	U
Methyl Acetate		ug/kg	<6300	U
Tert-Butyl Methyl Ether		ug/kg	<6300	U
Methylcyclohexane		ug/kg	<6300	U
Naphthalene		ug/kg	24300000	
n-Butylbenzene		ug/kg	<6300	U
N-Propylbenzene		ug/kg	<6300	U
sec-Butylbenzene		ug/kg	<6300	U
Styrene		ug/kg	<15700	U
tert-Butylbenzene		ug/kg	<6300	U
Tetrachloroethylene (PCE)		ug/kg	<6300	U
Toluene		ug/kg	299000	
Trichloroethylene (TCE)		ug/kg	<6300	U
Trichlorofluoromethane		ug/kg	<6300	U
Vinyl Chloride		ug/kg	<6300	U
Cis-1,2-Dichloroethylene		ug/kg	<6300	U
Cis-1,3-Dichloropropene		ug/kg	<6300	U
m,p-Xylene		ug/kg	222000	
O-Xylene (1,2-Dimethylbenzene)		ug/kg	53200	
Trans-1,2-Dichloroethene		ug/kg	<6300	U
Trans-1,3-Dichloropropene		ug/kg	<6300	U
Xylenes, Total		ug/kg	275200	
SW8270D				
1,1-Biphenyl		ug/kg	<1200000	U
1,2,4,5-Tetrachlorobenzene		ug/kg	<1200000	U
2,3,4,6-Tetrachlorophenol		ug/kg	<1200000	U
2,4,5-Trichlorophenol		ug/kg	<1200000	U
2,4,6-Trichlorophenol		ug/kg	<1200000	U
2,4-Dichlorophenol		ug/kg	<1200000	U
2,4-Dimethylphenol		ug/kg	<1200000	U
2,4-Dinitrophenol		ug/kg	<4800000	U
2,4-Dinitrotoluene		ug/kg	<1200000	U
2,6-Dinitrotoluene		ug/kg	<1200000	U
2-Chloronaphthalene		ug/kg	<1200000	U



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Riverview Innovation & Technology Campus, Inc.,
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Analytes	SAMPLE ID:		COGTAR-03172022	
	COLLECTION DATE:		3/17/2022	
	LAB REPORT:		221148	
	WASTE CODE:		D018	
	DESCRIPTION:		Grossly Contaminated COG	
	EPA TCLP	UNITS	Pipes from Battery - Microencapsulation	
2-Chlorophenol		ug/kg	<120000	U
2-Methylnaphthalene		ug/kg	3920000	
2-Methylphenol (O-Cresol)		ug/kg	<1200000	U
2-Nitroaniline		ug/kg	<1200000	U
2-Nitrophenol		ug/kg	<1200000	U
3,3'-Dichlorobenzidine		ug/kg	<1200000	U
Cresols, M & P (3&4-Methylphenol)		ug/kg	<1200000	U
3-Nitroaniline		ug/kg	<1200000	U
4,6-Dinitro-2-Methylphenol		ug/kg	<1610000	U
4-Bromophenyl Phenyl Ether		ug/kg	<1200000	U
4-Chloro-3-Methylphenol		ug/kg	<1200000	U
4-Chloroaniline		ug/kg	<1200000	U
4-Chlorophenyl Phenyl Ether		ug/kg	<1200000	U
4-Nitroaniline		ug/kg	<1200000	U
4-Nitrophenol		ug/kg	<1200000	U
Acenaphthene		ug/kg	<1200000	U
Acenaphthylene		ug/kg	1550000	
Acetophenone		ug/kg	<1200000	U
Anthracene		ug/kg	<1200000	U
Atrazine		ug/kg	<1200000	U
Benzo(A)Anthracene		ug/kg	<1200000	U
Benzaldehyde		ug/kg	<1200000	U
Benzo(A)Pyrene		ug/kg	<1200000	U
Benzo(B)Fluoranthene		ug/kg	<1200000	U
Benzo(G,H,I)Perylene		ug/kg	<1200000	U
Benzo(K)Fluoranthene		ug/kg	<1200000	U
Biphenyl (Diphenyl)		ug/kg	<1200000	U
Bis(2-Chloroisopropyl) Ether		ug/kg	<1200000	U
Bis(2-Chloroethoxy) Methane		ug/kg	<1200000	U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)		ug/kg	<1200000	U
Bis(2-Ethylhexyl) Phthalate		ug/kg	<1200000	U
Benzyl Butyl Phthalate		ug/kg	<1200000	U
Caprolactam		ug/kg	<1200000	U
Carbazole		ug/kg	<1200000	U
Chrysene		ug/kg	<1200000	U
Di-N-Butyl Phthalate		ug/kg	<1200000	U
Di-N-Octylphthalate		ug/kg	<1200000	U



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 Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
 Riverview Innovation & Technology Campus, Inc.,
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Analytes	SAMPLE ID:		COGTAR-03172022	
	COLLECTION DATE:		3/17/2022	
	LAB REPORT:		221148	
	WASTE CODE:		D018	
	DESCRIPTION:		Grossly Contaminated COG	
	EPA TCLP	UNITS	Pipes from Battery - Microencapsulation	
Dibenz(A,H)Anthracene		ug/kg	<1200000	U
Dibenzofuran		ug/kg	<1200000	U
Diethyl Phthalate		ug/kg	<1200000	U
Dimethyl Phthalate		ug/kg	<1200000	U
Fluoranthene		ug/kg	1900000	
Fluorene		ug/kg	1510000	
Hexachlorobenzene		ug/kg	<1200000	U
Hexachlorobutadiene		ug/kg	<1200000	U
Hexachlorocyclopentadiene		ug/kg	<4800000	U
Hexachloroethane		ug/kg	<1200000	U
Indeno(1,2,3-C,D)Pyrene		ug/kg	<1200000	U
Isophorone		ug/kg	<1200000	U
N-Nitrosodi-N-Propylamine		ug/kg	<1200000	U
N-Nitrosodiphenylamine		ug/kg	<1200000	U
Naphthalene		ug/kg	24300000	
Nitrobenzene		ug/kg	<1200000	U
Pentachlorophenol		ug/kg	<2400000	U
Phenanthrene		ug/kg	3540000	
Phenol		ug/kg	<1200000	U
Pyrene		ug/kg	1220000	
SW6010				
Aluminum		mg/kg	63.6	
Antimony		mg/kg	<3.12	U
Arsenic		mg/kg	16.1	
Barium		mg/kg	<5.20	U
Beryllium		mg/kg	<0.260	U
Cadmium		mg/kg	0.263	
Calcium		mg/kg	163	
Chromium, Total		mg/kg	11.2	
Cobalt		mg/kg	<2.60	U
Copper		mg/kg	12.7	
Iron		mg/kg	39300	
Lead		mg/kg	4.67	
Magnesium		mg/kg	<130	U
Manganese		mg/kg	477	
Nickel		mg/kg	35.7	



Table 4
 Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
 Riverview Innovation & Technology Campus, Inc.,
 Tonawanda, New York

Analytes	SAMPLE ID:		COGTAR-03172022	
	COLLECTION DATE:		3/17/2022	
	LAB REPORT:		221148	
	WASTE CODE:		D018	
	DESCRIPTION:		Grossly Contaminated COG Pipes from Battery - Microencapsulation	
	EPA TCLP	UNITS		
Potassium		mg/kg	<130	U
Selenium		mg/kg	<1.04	U
Silver		mg/kg	<0.520	U
Sodium		mg/kg	<130	U
Sulfur		mg/kg	NS	
Thallium		mg/kg	<1.30	U
Vanadium		mg/kg	2.11	
Zinc		mg/kg	12.4	
<u>SW7471</u>				
Mercury		mg/kg	8.87	
Gamma Bhc (Lindane)		ug/kg		
Chlordane (Technical)		ug/kg		
<u>SW8151A Herbicides</u>				
Acetic acid, (2,4,5-trichlorophenoxy)-		ug/kg		
Silvex (2,4,5-TP)		ug/kg		
2,4-D (Dichlorophenoxyacetic Acid)		ug/kg		
Dicamba		ug/kg		
<u>E350.1M</u>				
Nitrogen, Ammonia (As N)		mg/kg	530	
<u>SW9012B</u>				
Cyanide		mg/kg	259	
<u>SOLIDS</u>				
Total Solids		%	88.2	
<u>SW9045D</u>				
pH		ph units	7.07	



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Riverview Innovation & Technology Campus, Inc.,
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Analytes	SAMPLE ID:		COGTAR-03172022	
	COLLECTION DATE:		3/17/2022	
	LAB REPORT:		221148	
	WASTE CODE:		D018	
	DESCRIPTION:		Grossly Contaminated COG Pipes from Battery - Microencapsulation	
	EPA TCLP	UNITS		
TCLP - SW8260C				
1,2-Dichloroethane	500	ug/l	<200	U
Chlorobenzene	100000	ug/l	<200	U
Tetrachloroethylene (PCE)	700	ug/l	<1000	U
Carbon Tetrachloride	500	ug/l	<200	U
Chloroform	6000	ug/l	<200	U
Benzene	500	ug/l	6780	
Vinyl Chloride	200	ug/l	<200	U
1,1-Dichloroethene	700	ug/l	<200	U
Methyl Ethyl Ketone (2-Butanone)	200000	ug/l	<200	U
Trichloroethylene (TCE)	500	ug/l	<200	U
TCLP - SW8270D				
1,4-Dichlorobenzene	7500	ug/l	<200	U
2,4,5-Trichlorophenol	400000	ug/l	<200	U
2,4,6-Trichlorophenol	2000	ug/l	<200	U
2,4-Dinitrotoluene	130	ug/l	<200	U
Cresols, (as m,p,o-Cresol)	20000	ug/l	4080	
Hexachlorobenzene	130	ug/l	<200	U
Hexachlorobutadiene	500	ug/l	<200	U
Hexachloroethane	3000	ug/l	<200	U
Nitrobenzene	2000	ug/l	<200	U
Pentachlorophenol	100000	ug/l	<400	U
Pyridine	5000	ug/l	356	
TCLP- SW7470				
Mercury	0.2	mg/L	0.0106	
TCLP - SW6010				
Arsenic	5	mg/L	<0.500	U
Barium	100	mg/L	<0.500	U
Cadmium	1	mg/L	<0.0250	U
Chromium, Total	5	mg/L	<0.500	U
Lead	5	mg/L	<0.500	U
Selenium	1	mg/L	<0.200	U
Silver	5	mg/L	<0.500	U



Table 4
 Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
 Riverview Innovation & Technology Campus, Inc.,
 Tonawanda, New York

Analytes	SAMPLE ID:		COGTAR-03172022	
	COLLECTION DATE:		3/17/2022	
	LAB REPORT:		221148	
	WASTE CODE:		D018	
	DESCRIPTION:		Grossly Contaminated COG Pipes from Battery - Microencapsulation	
	EPA TCLP	UNITS		
<u>TCLP - 8081B</u>				
Chlordane	30	ug/L	<2.00	U
Endrin	20	ug/L	<1.00	U
Gamma Bhc (Lindane)	400	ug/L	<1.00	U
Heptachlor	8	ug/L	<1.00	U
Heptachlor Epoxide	8	ug/L	2.11	
Methoxychlor	10000	ug/L	2.34	
Toxaphene	500	ug/L	<20.0	U
<u>TCLP- SW8151A</u>				
2,4-D (Dichlorophenoxyacetic Acid)	10	mg/L	<0.25	U
Silvex (2,4,5-TP)	1	mg/L	<0.25	U
<u>Ignitability EPA 1030</u>				
Ignitability		mm/sec	NS	
<u>SW7.3.3.2</u>				
Reactive Cyanide		mg/kg	<1.0	U
<u>SW7.3.4.2</u>				
Sulfide Reactive		mg/kg	<10	U
<u>SW1010</u>				
Flash Point	70	deg C	>70	
<u>ASTM D5865-04 BTUS/High Heat Value</u>				
BTU (As Received)		BTU/lb	10100	
Notes:				
NS = Not Sampled				
NC = Not Calculable				
Bold = Analyte was detected				
"<" = Analyzed for but detected at or above the quantitation limit				
J = Analyte detected below quantitation limit				



Table 5
Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
Riverview Innovation & Technology Campus, Inc.,
Tonawanda, New York

Analytes	Permit No. 331 Effluent Limits	Units	COG-FRAC TANK- 09272021	
		Sample Date:	9/27/2021	
		Location:	Quench Pit Weir Tank	
		Sample Type:	Quench Water, Post Treatment	
VOCs (SW8260C)				
1,1,1-Trichloroethane (TCA)	Monitor	ug/l	<0.70	U
1,1,2,2-Tetrachloroethane	Monitor	ug/l	<0.17	U
1,1,2-Trichloroethane	Monitor	ug/l	<0.50	U
1,1-Dichloroethane	Monitor	ug/l	<0.7	U
1,1-Dichloroethene	Monitor	ug/l	<0.17	U
1,2,3-Trichlorobenzene	Monitor	ug/l	<0.7	U
1,2,4-Trichlorobenzene	Monitor	ug/l	<0.7	U
1,2-Dibromo-3-Chloropropane	Monitor	ug/l	<0.7	U
1,2-Dibromoethane (Ethylene Dibromide)	Monitor	ug/l	<0.7	U
1,2-Dichlorobenzene	Monitor	ug/l	<0.70	U
1,2-Dichloroethane	Monitor	ug/l	<0.70	U
1,2-Dichloropropane	Monitor	ug/l	<0.14	U
1,3-Dichlorobenzene	Monitor	ug/l	<0.70	U
1,4-Dichlorobenzene	Monitor	ug/l	<0.70	U
1,4-Dioxane (P-Dioxane)	Monitor	ug/l	<1	U
Methyl Ethyl Ketone (2-Butanone)	Monitor	ug/l	<1.9	U
2-Hexanone	Monitor	ug/l	<1	U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	Monitor	ug/l	<1	U
Acetone	Monitor	ug/l	6.2	
Benzene	Monitor	ug/l	2.7	
Bromochloromethane	Monitor	ug/l	<0.7	U
Bromodichloromethane	Monitor	ug/l	<0.19	U
Bromoform	Monitor	ug/l	<0.65	U
Bromomethane	Monitor	ug/l	<0.70	U
Carbon Disulfide	Monitor	ug/l	<1	U
Carbon Tetrachloride	Monitor	ug/l	<0.13	U
Chlorobenzene	Monitor	ug/l	<0.70	U
Chloroethane	Monitor	ug/l	<0.70	U
Chloroform	Monitor	ug/l	<0.70	U
Chloromethane	Monitor	ug/l	<0.70	U
Cyclohexane	Monitor	ug/l	<0.27	U
Dibromochloromethane	Monitor	ug/l	<0.15	U
Dichlorodifluoromethane	Monitor	ug/l	<1	U
Methylene Chloride	Monitor	ug/l	<0.70	U
Ethylbenzene	Monitor	ug/l	<0.70	U
Isopropylbenzene (Cumene)	Monitor	ug/l	<0.7	U
Methyl Acetate	Monitor	ug/l	<0.23	U



Table 5
Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
Riverview Innovation & Technology Campus, Inc.,
Tonawanda, New York

Analytes	Permit No. 331 Effluent Limits	Units	COG-FRAC TANK- 09272021	
		Sample Date:	9/27/2021	
		Location:	Quench Pit Weir Tank	
		Sample Type:	Quench Water, Post Treatment	
Tert-Butyl Methyl Ether	Monitor	ug/l	<0.7	U
Methylcyclohexane	Monitor	ug/l	<0.4	U
Styrene	Monitor	ug/l	<0.70	U
Tetrachloroethylene (PCE)	Monitor	ug/l	<0.18	U
Toluene	Monitor	ug/l	3.7	
Trichloroethylene (TCE)	Monitor	ug/l	<0.18	U
Trichlorofluoromethane	Monitor	ug/l	<0.70	U
Vinyl Chloride	Monitor	ug/l	<0.07	U
Cis-1,2-Dichloroethylene	Monitor	ug/l	<0.70	U
Cis-1,3-Dichloropropene	Monitor	ug/l	<0.14	U
m,p-Xylene	Monitor	ug/l	4.2	
O-Xylene (1,2-Dimethylbenzene)	Monitor	ug/l	1.9	
Trans-1,2-Dichloroethene	Monitor	ug/l	<0.70	U
Trans-1,3-Dichloropropene	Monitor	ug/l	<0.16	U
TAL Metals (SW6010)				
Aluminum	-	ug/l	45.6	
Antimony	-	ug/l	1.37	J
Arsenic	500	ug/l	0.54	
Barium	-	ug/l	90.66	
Beryllium	-	ug/l	<0.1	U
Cadmium	-	ug/l	0.11	J
Calcium	-	ug/l	148000	
Chromium, Total	-	ug/l	0.44	J
Cobalt	-	ug/l	0.95	
Copper	-	ug/l	2.71	
Iron	-	ug/l	358	
Lead	-	ug/l	3.27	
Magnesium	-	ug/l	18500	
Manganese	-	ug/l	933.3	
Nickel	-	ug/l	0.26	
Potassium	-	ug/l	22000	
Selenium	-	ug/l	<1.73	U
Silver	-	ug/l	<0.16	U
Sodium	-	ug/l	18600	
Thallium	-	ug/l	0.22	J
Vanadium	-	ug/l	<1.57	U
Zinc	-	ug/l	15.17	



Table 5
 Coke Oven Gas Pipe and Coke Oven Gas Pipe Residuals CCR
 Riverview Innovation & Technology Campus, Inc.,
 Tonawanda, New York

Analytes	Permit No. 331 Effluent Limits	Units	COG-FRAC TANK- 09272021	
		Sample Date:	9/27/2021	
		Location:	Quench Pit Weir Tank	
		Sample Type:	Quench Water, Post Treatment	
Mercury (SW7470)				
Mercury	0.001	mg/l	0.00018	J
Bold = Analyte was detected J = Analyzed for but detected at or above the quantitation limit U = Analyte detected below quantitation limit Red highlight = Analyte exceeds POTW Permit No. 331 Effluent Limit				

Photographic Log



Client Name: RITC	Date Photo was Taken: 11/16/2021	Project: RITC
Photo No. 1 Direction Photo Taken: View is northeast.		
Description: COG pipe removed from the boiler house.		
Client Name: RITC	Date Photo was Taken: 11/16/2021	Project: RITC
Photo No. 2 Direction Photo Taken: View is west.		
Description: The COG pipe is emptied into the yellow quench box.		



Client Name: RITC	Date Photo was Taken: 11/19/2021	Project: RITC
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Photo No. 3

Direction Photo Taken:

View is southwest.



Description:

COG pipe removed from the Battery is emptied into the quench box.

Client Name: RITC	Date Photo was Taken: 11/19/2021	Project: RITC
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Photo No. 4

Direction Photo Taken:

View is pipe interior.



Description:

Each section of piping is inspected to ensure residuals have been removed.



Client Name: RITC	Date Photo was Taken: 12/1/2021	Project: RITC
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Photo No. 5
Direction Photo Taken:

View is west.

Description:

COG pipe is placed in the quench pit.



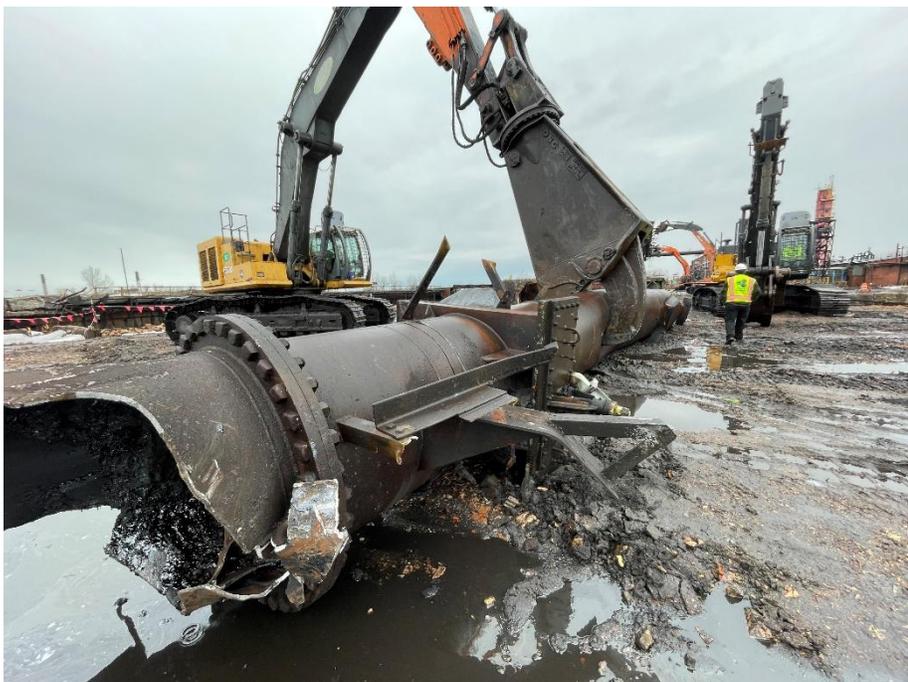
Client Name: RITC	Date Photo was Taken: 2/22/2022	Project: RITC
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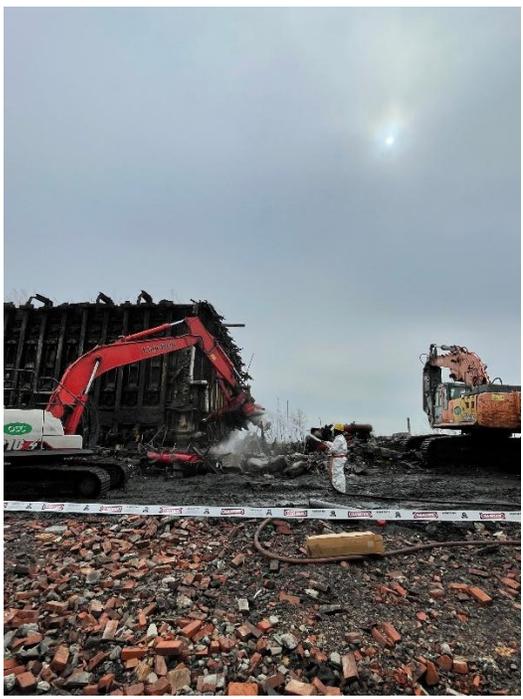
Photo No. 6
Direction Photo Taken:

View is west.

Description:

COG pipe is removed from the Battery collector main.



Client Name: RITC	Date Photo was Taken: 2/23/2022	Project: RITC
Photo No. 7		
Direction Photo Taken: View is south.		
Description: COG pipe is emptied into the quench box.		
Client Name: RITC	Date Photo was Taken: 3/9/2022	Project: RITC
Photo No. 8		
Direction Photo Taken: View is west.		
Description: COG pipe is removed from the Battery under controlled demolition conditions. The pipe exterior is rinsed before being transported to the quench area.		



Client Name: RITC	Date Photo was Taken: 3/9/2022	Project: RITC
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Photo No. 9	
Direction Photo Taken: View is aerial.	
Description: Typical black solid COG residuals in removed pipe.	

Client Name: RITC	Date Photo was Taken: 3/9/2022	Project: RITC
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Photo No. 10	
Direction Photo Taken: View is pipe interior.	
Description: Crystalline COG residuals required prying and loosening before being emptied (less typical).	



Client Name: RITC	Date Photo was Taken: 3/14/2022	Project: RITC
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Photo No. 11
Direction Photo Taken:

View is pipe interior.



Description:

COG residuals with ice chunks and rust scale typical of pipe removed from Battery basement.

Client Name: RITC	Date Photo was Taken: 6/22/2022	Project: RITC
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Photo No. 12
Direction Photo Taken:

View is west.



Description:

COG piping removed from the main pipe rack.



Client Name: RITC	Date Photo was Taken: 6/29/2022	Project: RITC
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Photo No. 13
Direction Photo Taken:

View is east.



Description:

COG piping removed from the main pipe rack to be inspected and quenched.

Client Name: RITC	Date Photo was Taken: 6/30/2022	Project: RITC
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Photo No. 14
Direction Photo Taken:

View is west.



Description:

COG piping is removed, quantified, quenched, and inspected.



Client Name: RITC	Date Photo was Taken: 7/18/2022	Project: RITC
Photo No. 15 Direction Photo Taken: View is west.		
Description: COG pipe removed from the main pipe rack is emptied into the quench box.		
Client Name: RITC	Date Photo was Taken: 7/22/2022	Project: RITC
Photo No. 16 Direction Photo Taken: View is south.		
Description: The exhausters from the Exhuaster building are quenched.		



Client Name: RITC	Date Photo was Taken: 9/14/2022	Project: RITC
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Photo No. 17
Direction Photo Taken:

View is north.



Description:

COG piping removed from the Ammonia Concentrator, Process Vessel PV-6.

Client Name: RITC	Date Photo was Taken: 10/5/2022	Project: RITC
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Photo No. 18
Direction Photo Taken:

View is north.



Description:

Empty COG piping removed from the Primary Cooling Tower, Process Vessel PV-1, and prepared to be quenched.



Client Name: RITC	Date Photo was Taken: 4/6/2023	Project: RITC
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Photo No. 19
Direction Photo Taken:

View is east.



Description:

The Quench Pit immediately after being dewatered.

Client Name: RITC	Date Photo was Taken: 4/7/2023	Project: RITC
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Photo No. 20
Direction Photo Taken:

View is east.



Description:

Removing debris from the Quench Pit and preparing for cleaning.



Client Name: RITC	Date Photo was Taken: 4/11/2023	Project: RITC
Photo No. 21 Direction Photo Taken: View is east.		
Description: The Quench Pit is vacuumed with a Ditch Witch and residual solids are shoveled into an excavator bucket for removal.		
Client Name: RITC	Date Photo was Taken: 4/11/2023	Project: RITC
Photo No. 22 Direction Photo Taken: View is northwest.		
Description: The typical condition of the Quench Pit. Cracks present on all walls.		



Client Name: RITC	Date Photo was Taken: 4/11/2023	Project: RITC
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Photo No. 23
Direction Photo Taken:

View is west.



Description:

The Quench Pit has been cleaned and all residuals removed.

Client Name: RITC	Date Photo was Taken: 4/11/2023	Project: RITC
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Photo No. 24
Direction Photo Taken:

View is east.



Description:

The Quench Pit has been cleaned and all residuals removed.



Appendix A: Daily Planning Inventories for COG Pipe Removal



**Table 7
Daily Planning Summary**

Work Location: _____ **Boiler House** _____

Report Date: 11/16/2021

Spotter: R. Bix

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
8	40	Pipe extending from sample 1 location on west side of boiler house. Attached to Boiler No. 7. This line contained the residuals that ignited.
8	77	Separate 8" line that also connected to Boiler No. 7.
2	4	Small part of Boiler No. 7 line system.
0	0	
0	0	
Pipe Area (in ²)	Pipe Volume (ft ³)	
50	14	
50	27	
3	0.087	
0	0	
0	0	

	Potential Volume of Residual (ft ³)		Potential Volume of Pipe (ft ³)
	41		90
15% Contingency	50	15% Contingency	104
	Minium Quench Volume (Gallons)		
	400		800
	Disposal Weight (Tons)		
	4		

Table 7
Daily Planning Summary
Work Location: _____ Boiler House _____

Report Date: __11/19/2021__

Spotter: __R. Bix__

Complete All Blue Cells Daily		
Line Diameter (inch)	Length (ft)	Notes/Location
20	68	North-south oriented line that spanned Boiler House.
10	14	First vertical pipe in from the east connecting to the main horizontal line along the ground level.
15	103	Horizontal COG line from ground level along southern face of Boiler House.
10	58	Multiple sections removed from Boiler No. 8 and ancillary sections from main horizontal line.
0	0	
Pipe Area (in²)	Pipe Volume (ft³)	
314	148	
79	8	
177	126	
79	32	
0	0	

Potential Volume of Residual (ft³)		Potential Volume of Pipe (ft³)	
	314		630
15% Contingency	370	15% Contingency	725
Minium Quench Volume (Gallons)			
	2800		5500
Disposal Weight (Tons)			
	25		

Table 7
Daily Planning Summary
Work Location: __Boiler House_____

Report Date: __12/02/2021__

Spotter: __R. Bix_____

Complete All Blue Cells Daily		
Line Diameter (inch)	Length (ft)	Notes/Location
15	8	Pipe section had been connected to eastern refractory boiler.
20	3	Pipe section had been connected to eastern refractory boiler.
8	2	Pipe section had been connected to eastern refractory boiler.
0	0	
0	0	
Pipe Area (in^2)	Pipe Volume (ft^3)	
177	10	
314	7	
50	1	
0	0	
0	0	

Potential Volume of Residual (ft^3)		Potential Volume of Pipe (ft^3)	
	17		40
15% Contingency	20	15% Contingency	46
Minium Qunch Volume (Gallons)			
	200		400
Disposal Weight (Tons)			
	2		

Table 7
Daily Planning Summary
Work Location: __Boiler House_____

Report Date: __12/14/2021__

Spotter: __R. Birx__

Complete All Blue Cells Daily		
Line Diameter (inch)	Length (ft)	Notes/Location
10	28	COG line was connected to west refractory boiler. Was exposed during demolition. Approximately 15-20% full.
0	0	
0	0	
0	0	
0	0	
Pipe Area (in²)	Pipe Volume (ft³)	
79	15	
0	0	
0	0	
0	0	
0	0	

Potential Volume of Residual (ft³)		Potential Volume of Pipe (ft³)	
	15		40
15% Contingency	20	15% Contingency	46
Minium Quench Volume (Gallons)			
	200		400
Disposal Weight (Tons)			
	2		

Table 7
Daily Planning Summary
Work Location: Battery Crossover Mains

Report Date: 02/22/2022
 Spotter: Roxanne Birx

Complete All Blue Cells Daily		
Line Diameter (inch)	Length (ft)	Notes/Location
40	64	East battery collector main, removed in 27' and 37' sections. 5% or less full of residuals. Semi-crystalline tar-like.
0	0	
0	0	
0	0	
0	0	
Pipe Area (in²)	Pipe Volume (ft³)	
1256	558	
0	0	
0	0	
0	0	
0	0	

Potential Volume of Residual (ft³)		Potential Volume of Pipe (ft³)	
	558		1120
15% Contingency	650	15% Contingency	1288
Minium Quunch Volume (Gallons)			
	4900		9700
Disposal Weight (Tons)			
	44		

Table 7
Daily Planning Summary
Work Location: Battery Crossover Mains

Report Date: 02/23/2022
 Spotter: Roxanne Birx

Complete All Blue Cells Daily		
Line Diameter (inch)	Length (ft)	Notes/Location
40	64	West Battery Crossover main. Approximately 5% full of residuals. Semi-crystalline to low viscosity tar-like residuals.
0	0	
0	0	
0	0	
0	0	
Pipe Area (in²)	Pipe Volume (ft³)	
1256	558	
0	0	
0	0	
0	0	
0	0	

Potential Volume of Residual (ft³)		Potential Volume of Pipe (ft³)	
	558		1120
15% Contingency	650	15% Contingency	1288
Minium Quunch Volume (Gallons)			
	4900		9700
Disposal Weight (Tons)			
	44		

Table 7
Daily Planning Summary
Work Location: Battery Basement

Report Date: 03/09/2022
 Spotter: Roxanne Birx

Complete All Blue Cells Daily		
Line Diameter (inch)	Length (ft)	Notes/Location
16	14	50% full, strong odor, black and brown solids
16	32	60% full, material released well
16	15	30% full, material released well
16	17.5	30% full, flowable and crystalline tar-like residuals, released well
16	9	Pipe reduced to 8 inches
16	10	20% full SAA
16	18	30% full, SAA
16	4	60% full, material released well
16	16	30% full, SAA
55	7	The Pre Heater from the Battery basement
Pipe Area (in ²)	Pipe Volume (ft ³)	
201	20	
201	45	
201	21	

201	13	
201	13	
201	14	
201	25	
201	22	
201	22	
2375	115	

Potential Volume of Residual (ft ³)		Potential Volume of Pipe (ft ³)	
	309		620
15% Contingency	360	15% Contingency	713
Minium Qunch Volume (Gallons)			
	2700		5400
Disposal Weight (Tons)			
	25		

Table 7
Daily Planning Summary
Work Location: Battery Basement

Report Date: 03/14/2022
 Spotter: Peter Zaffram

Complete All Blue Cells Daily		
Line Diameter (inch)	Length (ft)	Notes/Location
16	33	North lateral COG line from Battery basement. Approximately 75% full of tar-like solids and ice chunks. Black and rust colored.
16	32	Same as above.
16	35	Same as above.
16	35	Same as above.
16	35	Same as above.
16	10	Same as above.
16	13	Same as above.
16	27	Same as above.
16	24	Same as above.
16	14	Same as above.
Pipe Area (in ²)	Pipe Volume (ft ³)	
201	46	
201	45	
201	49	

201	49	
201	49	
201	14	
201	18	
201	33	
201	33	
201	20	

Potential Volume of Residual (ft ³)		Potential Volume of Pipe (ft ³)	
	356		720
15% Contingency	410	15% Contingency	828
Minium Qunch Volume (Gallons)			
	3100		6300
Disposal Weight (Tons)			
	28		

Table 7
Daily Planning Summary
Work Location: Broadway Pipe Rack

Report Date: 6/21/2022

Spotter: Roxanne Birx

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
24	176	Main 24 inch COG line along Broadway. Line varies from 50-70% filled with residuals. Black, low density, dry, luster (possible naphthalene crystals), strong odor, some tar-like residuals.
0	0	
0	0	
0	0	
0	0	
Pipe Area (in ²)	Pipe Volume (ft ³)	
452	553	
0	0	
0	0	
0	0	
0	0	

Potential Volume of Residual (ft ³)	Potential Volume of Pipe (ft ³)
553	1110
15% Contingency 640	15% Contingency 1277
Minium Quench Volume (Gallons)	
4800	9600
Disposal Weight (Tons)	
44	

Table 7
Daily Planning Summary
Work Location: Broadway Pipe Rack

Report Date: 06/22/2022
 Spotter: Peter Zaffram

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
24	195	Main 24 inch COG line along Broadway. Line varies from 50-70% filled with residuals. Black, low density, dry, luster (possible naphthalene crystals), strong odor, some tar-like residuals.
0	0	
0	0	
0	0	
0	0	
Pipe Area (in ²)	Pipe Volume (ft ³)	
452	612	
0	0	
0	0	
0	0	
0	0	

Potential Volume of Residual (ft ³)	Potential Volume of Pipe (ft ³)
612	1230
15% Contingency 710	15% Contingency 1415
Minium Quench Volume (Gallons)	
5400	10700
Disposal Weight (Tons)	
48	

Table 7
Daily Planning Summary
Work Location: Broadway Pipe Rack

Report Date: 06/29/2022

Spotter: Peter Zaffram

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
24	14	Approximately 50% full, black, flaky, fine grain, strong odor, low density, slight luster. Little tar-like material.
24	20	Same as above.
24	20	Same as above.
24	25	Same as above.
24	13	Same as above.
24	17	Same as above.
24	17	Same as above.
24	12	Same as above.
24	11	Same as above.
24	15	Same as above.
24	18	Same as above.
24	14	Same as above.
24	22	Same as above.
24	25	Same as above.
12	6	Same as above.
24	15	Same as above.
Pipe Area (in ²)	Pipe Volume (ft ³)	
452	44	
452	63	
452	63	
452	79	
452	41	
452	53	
452	53	
452	38	
452	35	
452	47	
452	57	
452	44	
452	69	
452	79	
113	5	
452	47	

Potential Volume of Residual (ft ³)		Potential Volume of Pipe (ft ³)	
	815		1630
15% Contingency	940	15% Contingency	1875
	Minium Quench Volume (Gallons)		
	7100		14100
	Disposal Weight (Tons)		
	64		

Table 7
Daily Planning Summary
Work Location: Broadway Pipe Rack

Report Date: 06/30/2022

Spotter: Peter Zaffram

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
24	14	Approximatley 50% full, black, flaky, fine grain, strong odor, low density, slight luster. Little tar-like material.
24	14	Same as above.
24	6	Same as above.
16	19	Same as above.
24	21	Same as above.
24	23	Same as above.
24	17	Same as above.
24	17	Same as above.
16	20	Same as above.
24	18	Same as above.
30	28	Same as above.
30	32	Same as above.
24	24	Same as above, 24" diameter reducing to 12"
24	28	Same as above
30	15	Same as above
30	24	Same as above
24	10	Same as above
24	12	Same as above
Pipe Area (in ²)	Pipe Volume (ft ³)	
452	44	
452	44	
452	19	
201	27	
452	66	
452	72	
452	53	
452	53	
201	28	
452	57	
707	137	
707	157	
452	75	
452	88	
707	74	
707	118	
452	31	
452	38	

Potential Volume of Residual (ft ³)		Potential Volume of Pipe (ft ³)	
	1181		2370
15% Contingency	1360	15% Contingency	2726
Minium Qunch Volume (Gallons)			
	10200		20500
Disposal Weight (Tons)			
	92		

Table 7
Daily Planning Summary
Work Location: Broadway Pipe Rack - Uncoated line

Report Date: 7/18/2022
 Spotter: Roxanne Birx

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
42	30	Dry black and brown residuals with luster. 5% residuals.
42	25	Empty
42	28	Empty
42	27	Empty
0	0	
Pipe Area (in ²)	Pipe Volume (ft ³)	
1385	288	
1385	240	
1385	269	
1385	260	
0	0	

Potential Volume of Residual (ft ³)	Potential Volume of Pipe (ft ³)
1058	2120
15% Contingency 1220	15% Contingency 2438
Minium Quench Volume (Gallons)	
9200	18300
Disposal Weight (Tons)	
83	

Table 7
Daily Planning Summary
Work Location: COG from Broadway

Report Date: 7/19/2022
 Spotter: Roxanne Birx

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location	
42	36	Empty	
42	27	Empty	
42	22	Empty	
42	25	Empty	
42	35	Empty	
42	25	Empty	
Pipe Area (in ²)	Pipe Volume (ft ³)		
1385	346		
1385	260		
1385	212		
1385	240		
1385	337		
1385	240		

Potential Volume of Residual (ft ³)		Potential Volume of Pipe (ft ³)	
	1635		3270
15% Contingency	1880	15% Contingency	3761
Minium Quunch Volume (Gallons)			
	14100		28300
Disposal Weight (Tons)			
	127		

Table 7
Daily Planning Summary
Work Location: COG from and around Exhauster Building

Report Date: 7/20/2022

Spotter: Roxanne Birx

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
24	6	Brown and black dry solids, flaky, with luster. Strong odor. 5% full.
24	6	Brown and black dry solids, flaky, with luster. Strong odor. 5% full.
12	6	Brown and black dry solids, flaky, with luster. Strong odor. 5% full. Drip leg.
24	20	Brown and black dry solids, flaky, with luster. Strong odor. 5% full.
24	16	Brown and black dry solids, flaky, with luster. Strong odor. 5% full.
24	4	Brown and black dry solids, flaky, with luster. Strong odor. Empty, just residual thin tar-like coating.
24	10	Brown and black dry solids, flaky, with luster. Strong odor. Empty, just residual thin tar-like coating.
Pipe Area (in ²)	Pipe Volume (ft ³)	
452	19	
452	19	
113	5	
452	63	
452	50	
452	13	
452	31	

Potential Volume of Residual (ft ³)		Potential Volume of Pipe (ft ³)	
	199		400
15% Contingency	230	15% Contingency	460
Minium Quunch Volume (Gallons)			
	1800		3500
Disposal Weight (Tons)			
	16		

Table 7
Daily Planning Summary
Work Location: COG from in and around the Exhauster Building.

Report Date: 7/21/2022
 Spotter: Roxanne Birx

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
28	15	Brown and black, low density, flakes with luster. 3% - 5% full.
24	12	Brown and black, low density, flakes with luster. 2% full.
10	18	Brown and black, low density, flakes with luster. 5% full.
28	5	Empty
24	22	Some thin tar like coating, <5% residuals.
24	20	Empty
Pipe Area (in ²)	Pipe Volume (ft ³)	
615	64	
452	38	
79	10	
615	21	
452	69	
452	63	

Potential Volume of Residual (ft ³)	Potential Volume of Pipe (ft ³)		
	265		530
15% Contingency	310	15% Contingency	610
Minium Quench Volume (Gallons)			
	2400		4600
Disposal Weight (Tons)			
	21		

Table 7
Daily Planning Summary
Work Location: COG from in and around Exhauster Building.

Report Date: 7/22/2022

Spotter: Roxanne Birx

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
28	17	Empty
28	15	Empty
28	8	Empty
28	10	Empty
28	12	Empty
24	15	Rusted COG pipe, 5% residuals.
24	12	Fiberglass COG line, empty.
Pipe Area (in ²)	Pipe Volume (ft ³)	
615	73	
615	64	
615	34	
615	43	
452	38	

Potential Volume of Residual (ft ³)	Potential Volume of Pipe (ft ³)
251	510
15% Contingency 290	15% Contingency 587
Minium Quunch Volume (Gallons)	
2200	4400
Disposal Weight (Tons)	
20	

Table 7
Daily Planning Summary
Work Location: By Products connecting COG to scrubbers

Report Date: 08/23/2022
 Spotter: Peter Zafram

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
30	32	Process vessel supply piping and connecting piping. Realitvly clear, 1-5% full of residuals.
30	30	Process vessel supply piping and connecting piping. Realitvly clear, 1-5% full of residuals.
30	34	Process vessel supply piping and connecting piping. Realitvly clear, 1-5% full of residuals.
36	6	Process vessel supply piping and connecting piping. Realitvly clear, 1-5% full of residuals.
36	16	Process vessel supply piping and connecting piping. Realitvly clear, 1-5% full of residuals.
30	14	Process vessel supply piping and connecting piping. Realitvly clear, 15% full of residuals.
30	22	Process vessel supply piping and connecting piping. Realitvly clear, 10% full of residuals.
30	23	Process vessel supply piping and connecting piping. Realitvly clear, 1-5% full of residuals.
Pipe Area (in ²)	Pipe Volume (ft ³)	
0	0	
707	157	
707	147	
707	167	
1017	42	
1017	113	
707	69	
707	108	
707	113	

Potential Volume of Residual (ft ³)		Potential Volume of Pipe (ft ³)	
	513		1030
15% Contingency	600	15% Contingency	1185
Minium Quunch Volume (Gallons)			
	4500		8900
Disposal Weight (Tons)			
	41		

Table 7
Daily Planning Summary
Work Location: COG Lines from Ammonia Concentrators

Report Date: 8/25/2022
 Spotter: Roxanne Birx

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
36	10	COG removed from Ammonia Concentrators area. 10% full, dry, low-density brown and black material.
36	13	COG removed from Ammonia Concentrators area. 10% full, dry, low-density brown and black material.
36	27	COG removed from Ammonia Concentrators area. 10% full, dry, low-density brown and black material.
36	11	COG removed from Ammonia Concentrators area. 10% full, dry, low-density brown and black material.
36	25	COG removed from Ammonia Concentrators area. 10% full, dry, low-density brown and black material.
20	6	COG drip leg removed from Ammonia Concentrators area. 100% full of tar like residuals.
20	16	COG removed from Ammonia Concentrators area. 10% full, dry, low-density brown and black material.
36	6	COG removed from Ammonia Concentrators area. 10% full, dry, low-density brown and black material.
36	4	COG removed from Ammonia Concentrators area. 10% full, dry, low-density brown and black material.
Pipe Area (in ²)	Pipe Volume (ft ³)	
1017	71	
1017	92	
1017	191	
1017	78	
1017	177	
314	13	
314	35	
1017	42	
1017	28	

Potential Volume of Residual (ft ³)		Potential Volume of Pipe (ft ³)	
	608		1220
15% Contingency	700	15% Contingency	1403
Minium Quench Volume (Gallons)			
	5300		10600
Disposal Weight (Tons)			
	48		

Table 7
Daily Planning Summary
Work Location: Ammonia Concentrator (PV-7)

Report Date: 9/13/2022
 Spotter: Roxanne Birx

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
36	60	Vertical COG on PV-7, Empty.
0	0	
0	0	
0	0	
0	0	
Pipe Area (in ²)	Pipe Volume (ft ³)	
1017	424	
0	0	
0	0	
0	0	
0	0	

Potential Volume of Residual (ft ³)		Potential Volume of Pipe (ft ³)	
	424		850
15% Contingency	490	15% Contingency	978
Minium Qunch Volume (Gallons)			
	3700		7400
Disposal Weight (Tons)			
	34		

Table 7
Daily Planning Summary
Work Location: Ammonia Concentrator (PV-6)

Report Date: 9/14/2022
 Spotter: Roxanne Birx

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
36	25	Vertical COG on PV-6, Empty.
0	0	
0	0	
0	0	
0	0	
Pipe Area (in ²)	Pipe Volume (ft ³)	
1017	177	
0	0	
0	0	
0	0	
0	0	

Potential Volume of Residual (ft ³)	Potential Volume of Pipe (ft ³)
177	360
15% Contingency 210	15% Contingency 414
Minium Quench Volume (Gallons)	
1600	3200
Disposal Weight (Tons)	
15	

Table 7
Daily Planning Summary
Work Location: Ammonia Concentrator (PV-4, PV-5)

Report Date: 9/15/2022
 Spotter: Roxanne Birx

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
36	50	Vertical COG on PV-4 and PV-5, Empty.
0	0	
0	0	
0	0	
0	0	
Pipe Area (in ²)	Pipe Volume (ft ³)	
1017	353	
0	0	
0	0	
0	0	
0	0	

Potential Volume of Residual (ft ³)	Potential Volume of Pipe (ft ³)		
	353		710
15% Contingency	410	15% Contingency	817
Minium Qunch Volume (Gallons)			
	3100		6200
Disposal Weight (Tons)			
	28		

Table 7
Daily Planning Summary
Work Location: Secondary Cooler (PV-2)

Report Date: 9/20/2022
 Spotter: Roxanne Birx

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
36	50	Vertical COG on PV-2, Empty.
0	0	
0	0	
0	0	
0	0	
Pipe Area (in ²)	Pipe Volume (ft ³)	
1017	353	
0	0	
0	0	
0	0	
0	0	

Potential Volume of Residual (ft ³)	Potential Volume of Pipe (ft ³)
353	710
15% Contingency 410	15% Contingency 817
Minium Quench Volume (Gallons)	
3100	6200
Disposal Weight (Tons)	
28	

Table 7
Daily Planning Summary
Work Location: Primary Cooler (PV-1)

Report Date: 10/05/2022
 Spotter: Roxanne Birx

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
36	75	Vertical COG on PV-1, Empty.
0	0	
0	0	
0	0	
0	0	
Pipe Area (in ²)	Pipe Volume (ft ³)	
1017	530	
0	0	
0	0	
0	0	
0	0	

Potential Volume of Residual (ft ³)	Potential Volume of Pipe (ft ³)
530	1060
15% Contingency 610	15% Contingency 1219
Minium Quench Volume (Gallons)	
4600	9200
Disposal Weight (Tons)	
42	

Table 7
Daily Planning Summary
Work Location: Light Oil Scrubber (PV-10)

Report Date: 10/20/2022
 Spotter: Roxanne Birx

Complete All Blue Cells Daily

Line Diameter (inch)	Length (ft)	Notes/Location
36	100	Vertical COG on PV-10, <5% full.
0	0	
0	0	
0	0	
0	0	
Pipe Area (in ²)	Pipe Volume (ft ³)	
1017	707	
0	0	
0	0	
0	0	
0	0	

Potential Volume of Residual (ft ³)	Potential Volume of Pipe (ft ³)		
	707		1420
15% Contingency	820	15% Contingency	1633
Minium Qunch Volume (Gallons)			
	6200		12300
Disposal Weight (Tons)			
	56		

Appendix B: Waste Manifests



FOR STATE USE ONLY		
SITE NO. 32S30	APPLICATION NO.	DATE RECEIVED
DEPARTMENT ACTION		DATE
<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	

**APPLICATION FOR TREATMENT OR DISPOSAL
 OF AN INDUSTRIAL WASTE STREAM**
SEE APPLICATION INSTRUCTIONS ON REVERSE SIDE



1. NAME OF PROJECT/FACILITY MODERN LANDFILL, INC.	2. COUNTY NIAGARA	3. SITE NUMBER 32S30
4. NAME OF OWNER RICHARD WASHUTA	5. ADDRESS (Street, City, State, Zip Code) 4746 Model City Road, Model City, NY 14107	6. TELEPHONE NO. (716) 754-8226
6. NAME OF OPERATOR RICHARD WASHUTA	8. ADDRESS (Street, City, State, Zip Code) Pletcher & Harold Road, Model City, NY 14107	9. TELEPHONE NO. (716) 754-8226
10. METHOD OF TREATMENT OR DISPOSAL SANITARY LANDFILL - D90		
11. COMPANY GENERATING WASTE Riverview Innovation & Technology Campus		12. ADDRESS OF FACILITY GENERATING WASTE (Street, City, State, Zip Code) 3875 River Road, Tonawanda NY 14150
13. REPRESENTATIVE OF WASTE GENERATOR John Yensan	14. MAILING ADDRESS OF REPRESENTATIVE 140 Lee Street, Suite 200, Buffalo, NY 14210	15. TELEPHONE NO. 716-583-4400
16. DESCRIPTION OF PROCESS PRODUCING WASTE: Residual material from inside piping, coal/coke breeze, and soil from the surrounding area.		
17. EXPECTED ANNUAL WASTE PRODUCTION one-time	18. WASTE HAULED IN <input type="checkbox"/> Drums <input checked="" type="checkbox"/> Bulk Tank <input type="checkbox"/> Roll-Off Container <input type="checkbox"/> Other	
19. WASTE COMPOSITION 19A. Average Percent Solids 100	19b. Physical State <input type="checkbox"/> Liquid <input type="checkbox"/> Slurry <input type="checkbox"/> Sludge <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Contained Gas	19c. pH Range to
19d. COMPONENTS	CONCENTRATION (Dry Weight) Upper Lower Typical	
1) soil	60	30
2) residuals	20	0
3) coal/coke breeze	40	0
4)		
20. IS AN ANALYSIS OF WASTE ATTACHED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	21. WAS A TCLP TEST CONDUCTED ON THE WASTE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If "yes",	22. MATERIAL IS: <input type="checkbox"/> Hazardous <input checked="" type="checkbox"/> Non-Hazardous
23. DETAIL ALL HAZARD AND NUISANCE PROBLEMS ASSOCIATED WITH THE WASTES. List necessary safety, handling, treatment and disposal precautions.		
24. WHERE WAS MATERIAL DISPOSED OF PREVIOUSLY? N/A		
25. NAME OF WASTE TRANSPORTER Geiter Done	26. ADDRESS (Street, City, State, Zip Code) 300 Green Street, Buffalo NY	27. NYSDEC PERMIT No.
29. CERTIFICATION I hereby affirm under penalty of perjury that information provided on this form and attached statements and exhibits is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.		28. TELEPHONE NO.
a. SIGNATURE AND TITLE OF REPRESENTATIVE OF WASTE GENERATOR <i>John Yensan</i>		DATE
b. SIGNATURE AND TITLE OF REPRESENTATIVE OF TREATMENT OR DISPOSAL FACILITY		DATE

MODERN LANDFILL, INC
PO BOX 209
MODEL CITY, NY 14107



GENERATOR WASTE CHARACTERIZATION REPORT

To The Waste Generator:

This package contains the forms required to gain approval for disposal of acceptable waste at Modern Landfill, Inc. If you should require assistance completing this form, please contact this office.

1. Fully complete this Generator Waste Characterization Form and sign the certifications.
2. Return completed form along with the proper analytical data to this office. Please note: a NYS Certified Laboratory must complete all analysis, **and package must contain all QA/QC information along with the chain of custody.**
3. Modern Landfill must be in receipt of the Hauler's Certificate of Insurance and copy of approved Part 364 prior to waste shipment.
4. Out of State Generators using the NYS Hazardous Waste Manifest must have the manifest approved by this office prior to shipment.
5. A copy of the 47-19-7 Application will be forwarded to you upon approval of the waste by Modern Landfill. The application number provided on the approved 47-19-7 form is necessary to schedule at Modern Landfill.
6. Faxed copies of applications will not be accepted. Original Signatures only!!
7. Annual updates are required for on-going waste streams only and should include this form and analysis. One-time only approvals, generic or 47-19-7 applications are not required to be updated. The paperwork should be submitted 30 days prior to the expiration of the approval (one year from date approved) to insure no lapse in approval occurs. To further assist you, we will enclose a copy of the 47-19-7 application that requires updating.

Scheduling: To schedule an approved waste into the landfill, please contact the Landfill Scalehouse at (800) 622-0012. Please provide the approval number located in the upper right hand corner of the approved 47-19-7 application when scheduling.

If you are not an existing customer or need assistance with transportation, please contact our Sales Department prior to scheduling.

TELEPHONE: (800) 662 -0012

FAX: (716) 754-2355

GENERATOR WASTE CHARACTERIZATION REPORT

INSTRUCTIONS: The following form is required for disposal of non-hazardous industrial/commercial wastes at Modern Landfill. Please complete all sections of this report. Send completed report along with the analytical, chain of custody and the Application for Disposal of and Industrial Waste Stream (47-19-7) to this office. A separate form is required for each waste stream.

GENERATOR INFORMATION:

Generator Name: Riverview Innovation & Technology Campus

Generating Facility Address: 3875 River Road, Tonawanda NY 14150

Technical Contact: John Yensan Phone: 716-583-4400

Alternate Contact: _____ Phone: _____

INVOICING INFORMATION:

Contracting Firm: Ontario Specialty Contracting

Contact: Dan Flanigan Phone: 716-560-3006

Do you have an existing account with Modern Landfill? Yes No

Billing Address: 140 Lee Street, Suite 200, Buffalo NY 14210

TRANSPORTER INFORMATION:

Hauler Name: Geiter Done of WNY NYSDEC Permit No: _____

Contact Person: _____ Phone: _____

Is Modern Landfill currently on your Transporter Permit? Yes No

If no, please enclose a Part C Application to cover this waste stream.

WASTE INFORMATION:

Common name of waste: _____

Description of process generating this waste: Residual material scrapped up from the ground surface

Is this waste hazardous under USEPA Guidelines & 6NYCRR Part 371 (d)? Yes No

Indicate the category which best describes this waste stream:

Industrial Waste
Household Waste
Commercial Solid Waste

Construction & Demolition Debris
Other (Please Specify) _____

PHYSICAL CHARACTERISTICS OF WASTE

The waste is at least 20% solid and contains no free liquid	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
The flashpoint of the waste is > 140 F	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
The pH level of the waste is between 2.0 and 12.5	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Is the waste reactive (Cyanide/ Sulfide)?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
Is the waste free of PCB's?	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Color:		<input type="checkbox"/>	Strong	<input type="checkbox"/>
		<input type="checkbox"/>	Mild	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	None	<input type="checkbox"/>

TCLP TESTING AND CERTIFICATION

METALS

CONSTITUENT	NONHAZARDOUS LIMIT (mg/l)	PRESENT	NOT PRESENT
ARSENIC	5.0		x
BARIUM	100.0		x
CADMIUM	1.0		x
CHROMIUM	5.0		x
LEAD	5.0		x
MERCURY	0.2		x
SELENIUM	1.0		x
SILVER	5.0		x

HERBICIDES/ PESTICIDES

CONSTITUENT	NONHAZARDOUS LIMIT (mg/l)	PRESENT	NOT PRESENT
2,4-D	10.0		x
2,4,5 -TP (SILVEX)	1.0		x
ENDRIN	0.02		x
LINDANE	0.4		x
METHOXYCHLOR	10.0		x
TOXAPHENE	0.5		x
CHLORDANE	0.03		x
HEPTACHLOR	0.008		x

ACID EXTRACTABLES

CONSTITUENT	NONHAZARDOUS LIMIT (mg/l)	PRESENT	NOT PRESENT
O-CREOSOL	200.0		x
M-CREOSOL	200.0		x
P-CREOSOL	200.0		x
PENTACHLOROPHENOL	100.0		x
2, 4,5-TRICHLOROPHENOL	400.0		x
2,4,6-TRICHLOROPHENOL	2.0		x

BASE NEUTRALS EXTRACTABLES

CONSTITUENT	NONHAZARDOUS LIMIT (mg/l)	PRESENT	NOT PRESENT
1,4 DICHLOROENZENE	7.5		x
2, 4 DINITROTOLUENE	0.13		x
HEXACHLOROENZENE	0.13		x
HEXACHLOROBUTADIENE	0.5		x
HEXACHLOROETANE	3		x
NITROBENZENE	2		x
PYRIDINE	5		x

**VOLATILE ORGANICS
CERTIFICATION:**

CONSTITUENT	NONHAZARDOUS LIMIT (mg/l)	PRESENT	NOT PRESENT
1,1 DICHLOROETHYLENE	0.7		x
METHYL ETHYL KETONE	200.0		x
TETRACHLOROETHYLENE	0.7		x
VINYL CHLORIDE	0.2		x
BENZENE	0.5		x
CARBON TETRACHLORIDE	0.5		x
CHLOROFORM	6.0		x
TRICHLOROETHYLENE	0.5		x
1,2 DICHLOROETHANE	0.5		x
CHLOROBENZENE	100.0		x

I CERTIFY THAT ALL INFORMATION CONTAINED WITHIN THIS GENERATOR WASTE CHARACTERIZATION REPORT, INCLUDING ALL ATTACHED INFORMATION, IS COMPLETE AND ACTUAL AND IS AN ACCURATE REPRESENTATION OF KNOWN OR SUSPECTED HAZARDS DESCRIBED HEREIN.

SIGNATURE: 

PRINTED NAME: John Yensan

TITLE: Secretary

COMPANY: Riverview Innovation & Technology Campus

DATE: 05/09/22

Roxanne Vandermeulen

From: Kirsten Colligan <kcolligan@oscinc.com>
Sent: Tuesday, September 23, 2025 4:42 PM
To: Roxanne Vandermeulen
Subject: FW: waste profile submittal
Attachments: Updated-Solid-Waste-Mixing pad residuals.pdf; Updated-Solid-Waste-Mixing pad residuals GWCR.pdf

All they sent me was an email approval. Please see below. I did attached the profiles that were signed as well.

Kirsten Colligan

Project Manager

[C 716.574.6936](tel:716.574.6936)

From: Krysta Cione kcione@modern-corp.com
Sent: Monday, May 16, 2022 2:45 PM
To: Kirsten Colligan <kcolligan@oscinc.com>
Cc: Dan Flanigan <dflanigan@oscinc.com>; Mike Gullo <mike@modern-corp.com>; Nathan Duncan <nduncan@modern-corp.com>; Kevin O'Neil <kevino@modern-corp.com>
Subject: RE: waste profile submittal

CAUTION: This email originated from outside of the organization. Do not click links, open attachments, or reply unless you recognize the sender and know the content is safe.

Hi Kirsten,

Sorry for the delay. This waste is approved on a one-time basis under approval no. M22-3419.

Thanks,
Krysta

Krysta Cione

Environmental Protection Manager

DIRECT: (716) 754-8226 x245 | MOBILE: (724) 866-7621

From: Kirsten Colligan <kcolligan@oscinc.com>
Sent: Monday, May 16, 2022 9:01 AM
To: Mike Gullo <mike@modern-corp.com>
Cc: Krysta Cione <kcione@modern-corp.com>; Dan Flanigan <dflanigan@oscinc.com>
Subject: FW: waste profile submittal

Good morning Mike,

I was wondering if there was anything else you needed from me for the attached profile request.

Thanks,

Kirsten Colligan

Project Manager
C [716.574.6936](tel:716.574.6936)



Safety. Environmental Stewardship. Innovative Contracting Solutions.
The OSC Group



Please consider the environment before printing this e-mail.

From: Kirsten Colligan
Sent: Monday, May 9, 2022 5:13 PM
To: 'Mike Gullo' <mike@modern-corp.com>
Cc: Krysta Cione <kcione@modern-corp.com>; 'Kevin O'Neil' <kevino@modern-corp.com>; Dan Flanigan <dflanigan@oscinc.com>
Subject: waste profile submittal

Good afternoon Mike,

Please see attached profile for nonhazardous waste. We have approximately 250 yards of material stockpiled for disposal. The material passes paint filter and I have attached the laboratory reports for your review.

Please let me know if you need anything else or if you have any questions.

Hope you had a great weekend.

Kirsten Colligan

Project Manager
C [716.574.6936](tel:716.574.6936)



Safety. Environmental Stewardship. Innovative Contracting Solutions.
The OSC Group



Please consider the environment before printing this e-mail.

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MODERN Corporation

1445 Pletcher Road
 Model City, NY 14107
 (716) 754-8226



Ticket: 1003195353
 Date: 5/19/2022
 Time: 11:07:36 - 11:09:52
 Scale

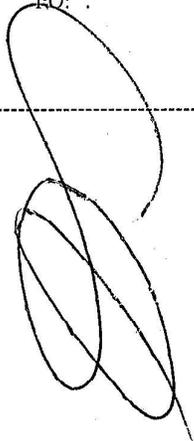
Gross: 54460 POU In Scale 1-INBOI
 Tare: 27460 POU P.T.
 Nct: 27000 POU

Truck: PARISO-38
 Customer: 0005730123/OSC TONAWANDA COKE
 Carrier: PARI-002/Pariso Hauling

Truck Type: TA
 Route: PARISO/PARISO
 Profile: M22-3419/RITC - OSC - TONAWAND Manifest: 14504
 PO: .

Generator: 0005730123/OSC TONAWANDA COKE
 Service Site:
 Comment:

Origin	Materials & Services	Quantity	Unit
141600/Tonawanda, City Of	DC DEC Approved Waste	13.50	TON



Driver: _____

Weighmaster: Michelle Petrea

4-
 3-
 5-
 1-
 VPO LSP
 1- STB-TSO
 VPO LSP

4-
 3-
 3-
 1- HOME
 (HOME)

COUNTY REG:
 TRACING (CUTTER MARK ID REG)
 SE HOME REGULATORY CONCEPT



NON-HAZARDOUS WASTE & ASBESTOS WASTE SHIPMENT RECORDS

If waste is asbestos waste, complete Sections I, II, III and IV
If waste is **NOT** asbestos waste, complete Sections I, II and III

2

0014504

Section I GENERATOR (Generator completes Section I, a-q)

a: Generator's US EPA ID Number:		b: Manifest Document Number: 0014504	
c: Generator's Name and Location: Riverview Innovation Technology Campus 3875 River Road Tonawanda, New York 14150		e: Generator's Mailing Address: Riverview Innovation Technology Campus 140 Lee Street, Suite 200 Buffalo, New York 14120	
d: Generators Phone: 716-583-4400		f: Phone:	
If owner of the generating facility differs from the generator, provide: g. Owner's Name:		h. Owner's Phone:	

i. Waste Profile #:	j. Exp. Date	k. Waste Shipping Name and Description	l. Containers		m. Total Quantity	n. Unit Wt/Vol
			No.	Type		
M22-3419	5/9/23	Soil / Residuals / Coal	1	CM	20	Tons

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.

<i>Kirsten Colligan</i> on behalf of RITC	<i>[Signature]</i> on behalf of RITC	05/19/22
o. Generator Authorized Agent Name (Print)	p. Signature	q. Date

Section II TRANSPORTER (Generator completes Sec. II, a-b; Transporter completes Sec. II, c-e)

a: Transporter's Name and Address: Pariso Logistics 3649 River Rd Buffalo NY 14150		
b: Phone:		
<i>Sherman M Abdallah</i>	<i>[Signature]</i>	5-19-22
c. Transporter Authorized Agent Name (Print)	d. Signature	e. Date

Section III DESTINATION (Generator completes Sec. III, a-c; Destination Site completes Sec. III, d-g)

a: Disposal Facility and Site Address: Modern Landfill, Inc. 1445 Pletcher Rd. Model City, NY 14107		c: US EPA Number	d: Discrepancy Indication Space:
b: Phone: 716-754-8226			
I hereby certify that the above named material has been accepted and to the best of my knowledge, the foregoing is true and accurate.			
<i>Michelle Petru</i>	<i>Michelle Petru</i>	5/19/22	
e: Authorized Agent Name (Print)	f. Signature	g. Date	

Section IV ASBESTOS (Generator completes Sec. IV, a-d; Operator completes Sec. IV, e-g)

a: Operator's Name and Address:		c: Special Handling Instructions and Additional Information:	
b: Phone:			
d: Friable, Non-Friable or Both:		e: Percentage Friable/NonFriable: 0% Friable and 0% Non-Friable	
OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.			
e. Operator's Name and Title (Print)		f. Signature	
		g. Date	
*Operator refers to the company which owns, leases, operates, controls or supervises the facility being demolished or renovated, or the demolition or renovation operation or both.			

DESTINATION RETURN

MODERN Corporation

1445 Pletcher Road
Model City, NY 14107
(716) 754-8226



Ticket: 1003195365
Date: 5/19/2022
Time: 11:21:17 - 11:21:48
Scale

Gross: 51900 POU In Scale 1-INBOI
Tare: 26980 POU P.T.
Net: 24920 POU

Truck: PARISO-36
Customer: 0005730123/OSC TONAWANDA COKE
Carrier: PARI-002/Pariso Hauling

Truck Type: TA

Profile: M22-3419/RITC - OSC - TONAWAND Manifest: 14505

PO: .

Generator: 0005730123/OSC TONAWANDA COKE

Service Site:

Comment:

Origin	Materials & Services	Quantity	Unit
141600/Tonawanda, City Of	DC DEC Approved Waste	12.46	TON

Driver:

Jaquan B

Weighmaster: Michelle Petrea



NON-HAZARDOUS WASTE & ASBESTOS WASTE SHIPMENT RECORDS

If waste is asbestos waste, complete Sections I, II, III and IV
If waste is **NOT** asbestos waste, complete Sections I, II and III

0014505

Section I GENERATOR (Generator completes Section I, a-q)

a: Generator's US EPA ID Number:		b: Manifest Document Number: 0014505			
c: Generator's Name and Location: Riverview Innovation Technology Campus 3875 River Road Tonawanda, New York 14150		e: Generator's Mailing Address: Riverview Innovation Technology Campus 140 Lee Street, Suite 200 Buffalo, New York 14120			
d: Generators Phone: 716-583-4400		f: Phone:			
If owner of the generating facility differs from the generator, provide: g. Owner's Name:		h. Owner's Phone:			
i. Waste Profile #: M22-3419	j. Exp. Date: 5/9/23	k. Waste Shipping Name and Description: Soil / Residuals / Coal	l. Containers: No. Type 1 CM		m. Total Quantity: 20 n. Unit Wt/Vol: Tons

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.

o. Generator Authorized Agent Name (Print): Kirsten Colligan on behalf of RITC	p. Signature: <i>[Signature]</i> on behalf of RITC	q. Date: 05/19/22
---	---	-----------------------------

Section II TRANSPORTER (Generator completes Sec. II, a-b; Transporter completes Sec. II, c-e)

a: Transporter's Name and Address: Paris Logistics 3649 River Rd Tonawanda NY 14150		
b: Phone:		
c. Transporter Authorized Agent Name (Print): Juan B	d. Signature: <i>[Signature]</i>	e. Date: 5.19.22

Section III DESTINATION (Generator completes Sec. III, a-c; Destination Site completes Sec. III, d-g)

a: Disposal Facility and Site Address: Modern Landfill, Inc. 1445 Pletcher Rd. Model City, NY 14107		c: US EPA Number:	d: Discrepancy Indication Space:
b: Phone: 716-754-8226			
I hereby certify that the above named material has been accepted and to the best of my knowledge, the foregoing is true and accurate.			
e: Authorized Agent Name (Print): Michelle Petrea	f. Signature: <i>[Signature]</i>	g. Date: 5/19/22	

Section IV ASBESTOS (Generator completes Sec. IV, a-d; Operator completes Sec. IV, e-g)

a: Operator's Name and Address:		c: Special Handling Instructions and Additional Information:	
b: Phone:			
d: Friable, Non-Friable or Both:		e: Percentage Friable/NonFriable: 0% Friable and 0% Non-Friable	
OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.			
e. Operator's Name and Title (Print)		g. Date	
f. Signature			

*Operator refers to the company which owns, leases, operates, controls or supervises the facility being demolished or renovated, or the demolition or renovation operation or both.

DESTINATION RETURN

MODERN Corporation

1445 Pletcher Road
Model City, NY 14107
(716) 754-8226



Ticket: 1003195428
Date: 5/19/2022
Time: 12:39:41 - 12:40:18
Scale

Gross: 55880 POU In Scale 1-INBOI
Tare: 27460 POU P.T.
Net: 28420 POU

Truck: PARISO-38
Customer: 0005730123/OSC TONAWANDA COKE
Carrier: MDS-001/MODERN DISPOSAL

Truck Type: TA
Route: PARISO/PARISO
Profile: M22-3419/RITC - OSC - TONAWAND Manifest: 14506

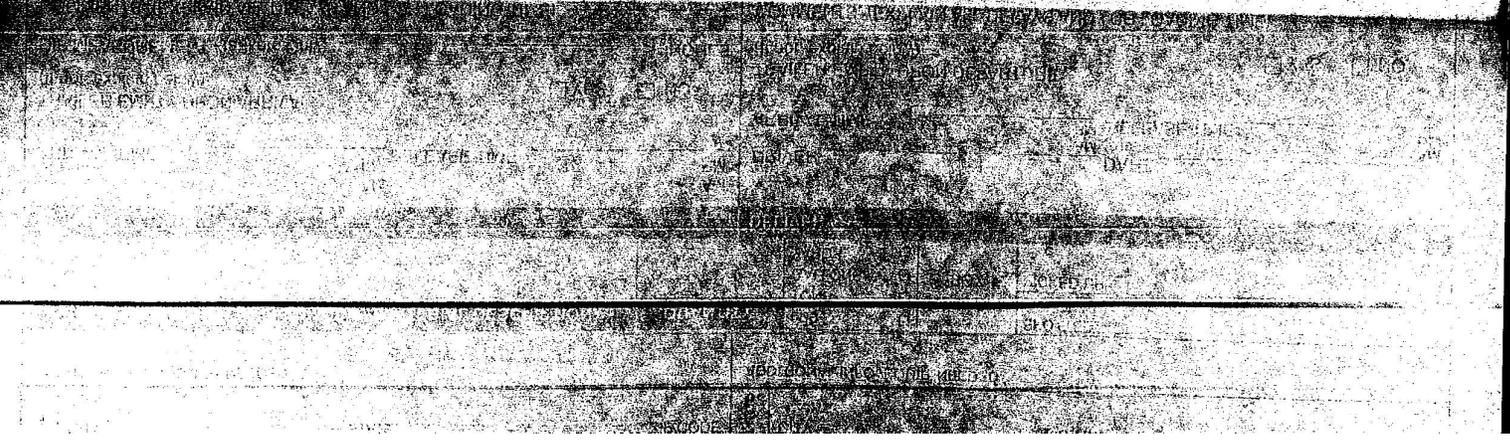
Generator: 0005730123/OSC TONAWANDA COKE
Service Site:
Comment:

PQ:

Origin	Materials & Services	Quantity	Unit
141600/Tonawanda, City Of	DC Industrial Waste - General	14.21	TON

Driver: _____

Weighmaster: Michelle Petrea



If waste is asbestos waste, complete Sections I, II, III and IV
If waste is NOT asbestos waste, complete Sections I, II and III

3

0014506

Section I GENERATOR (Generator completes Section I, a-q)

a: Generator's US EPA ID Number:		b: Manifest Document Number: 0014506	
c: Generator's Name and Location: Riverview Innovation Technology Campus 3875 River Road Tonawanda, New York 14150		e: Generator's Mailing Address: Riverview Innovation Technology Campus 140 Lee Street, Suite 200 Buffalo, New York 14120	
d: Generators Phone: 716-583-4400		f: Phone:	
If owner of the generating facility differs from the generator, provide: g. Owner's Name:		h. Owner's Phone:	

i. Waste Profile #:	j. Exp. Date	k. Waste Shipping Name and Description	l. Containers		m. Total Quantity	n. Unit Wt/Vol
			No.	Type		
M22-3419	5/9/23	Soil / Residuals / Coal	1	CM	20	Tons

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.

<i>Kirsten Colligan</i> on behalf of RITC	<i>[Signature]</i> on behalf of RITC	05/19/22
o. Generator Authorized Agent Name (Print)	p. Signature	q. Date

Section II TRANSPORTER (Generator completes Sec. II, a-b; Transporter completes Sec. II, c-e)

a: Transporter's Name and Address: Pariso Logistics 3649 River Rd Tonawanda NY 14150		
b: Phone:		
<i>Sherman M. Abdallah</i>	<i>[Signature]</i>	5-19-22
c. Transporter Authorized Agent Name (Print)	d. Signature	e. Date

Section III DESTINATION (Generator completes Sec. III, a-c; Destination Site completes Sec. III, d-g)

a: Disposal Facility and Site Address: Modern Landfill, Inc. 1445 Pletcher Rd. Model City, NY 14107		c: US EPA Number	d: Discrepancy Indication Space:
b: Phone: 716-754-8226			
I hereby certify that the above named material has been accepted and to the best of my knowledge, the foregoing is true and accurate.			
<i>Nathan Duncanson</i>	<i>[Signature]</i>	5-19-22	
e. Authorized Agent Name (Print)	f. Signature	g. Date	

Section IV ASBESTOS (Generator completes Sec. IV, a-d; Operator completes Sec. IV, e-g)

a: Operator's Name and Address:		c: Special Handling Instructions and Additional Information:	
b: Phone:			
d: Friable, Non-Friable or Both:		e: Percentage Friable/NonFriable: 0% Friable and 0% Non-Friable	
OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.			
e. Operator's Name and Title (Print)		g. Date	
f. Signature			

*Operator refers to the company which owns, leases, operates, controls or supervises the facility being demolished or renovated, or the demolition or renovation operation or both.

DESTINATION RETURN

MODERN Corporation

1445 Pletcher Road
Model City, NY 14107
(716) 754-8226



Ticket: 1003195449
Date: 5/19/2022
Time: 13:02:54 - 13:03:19
Scale

Gross: 57580 POU In Scale 1-INBOI
Tare: 27460 POU P.T.
Net: 30120 POU

Truck: PARISO-38
Customer: 0005730123/OSC TONAWANDA COKE
Carrier: PARI-002/Pariso Hauling

Truck Type: TA
Route: PARISO/PARISO
Profile: M22-3419/RITC - OSC - TONAWAND Manifest: 14507
PO: .

Generator: 0005730123/OSC TONAWANDA COKE
Service Site:
Comment:

Origin	Materials & Services	Quantity	Unit
141600/Tonawanda, City Of	DC Industrial Waste - General	15.06	TON

Driver:

Jaquan B

Weighmaster: Michelle Petrea



NON-HAZARDOUS WASTE & ASBESTOS WASTE SHIPMENT RECORDS

If waste is asbestos waste, complete Sections I, II, III and IV
If waste is **NOT** asbestos waste, complete Sections I, II and III

0014507

Section I GENERATOR (Generator completes Section I, a-q)

a: Generator's US EPA ID Number:		b: Manifest Document Number: 0014507				
c: Generator's Name and Location: Riverview Innovation Technology Campus 3875 River Road Tonawanda, New York 14150		e: Generator's Mailing Address: Riverview Innovation Technology Campus 140 Lee Street, Suite 200 Buffalo, New York 14120				
d: Generators Phone: 716-583-4400		f: Phone:				
If owner of the generating facility differs from the generator, provide: g. Owner's Name:		h. Owner's Phone:				
i. Waste Profile #:	j. Exp. Date	k. Waste Shipping Name and Description	l. Containers		m. Total Quantity	n. Unit Wt/Vol
			No.	Type		
M22-3419	5/9/23	Soil / Residuals / Coal	1	CM	20	Tons
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.						
o. Generator Authorized Agent Name (Print) Kirsten Colligan on behalf of RITC		p. Signature <i>KC</i> on behalf of RITC			q. Date 05/19/22	

Section II TRANSPORTER (Generator completes Sec. II, a-b; Transporter completes Sec. II, c-e)

a: Transporter's Name and Address: Paris Logistics 3649 River Rd Tonawanda NY 14150		
b: Phone:		
c. Transporter Authorized Agent Name (Print) Jaquan Brown	d. Signature <i>Jaquan B</i>	
e. Date		

Section III DESTINATION (Generator completes Sec. III, a-c; Destination Site completes Sec. III, d-g)

a: Disposal Facility and Site Address: Modern Landfill, Inc. 1445 Pletcher Rd. Model City, NY 14107		c: US EPA Number	d: Discrepancy Indication Space:
b: Phone: 716-754-8226			
I hereby certify that the above named material has been accepted and to the best of my knowledge, the foregoing is true and accurate.			
e: Authorized Agent Name (Print) Michelle Petrea		f. Signature <i>Michelle Petrea</i>	
		q. Date 5/19/22	

Section IV ASBESTOS (Generator completes Sec. IV, a-d; Operator completes Sec. IV, e-g)

a: Operator's Name and Address:		c: Special Handling Instructions and Additional Information:	
b: Phone:			
d: Friable, Non-Friable or Both:		e: Percentage Friable/NonFriable: 0% Friable and 0% Non-Friable	
OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.			
e. Operator's Name and Title (Print)		f. Signature	
		g. Date	
*Operator refers to the company which owns, leases, operates, controls or supervises the facility being demolished or renovated, or the demolition or renovation operation or both.			

DESTINATION RETURN

MODERN Corporation

1445 Pletcher Road
 Model City, NY 14107
 (716) 754-8226



Ticket: 1003195511
 Date: 5/19/2022
 Time: 14:12:24 - 14:13:40
 Scale

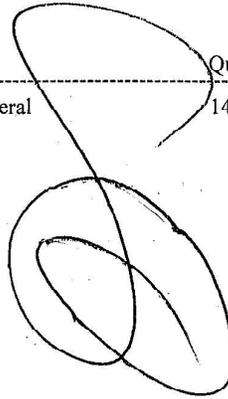
Gross: 57160 POU In Scale 1-INBOI
 Tare: 27460 POU P.T.
 Net: 29700 POU

Truck: PARISO-38
 Customer: 0005730123/OSC TONAWANDA COKE
 Carrier: MDS-001/MODERN DISPOSAL

Truck Type: TA
 Route: PARISO/PARISO
 Profile: M22-3419/RITC - OSC - TONAWAND Manifest: 14508
 PO: .

Generator: 0005730123/OSC TONAWANDA COKE
 Service Site:
 Comment:

Origin	Materials & Services	Quantity	Unit
141600/Tonawanda, City Of	DC Industrial Waste - General	14.85	TON



Driver: _____

Weighmaster: Michelle Petrea

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 100-

CONCRETE BRUSH
 THERMOSEAL (CUTTING BRUSH ID 100)
 TO MORE EFFICIENTLY CONCRETE

HOW MANY HOW DOZ. 077 87800

MOQUJ GTEA' NA T0701 370-100-8350



ERN NON-HAZARDOUS WASTE & ASBESTOS WASTE SHIPMENT RECORDS

If waste is asbestos waste, complete Sections I, II, III and IV
If waste is **NOT** asbestos waste, complete Sections I, II and III

4

0014508

Section I GENERATOR (Generator completes Section I, a-q)

a: Generator's US EPA ID Number:		b: Manifest Document Number: 0014508				
c: Generator's Name and Location: Riverview Innovation Technology Campus 3875 River Road Tonawanda, New York 14150		e: Generator's Mailing Address: Riverview Innovation Technology Campus 140 Lee Street, Suite 200 Buffalo, New York 14120				
d: Generators Phone: 716-583-4400		f: Phone:				
If owner of the generating facility differs from the generator, provide: g. Owner's Name:		h. Owner's Phone:				
i. Waste Profile #:	j. Exp. Date	k. Waste Shipping Name and Description	l. Containers		m. Total Quantity	n. Unit Wt/Vol
			No.	Type		
M22-3419	5/9/23	Soil / Residuals / Coal	1	CM	20	Tons
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.						
o. Generator Authorized Agent Name (Print) Kirsten Colligan on behalf of RITC		p. Signature 			q. Date 05/19/22	

Section II TRANSPORTER (Generator completes Sec. II, a-b; Transporter completes Sec. II, c-e)

a: Transporter's Name and Address: Pariso Logistics 3649 River Rd Buffalo NY		
b: Phone:		
c. Transporter Authorized Agent Name (Print) Sherman M. Abdallah	d. Signature 	e. Date 5-19-22

Section III DESTINATION (Generator completes Sec. III, a-c; Destination Site completes Sec. III, d-g)

a: Disposal Facility and Site Address: Modern Landfill, Inc. 1445 Pletcher Rd. Model City, NY 14107		c: US EPA Number	d: Discrepancy Indication Space:
b: Phone: 716-754-8226			
I hereby certify that the above named material has been accepted and to the best of my knowledge, the foregoing is true and accurate.			
e: Authorized Agent Name (Print) Michelle Petrea	f. Signature 	q. Date 5/19/22	

Section IV ASBESTOS (Generator completes Sec. IV, a-d; Operator completes Sec. IV, e-g)

a: Operator's Name and Address:		c: Special Handling Instructions and Additional Information:	
b: Phone:			
d: Friable, Non-Friable or Both:		e: Percentage Friable/NonFriable: 0% Friable and 0% Non-Friable	
OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.			
e. Operator's Name and Title (Print)		g. Date	
f. Signature			
*Operator refers to the company which owns, leases, operates, controls or supervises the facility being demolished or renovated, or the demolition or renovation operation or both.			

DESTINATION RETURN

MODERN Corporation

1445 Pletcher Road
Model City, NY 14107
(716) 754-8226



Ticket: 1003195529
Date: 5/19/2022
Time: 14:32:23 - 14:33:11
Scale

Gross: 55200 POU In Scale 1-INBOI
Tare: 26980 POU P.T.
Net: 28220 POU

Truck: PARISO-36
Customer: 0005730123/OSC TONAWANDA COKE
Carrier: PARI-002/Pariso Hauling

Truck Type: TA

Profile: M22-3419/RITC - OSC - TONAWAND Manifest: 14509
PO: .

Generator: 0005730123/OSC TONAWANDA COKE
Service Site:
Comment:

Origin	Materials & Services	Quantity	Unit
141600/Tonawanda, City Of	DC Industrial Waste - General	14.11	TON

Driver: Jaquon

Weighmaster: Michelle Petrea

If waste is asbestos waste, complete Sections I, II, III and IV
If waste is **NOT** asbestos waste, complete Sections I, II and III

0014509

Section I GENERATOR (Generator completes Section I, a-q)

a: Generator's US EPA ID Number:			b: Manifest Document Number: 0014509			
c: Generator's Name and Location: Riverview Innovation Technology Campus 3875 River Road Tonawanda, New York 14150			e: Generator's Mailing Address: Riverview Innovation Technology Campus 140 Lee Street, Suite 200 Buffalo, New York 14120			
d: Generators Phone: 716-583-4400			f: Phone:			
If owner of the generating facility differs from the generator, provide:			h. Owner's Phone:			
g. Owner's Name:						
i. Waste Profile #:	j. Exp. Date	k. Waste Shipping Name and Description	l. Containers		m. Total Quantity	n. Unit Wt/Vol
			No.	Type		
M22-3419	5/9/23	Soil / Residuals / Coal	1	CM	20	Tons
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described; classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.						
Kirsten Colligan on behalf of RITC			[Signature] on behalf of RITC		05/19/22	
o. Generator Authorized Agent Name (Print)			p. Signature		q. Date	

Section II TRANSPORTER (Generator completes Sec. II, a-b; Transporter completes Sec. II, c-e)

a: Transporter's Name and Address: Pariso Logistics 3649 River Road Tonawanda NY		
b: Phone:		
Jacqueline B		[Signature]
c. Transporter Authorized Agent Name (Print)		d. Signature
		e. Date

Section III DESTINATION (Generator completes Sec. III, a-c; Destination Site completes Sec. III, d-g)

a: Disposal Facility and Site Address: Modern Landfill, Inc. 1445 Pletcher Rd. Model City, NY 14107		c: US EPA Number	d: Discrepancy Indication Space:
b: Phone: 716-754-8226			
I hereby certify that the above named material has been accepted and to the best of my knowledge, the foregoing is true and accurate.			
Michelle Petrea		Michelle Petrea	
e: Authorized Agent Name (Print)		f. Signature	
		q. Date	

Section IV ASBESTOS (Generator completes Sec. IV, a-d; Operator completes Sec. IV, e-g)

a: Operator's Name and Address:		c: Special Handling Instructions and Additional Information:	
b: Phone:			
d: Friable, Non-Friable or Both:		e: Percentage Friable/NonFriable: 0% Friable and 0% Non-Friable	
OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.			
e. Operator's Name and Title (Print)		f. Signature	
		g. Date	
*Operator refers to the company which owns, leases, operates, controls or supervises the facility being demolished or renovated, or the demolition or renovation operation or both.			

DESTINATION RETURN

MODERN Corporation

1445 Pletcher Road
Model City, NY 14107
(716) 754-8226



Ticket: 1003195590
Date: 5/19/2022
Time: 15:57:16 - 15:57:47
Scale

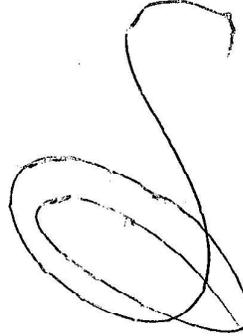
Gross: 60160 POU In Scale 1-INBOU
Tare: 27460 POU P.T.
Net: 32700 POU

Truck: PARISO-38
Customer: 0005730123/OSC TONAWANDA COKE
Carrier: PARI-002/Pariso Hauling

Truck Type: TA
Route: PARISO/PARISO
Profile: M22-3419/RITC - OSC - TONAWAND Manifest: 14510
PO: .

Generator: 0005730123/OSC TONAWANDA COKE
Service Site:
Comment:

Origin	Materials & Services	Quantity	Unit
141600/Tonawanda, City Of	DC Industrial Waste - General	16.35	TON



Driver: _____

Weighmaster: Michelle Petrea



NON-HAZARDOUS WASTE & ASBESTOS WASTE SHIPMENT RECORDS

If waste is asbestos waste, complete Sections I, II, III and IV
If waste is **NOT** asbestos waste, complete Sections I, II and III

5

0014510

Section I GENERATOR (Generator completes Section I, a-q)

a: Generator's US EPA ID Number:		b: Manifest Document Number: 0014510			
c: Generator's Name and Location: Riverview Innovation Technology Campus 3875 River Road Tonawanda, New York 14150		e: Generator's Mailing Address: Riverview Innovation Technology Campus 140 Lee Street, Suite 200 Buffalo, New York 14120			
d: Generators Phone: 716-583-4400		f: Phone:			
If owner of the generating facility differs from the generator, provide: g. Owner's Name:		h. Owner's Phone:			
i. Waste Profile #: M22-3419	j. Exp. Date: 5/9/23	k. Waste Shipping Name and Description: Soil / Residuals / Coal	l. Containers No. Type 1 CM		m. Total Quantity: 15 n. Unit Wt/Vol: Tons

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.

<i>Kirsten Colligan</i> on behalf of RITC	<i>[Signature]</i> on behalf of RITC	g. Date: 05/19/22
o. Generator Authorized Agent Name (Print)	p. Signature	g. Date

Section II TRANSPORTER (Generator completes Sec. II, a-b; Transporter completes Sec. II, c-e)

a: Transporter's Name and Address: Paris Logistics 3649 River Rd Tonawanda NY		
b: Phone:		
<i>Sherman M. [Signature]</i>	<i>[Signature]</i>	e. Date: 5-19-22
c. Transporter Authorized Agent Name (Print)	d. Signature	e. Date

Section III DESTINATION (Generator completes Sec. III, a-c; Destination Site completes Sec. III, d-g)

a: Disposal Facility and Site Address: Modern Landfill, Inc. 1445 Pletcher Rd. Model City, NY 14107		c: US EPA Number	d: Discrepancy Indication Space:
b: Phone: 716-754-8226			
I hereby certify that the above named material has been accepted and to the best of my knowledge, the foregoing is true and accurate.			
<i>Nathan [Signature]</i>	<i>[Signature]</i>	g. Date: 5-19-22	
e: Authorized Agent Name (Print)	f. Signature	g. Date	

Section IV ASBESTOS (Generator completes Sec. IV, a-d; Operator completes Sec. IV, e-g)

a: Operator's Name and Address:		c: Special Handling Instructions and Additional Information:	
b: Phone:			
d: Friable, Non-Friable or Both:		e: Percentage Friable/NonFriable: 0% Friable and 0% Non-Friable	
OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.			
e. Operator's Name and Title (Print)		f. Signature	
		g. Date	
*Operator refers to the company which owns, leases, operates, controls or supervises the facility being demolished or renovated, or the demolition or renovation operation or both.			

DESTINATION RETURN

MODERN Corporation

1445 Pletcher Road
Model City, NY 14107
(716) 754-8226

Truck: PARISO-36
Customer: 0005730123/OSC TONAWANDA COKE
Carrier: PARI-002/Pariso Hauling

Truck Type: TA

Generator: 0005730123/OSC TONAWANDA COKE
Service Site:
Comment:

Profile: M22-3419/RITC - OSC - TONAWAND Manifest: 14511
PO: .



Ticket: 1003195591
Date: 5/19/2022
Time: 15:58:53 - 15:59:20
Scale

Gross: 62500 POU In Scale 1-INBOI
Tare: 26980 POU P.T.
Net: 35520 POU

Origin	Materials & Services	Quantity	Unit
141600/Tonawanda, City Of	DC Industrial Waste - General	17.76	TON

Driver: 

Weighmaster: Michelle Petrea

If waste is asbestos waste, complete Sections I, II, III and IV
 If waste is **NOT** asbestos waste, complete Sections I, II and III

0014511

Section I GENERATOR (Generator completes Section I, a-q)

a: Generator's US EPA ID Number:		b: Manifest Document Number: 0014511			
c: Generator's Name and Location: Riverview Innovation Technology Campus 3875 River Road Tonawanda, New York 14150		e: Generator's Mailing Address: Riverview Innovation Technology Campus 140 Lee Street, Suite 200 Buffalo, New York 14120			
d: Generators Phone: 716-583-4400		f: Phone:			
If owner of the generating facility differs from the generator, provide: g. Owner's Name:		h. Owner's Phone:			
i. Waste Profile #: M22-3419	j. Exp. Date: 5/9/23	k. Waste Shipping Name and Description: Soil / Residuals / Coal	l. Containers No. Type 1 cm		m. Total Quantity: 15 n. Unit Wt/Vol: Tons
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.					
<i>Kirsten Colligan</i> o. Generator Authorized Agent Name (Print) on behalf of RITC		<i>[Signature]</i> p. Signature on behalf of RITC		q. Date	

Section II TRANSPORTER (Generator completes Sec. II, a-b; Transporter completes Sec. II, c-e)

a: Transporter's Name and Address: Pariso Logistics 3649 River Rd Tonawanda NY		
b: Phone:		
<i>Jaquan B</i> c. Transporter Authorized Agent Name (Print)	<i>Jaquan B</i> d. Signature	<i>5-19-22</i> e. Date

Section III DESTINATION (Generator completes Sec. III, a-c; Destination Site completes Sec. III, d-g)

a: Disposal Facility and Site Address: Modern Landfill, Inc. 1445 Pletcher Rd. Model City, NY 14107	c: US EPA Number	d: Discrepancy Indication Space:
b: Phone: 716-754-8226		
I hereby certify that the above named material has been accepted and to the best of my knowledge, the foregoing is true and accurate.		
<i>Nathan Durca</i> e: Authorized Agent Name (Print)	<i>[Signature]</i> f: Signature	<i>5-19-22</i> g. Date

Section IV ASBESTOS (Generator completes Sec. IV, a-d; Operator completes Sec. IV, e-g)

a: Operator's Name and Address:	c: Special Handling Instructions and Additional Information:	
b: Phone:		
d: Friable, Non-Friable or Both:	e: Percentage Friable/NonFriable: 0% Friable and 0% Non-Friable	
OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.		
e. Operator's Name and Title (Print)	f. Signature	g. Date
*Operator refers to the company which owns, leases, operates, controls or supervises the facility being demolished or renovated, or the demolition or renovation operation or both.		

MODERN Corporation

1445 Pletcher Road
Model City, NY 14107
(716) 754-8226



Ticket: 1003195763
Date: 5/20/2022
Time: 09:35:55 - 09:36:33
Scale

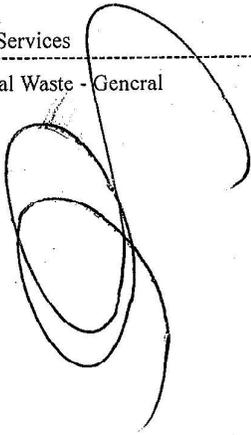
Gross: 36460 POU In Scale 1-INBOI
Tare: 27460 POU P.T.
Net: 9000 POU

Truck: PARISO-38
Customer: 0005730123/OSC TONAWANDA COKE
Carrier: PARI-002/Pariso Hauling

Truck Type: TA
Route: PARISO/PARISO
Profile: M22-3419/RITC - OSC - TONAWAND Manifest: 14512
PO: .

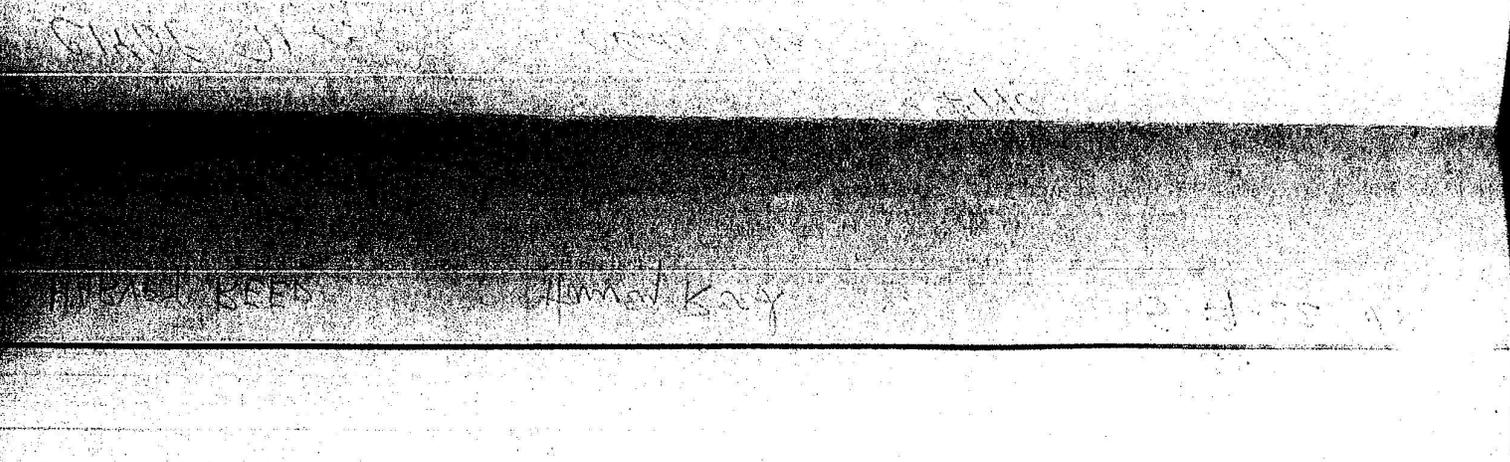
Generator: 0005730123/OSC TONAWANDA COKE
Service Site:
Comment:

Origin	Materials & Services	Quantity	Unit
141600/Tonawanda, City Of	DC Industrial Waste - General	4.50	TON



Driver: _____

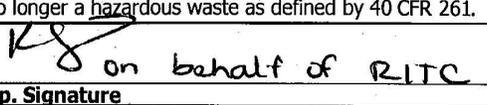
Weighmaster: Michelle Petrea



If waste is asbestos waste, complete Sections I, II, III and IV
If waste is **NOT** asbestos waste, complete Sections I, II and III

0014512

Section I GENERATOR (Generator completes Section I, a-q)

a: Generator's US EPA ID Number:		b: Manifest Document Number: 0014512			
c: Generator's Name and Location: Riverview Innovation Technology Campus 3875 River Road Tonawanda, New York 14150		e: Generator's Mailing Address: Riverview Innovation Technology Campus 140 Lee Street, Suite 200 Buffalo, New York 14120			
d: Generators Phone: 716-583-4400		f: Phone:			
If owner of the generating facility differs from the generator, provide: g. Owner's Name:		h. Owner's Phone:			
i. Waste Profile #:	j. Exp. Date	k. Waste Shipping Name and Description	l. Containers		m. Total Quantity
M22-3419	5/9/23	Soil / Residuals / Coal	No. 1	Type CM	n. Unit Wt/Vol 15 Tons
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.					
o. Generator Authorized Agent Name (Print) Kirsten Colligan on behalf of RITC		p. Signature  on behalf of RITC		q. Date 05/20/22	

Section II TRANSPORTER (Generator completes Sec. II, a-b; Transporter completes Sec. II, c-e)

a: Transporter's Name and Address: Pariso Logistics 3649 River Rd Buffalo NY		
b: Phone:		
c. Transporter Authorized Agent Name (Print) Sherman M. Abdallah	d. Signature 	e. Date 5-20-22

Section III DESTINATION (Generator completes Sec. III, a-c; Destination Site completes Sec. III, d-g)

a: Disposal Facility and Site Address: Modern Landfill, Inc. 1445 Pletcher Rd. Model City, NY 14107	c: US EPA Number	d: Discrepancy Indication Space:
b: Phone: 716-754-8226		
I hereby certify that the above named material has been accepted and to the best of my knowledge, the foregoing is true and accurate.		
e: Authorized Agent Name (Print) Michelle Petrea	f: Signature 	g. Date 5/20/22

Section IV ASBESTOS (Generator completes Sec. IV, a-d; Operator completes Sec. IV, e-g)

a: Operator's Name and Address:	c: Special Handling Instructions and Additional Information:	
b: Phone:		
d: Friable, Non-Friable or Both:	e: Percentage Friable/NonFriable: 0% Friable and 0% Non-Friable	
OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.		
e. Operator's Name and Title (Print)	f. Signature	g. Date
*Operator refers to the company which owns, leases, operates, controls or supervises the facility being demolished or renovated, or the demolition or renovation operation or both.		

DESTINATION RETURN

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Materials Management, Region 9
700 Delaware Avenue, Buffalo, NY 14209
P: (716) 851-7220 | F: (716) 851-7226
www.dec.ny.gov

E-FILED

COPY

January 27, 2023

Krysta Cione
Environmental Protection Manager
Modern Landfill, Inc.
P.O. Box
4746 Model City Road
Model City, New York 14107

Dear Ms. Cione:

Generator: Riverview Innovation and Technology
Campus
Address: 3875 River Road
Tonawanda, New York 14150
Waste description: COG line residuals, coal/coke
breeze
Application #M23-3540

The Department has reviewed the above referenced application for Treatment or Disposal of an Industrial Waste Stream (Form 47-19-7). Based on the information provided, this waste is acceptable for disposal at the **Modern Landfill**. Other waste streams will be reviewed under separate application. This approval expires January 27, 2026.

In the event that significant changes in the information presented on the application occur, you shall immediately notify this Department in writing. Such changes shall include, but not be limited to, changes in: tonnage, process, facility name or address, waste composition and/or hauler.

Enclosed is a copy of the approved application. Should you have questions, please call this office at 716/851-7220.

Sincerely,



Nelson Schnabel.
Environmental Engineer

cc: Peter Grasso, P.E., Regional Materials Management Engineer
Beverly Lewinski, DMM
32S30_ModernLandfill_Application#M23-3540.2023-01-27.letter.nf.pdf

47-19-7 (10/86) - Text 12
 NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
 DIVISION OF SOLID AND HAZARDOUS WASTE • BUREAU OF HAZARDOUS WASTE
 OPERATIONS
 50 WOLF ROAD, ALBANY, NEW YORK 12233-4017

**APPLICATION FOR TREATMENT OR DISPOSAL
 OF AN INDUSTRIAL WASTE STREAM
 SEE APPLICATION INSTRUCTIONS ON REVERSE SIDE**



FOR STATE USE ONLY		
SITE NO. 32S30	APPLICATION NO. M23-3540	DATE RECEIVED 1/25/2023
DEPARTMENT ACTION <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved		DATE 1/27/2023

1. NAME OF PROJECT/FACILITY MODERN LANDFILL, INC.		2. COUNTY NIAGARA		3. SITE NUMBER 32S30	
4. NAME OF OWNER RICHARD WASHUTA		5. ADDRESS (Street, City, State, Zip Code) 4746 Model City Road, Model City, NY 14107		6. TELEPHONE NO. (716) 754-8226	
6. NAME OF OPERATOR RICHARD WASHUTA		8. ADDRESS (Street, City, State, Zip Code) Pletcher & Harold Road, Model City, NY 14107		9. TELEPHONE NO. (716) 754-8226	
10. METHOD OF TREATMENT OR DISPOSAL SANITARY LANDFILL - D90					
11. COMPANY GENERATING WASTE Riverview Innovation and Technology Campus			12. ADDRESS OF FACILITY GENERATING WASTE (Street, City, State, Zip Code) 3875 River Road, Tonawanda NY 14150		
13. REPRESENTATIVE OF WASTE GENERATOR Dan Flanigan		14. MAILING ADDRESS OF REPRESENTATIVE 140 Lee Street, Suite 200, Buffalo NY 14210		15. TELEPHONE NO. 716-560-3006	
16. DESCRIPTION OF PROCESS PRODUCING WASTE: Clean out of COG lines. <i>former Tonawanda Coke Brownfield site # C915353</i>					
17. EXPECTED ANNUAL WASTE PRODUCTION 30 Tons OTD <i>(PWC)</i>		18. WASTE HAULED IN <input type="checkbox"/> Drums <input type="checkbox"/> Bulk Tank <input checked="" type="checkbox"/> Roll-Off Container <input type="checkbox"/> Other			
19. WASTE COMPOSITION 19A. Average Percent Solids 100		19b. Physical State <input type="checkbox"/> Liquid <input type="checkbox"/> Slurry <input type="checkbox"/> Sludge <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Contained Gas		19c. pH Range 5 to 7	
19d. COMPONENTS					
		CONCENTRATION (Dry Weight)			UNIT (Check One)
		Upper	Lower	Typical	WT % ppm
1) residuals		75	50	65	%
2) coal/coke breeze		50	25	35	%
3)					
4)					
20. IS AN ANALYSIS OF WASTE ATTACHED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		21. WAS A TCLP TEST CONDUCTED ON THE WASTE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If "yes",		22. MATERIAL IS: <input type="checkbox"/> Hazardous <input checked="" type="checkbox"/> Non-Hazardous	
23. DETAIL ALL HAZARD AND NUISANCE PROBLEMS ASSOCIATED WITH THE WASTES. List necessary safety, handling, treatment and disposal precautions. N/A					
24. WHERE WAS MATERIAL DISPOSED OF PREVIOUSLY? N/A					
25. NAME OF WASTE TRANSPORTER Pariso Logistics <i>(PWC)</i>		26. ADDRESS (Street, City, State, Zip Code) 3649 River Rd, Tonawanda, NY 14150		27. NYSDEC PERMIT No. 9A826	28. TELEPHONE NO. 716-875-6168
29. CERTIFICATION I hereby affirm under penalty of perjury that information provided on this form and attached statements and exhibits is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.					
a. SIGNATURE AND TITLE OF REPRESENTATIVE OF WASTE GENERATOR <i>John Washuta</i>				DATE 01/11/23	
b. SIGNATURE AND TITLE OF REPRESENTATIVE OF TREATMENT OR DISPOSAL FACILITY				DATE	

GENERATOR WASTE CHARACTERIZATION REPORT

INSTRUCTIONS: The following form is required for disposal of non-hazardous industrial/commercial wastes at Modern Landfill. Please complete all sections of this report. Send completed report along with the analytical, chain of custody and the Application for Disposal of and Industrial Waste Stream (47-19-7) to this office. A separate form is required for each waste stream.

GENERATOR INFORMATION:

Generator Name: Riverview Innovation and Technology Campus

Generating Facility Address: 3875 River Road, Tonawanda NY 14150

Technical Contact: John Yensan Phone: 716-583-4400

Alternate Contact: _____ Phone: _____

INVOICING INFORMATION:

Contracting Firm: Ontario Specialty Contracting

Contact: Dan Flanigan Phone: 716-560-3006

Do you have an existing account with Modern Landfill? Yes No

Billing Address: 140 Lee Street, Suite 200, Buffalo NY 14210

TRANSPORTER INFORMATION:

Hauler Name: Pariso Logistics NYSDEC Permit No: 9A826

Contact Person: _____ Phone: _____

Is Modern Landfill currently on your Transporter Permit? Yes No

If no, please enclose a Part C Application to cover this waste stream.

WASTE INFORMATION:

Common name of waste: _____

Description of process generating this waste: Clean out of COG lines.

Is this waste hazardous under USEPA Guidelines & 6NYCRR Part 371 (d)? Yes No

Indicate the category which best describes this waste stream:

Industrial Waste
Household Waste
Commercial Solid Waste

Construction & Demolition Debris
Other (Please Specify) _____

PHYSICAL CHARACTERISTICS OF WASTE

The waste is at least 20% solid and contains no free liquid	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
The flashpoint of the waste is > 140 F	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
The pH level of the waste is between 2.0 and 12.5	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Is the waste reactive (Cyanide/ Sulfide)?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
Is the waste free of PCB's?	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Color:		<input type="checkbox"/>	Strong	<input checked="" type="checkbox"/>
Odor:		<input type="checkbox"/>	Mild	<input type="checkbox"/>
		<input type="checkbox"/>	None	<input type="checkbox"/>

TCLP TESTING AND CERTIFICATION

METALS

HERBICIDES/ PESTICIDES

CONSTITUENT	NONHAZARDOUS LIMIT (mg/l)	PRESENT	NOT PRESENT
ARSENIC	5.0		x
BARIUM	100.0		x
CADMIUM	1.0		x
CHROMIUM	5.0		x
LEAD	5.0		x
MERCURY	0.2		x
SELENIUM	1.0		x
SILVER	5.0		x

CONSTITUENT	NONHAZARDOUS LIMIT (mg/l)	PRESENT	NOT PRESENT
2,4-D	10.0		x
2,4,5 -TP (SILVEX)	1.0		x
ENDRIN	0.02		x
LINDANE	0.4		x
METHOXYCHLOR	10.0		x
TOXAPHENE	0.5		x
CHLORDANE	0.03		x
HEPTACHLOR	0.008		x

ACID EXTRACTABLES

BASE NEUTRALS EXTRACTABLES

CONSTITUENT	NONHAZARDOUS LIMIT (mg/l)	PRESENT	NOT PRESENT
O-CREOSOL	200.0		x
M-CREOSOL	200.0		x
P-CREOSOL	200.0		x
PENTACHLOROPHENOL	100.0		x
2, 4,5-TRICHLOROPHENOL	400.0		x
2,4,6-TRICHLOROPHENOL	2.0		x

CONSTITUENT	NONHAZARDOUS LIMIT (mg/l)	PRESENT	NOT PRESENT
1,4 DICHLORO BENZENE	7.5		x
2, 4 DINITROTOLUENE	0.13		x
HEXACHLORO BENZENE	0.13		x
HEXACHLOROBUTADIENE	0.5		x
HEXACHLOROETANE	3		x
NITROBENZENE	2		x
PYRIDINE	5		x

**VOLATILE ORGANICS
CERTIFICATION:**

CONSTITUENT	NONHAZARDOUS LIMIT (mg/l)	PRESENT	NOT PRESENT
1,1 DICHLOROETHYLENE	0.7		x
METHYL ETHYL KETONE	200.0		x
TETRACHLOROETHYLENE	0.7		x
VINYL CHLORIDE	0.2		x
BENZENE	0.5		x
CARBON TETRACHLORIDE	0.5		x
CHLOROFORM	6.0		x
TRICHLOROETHYLENE	0.5		x
1,2 DICHLOROETHANE	0.5		x
CHLOROBENZENE	100.0		x

I CERTIFY THAT ALL INFORMATION CONTAINED WITHIN THIS GENERATOR WASTE CHARACTERIZATION REPORT, INCLUDING ALL ATTACHED INFORMATION, IS COMPLETE AND ACTUAL AND IS AN ACCURATE REPRESENTATION OF KNOWN OR SUSPECTED HAZARDS DESCRIBED HEREIN.

SIGNATURE: 

PRINTED NAME: John Yensan

TITLE: Secretary

COMPANY: Riverview Innovation and Technology Campus

DATE: 01/11/23

NON-HAZARDOUS WASTE & ASBESTOS WASTE SHIPMENT RECORDS

If waste is asbestos waste, complete Sections I, II, III and IV
 If waste is **NOT** asbestos waste, complete Sections I, II and III

0014495

Section I GENERATOR (Generator completes Section I, a-q)

a: Generator's US EPA ID Number:	b: Manifest Document Number: 0014495
c: Generator's Name and Location: River Innovation and Technology Campus 3875 River Rd. Tonawanda, NY 14150	e: Generator's Mailing Address: River View Innovation and Technology Campus 140 Lee St Suite 200 Buffalo, New York 14210
d: Generators Phone: (716) 560-3006	f: Phone: (716) 560-3006
g: Owner's Name:	h: Owner's Phone:

i. Waste Profile #:	j. Exp. Date	k. Waste Shipping Name and Description	l. Containers		m. Total Quantity	n. Unit Wt/Vol
			No.	Type		
			1	DT	20	EST

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.

o. Generator Authorized Agent Name (Print): Kirsten Colligan on behalf of RITC	p. Signature: on behalf of RITC	q. Date:
---	---	-----------------

Section II TRANSPORTER (Generator completes Sec. II, a-b; Transporter completes Sec. II, c-e)

a: Transporter's Name and Address: Pariso Logistics 3649 River Rd Tonawanda, NY 14150	b: Phone: Doan Trucking
c. Transporter Authorized Agent Name (Print): David Miller	d. Signature:
e. Date: 4/27/23	

Section III DESTINATION (Generator completes Sec. III, a-c; Destination Site completes Sec. III, d-g)

a: Disposal Facility and Site Address: Modern Landfill, Inc. 1445 Pletcher Rd. Model City, NY 14107	b: Phone: 716-754-8226	c: US EPA Number:	d: Discrepancy Indication Space:
I hereby certify that the above named material has been accepted and to the best of my knowledge, the foregoing is true and accurate.			
e: Authorized Agent Name (Print): Michelle Petron	f. Signature: 	g. Date: 4/27/23	

Section IV ASBESTOS (Generator completes Sec. IV, a-d; Operator completes Sec. IV, e-g)

a: Operator's Name and Address:	c: Special Handling Instructions and Additional Information:
b: Phone:	
d: Friable, Non-Friable or Both:	e: Percentage Friable/NonFriable: 0% Friable and 0% Non-Friable
OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.	
e. Operator's Name and Title (Print):	f. Signature:
g. Date:	

*Operator refers to the company which owns, leases, operates, controls or supervises the facility being demolished or renovated, or the demolition or renovation operation or both.

MODERN Corporation

1445 Pletcher Road
Model City, NY 14107
(716) 754-8226



Ticket: 1003310754
Date: 4/27/2023
Time: 11:13:18 - 11:14:00
Scale

Gross: 59460 POUIn Scale 1-INBOI
Tare: 28820 POU P.T.
Net: 30640 POU

Truck: DORAN-107
Customer: 0005730123/OSC TONAWANDA COKE
Carrier: DORA-001/DORAN TRUCKING

Truck Type: TA
Route: BROKER/SUB OUT VARIOUS BRC
Profile: M23-3540/RIVERVIEW INNOVATIO Manifest: 14495

Generator: 01698-001/MODERN DISPOSAL INC
Service Site:
Comment:

Origin	Materials & Services	Quantity	Unit
146400/Tonawanda, Town Of	DC Industrial Waste - General	15.32	TON

Driver: _____

Weighmaster: Michelle Petrea

NON-HAZARDOUS WASTE & ASBESTOS WASTE SHIPMENT RECORDS

landfill

If waste is asbestos waste, complete Sections I, II, III and IV
 If waste is **NOT** asbestos waste, complete Sections I, II and III

0018632

Section I GENERATOR (Generator completes Section I, a-q)

a: Generator's US EPA ID Number:		b: Manifest Document Number: 0018632	
c: Generator's Name and Location: Riverview Innovation and Technology Campus 3875 River Road Tonawanda, New York 14150		e: Generator's Mailing Address: Riverview Innovation and Technology Campus 140 Lee Street, Suite 200 Buffalo, New York 14210	
d: Generators Phone: 716-560-3006		f: Phone: 716-560-3006	
If owner of the generating facility differs from the generator, provide: g. Owner's Name:		h. Owner's Phone:	
i. Waste Profile #: M23-3540	j. Exp. Date: 1/27/24	k. Waste Shipping Name and Description: Clean out of COG lines - Residuals	l. Containers No. Type 1 DT
			m. Total Quantity: 18 EST
			n. Unit Wt/Vol: Tons
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.			
o. Generator Authorized Agent Name (Print): Kirsten Colligan on behalf of RITC		p. Signature: <i>[Signature]</i> on behalf of RITC	q. Date:

Section II TRANSPORTER (Generator completes Sec. II, a-b; Transporter completes Sec. II, c-e)

a: Transporter's Name and Address: Paris Logistics 3649 River Rd Tonawanda NY 14150		d: Signature: <i>[Signature]</i>	
b: Phone: 716-875-6168		e. Date: 1/27/23	
c. Transporter Authorized Agent Name (Print):		d. Signature: David A Miller	

Section III DESTINATION (Generator completes Sec. III, a-c; Destination Site completes Sec. III, d-g)

a: Disposal Facility and Site Address: Modern Landfill, Inc. 1445 Pletcher Rd. Model City, NY 14107		c: US EPA Number:	d: Discrepancy Indication Space:
b: Phone: 716-754-8226		I hereby certify that the above named material has been accepted and to the best of my knowledge, the foregoing is true and accurate.	
e: Authorized Agent Name (Print): John Green		f. Signature: <i>[Signature]</i>	g. Date: 4/27/23

Section IV ASBESTOS (Generator completes Sec. IV, a-d; Operator completes Sec. IV, e-g)

a: Operator's Name and Address:		c: Special Handling Instructions and Additional Information:	
b: Phone:		e: Percentage Friable/NonFriable: 0% Friable and 0% Non-Friable	
OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.			
e. Operator's Name and Title (Print):		f. Signature:	g. Date:
*Operator refers to the company which owns, leases, operates, controls or supervises the facility being demolished or renovated, or the demolition or renovation operation or both.			

MODERN Corporation

1445 Pletcher Road
Model City, NY 14107
(716) 754-8226



Ticket: 1003310663
Date: 4/27/2023
Time: 09:16:15 - 09:17:05
Scale

Gross: 53900 POU In Scale 1-INBOU
Tare: 28820 POU P.T.
Net: 25080 POU

Truck: DORAN-107
Customer: 0005730123/OSC TONAWANDA COKE
Carrier: DORA-001/DORAN TRUCKING

Truck Type: TA
Route: BROKER/SUB OUT VARIOUS BRC
Profile: M23-3540/RIVERVIEW INNOVATION Manifest: 18632

Generator: 01698-001/MODERN DISPOSAL INC
Service Site:
Comment:

Origin	Materials & Services	Quantity	Unit
146400/Tonawanda, Town Of	DC Industrial Waste - General	12.54	TON

Driver: _____

Weighmaster: Dawn Srock

MODERN NON-HAZARDOUS WASTE & ASBESTOS WASTE SHIPMENT RECORDS

Landfill

If waste is asbestos waste, complete Sections I, II, III and IV
 If waste is **NOT** asbestos waste, complete Sections I, II and III

0018633

Section I GENERATOR (Generator completes Section I, a-q)

a: Generator's US EPA ID Number:		b: Manifest Document Number: 0018633				
c: Generator's Name and Location: Riverview Innovation and Technology Campus 3875 River Road Tonawanda, New York 14150		e: Generator's Mailing Address: Riverview Innovation and Technology Campus 140 Lee Street, Suite 200 Buffalo, New York 14210				
d: Generators Phone: 716-560-3006		f: Phone: 716-560-3006				
If owner of the generating facility differs from the generator, provide:		h: Owner's Phone:				
g: Owner's Name:		h: Owner's Phone:				
i. Waste Profile #:	j. Exp. Date	k. Waste Shipping Name and Description	l. Containers		m. Total Quantity	n. Unit Wt/Vol
M23-3540	1/27/24		No.	Type		
		Clean out of COG lines - Residuals	1	DT	20	Tons
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.						
Kirsten Colligan on behalf of RITC		K on behalf of RITC				
o. Generator Authorized Agent Name (Print)		p. Signature		q. Date		

Section II TRANSPORTER (Generator completes Sec. II, a-b; Transporter completes Sec. II, c-e)

a: Transporter's Name and Address: Pariso Logistics 3649 River Rd Tonawanda NY 14150			Doran Trucking		
b: Phone:					
David A Miller		[Signature]		4/27/23	
g. Transporter Authorized Agent Name (Print)		d. Signature		e. Date	

Section III DESTINATION (Generator completes Sec. III, a-c; Destination Site completes Sec. III, d-g)

a: Disposal Facility and Site Address: Modern Landfill, Inc. 1445 Pletcher Rd. Model City, NY 14107		c: US EPA Number	d: Discrepancy Indication Space:
b: Phone: 716-754-8226			
I hereby certify that the above named material has been accepted and to the best of my knowledge, the foregoing is true and accurate.			
Michelle Petrea		Michelle Petrea	
e: Authorized Agent Name (Print)		f. Signature	
		4/27/23	
		g. Date	

Section IV ASBESTOS (Generator completes Sec. IV, a-d; Operator completes Sec. IV, e-g)

a: Operator's Name and Address:		c: Special Handling Instructions and Additional Information:	
b: Phone:			
d: Friable, Non-Friable or Both:		e: Percentage Friable/NonFriable: 0% Friable and 0% Non-Friable	
OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.			
e. Operator's Name and Title (Print)		f. Signature	
		g. Date	

*Operator refers to the company which owns, leases, operates, controls or supervises the facility being demolished or renovated, or the demolition or renovation operation or both.

RETURN TO GENERATOR

MODERN Corporation

1445 Pletcher Road
Model City, NY 14107
(716) 754-8226



Ticket: 1003310850
Date: 4/27/2023
Time: 13:34:52 - 13:35:44
Scale

Truck: DORAN-107
Customer: 0005730123/OSC TONAWANDA COKE
Carrier: DORA-001/DORAN TRUCKING

***** Reprinted Ticket *****

Gross: 62380 POU In Scale 1-INBOU
Tare: 28820 POU P.T.
Net: 33560 POU

Truck Type: TA
Route: BROKER/SUB OUT VARIOUS BRC
Profile: M23-3540/RIVERVIEW INNOVATION Manifest: 18633

Generator: 01698-001/MODERN DISPOSAL INC
Service Site:
Comment:

Origin	Materials & Services	Quantity	Unit
146400/Tonawanda, Town Of	DC Industrial Waste - General	16.78	TON

Driver: _____

Weighmaster: Michelle Petrea

MODERN Corporation

1445 Pletcher Road
Model City, NY 14107
(716) 754-8226



Ticket: 1003310850
Date: 4/27/2023
Time: 13:34:52 - 13:35:44
Scale

Truck: DORAN-107
Customer: 0005730123/OSC TONAWANDA COKE
Carrier: DORA-001/DORAN TRUCKING

***** Reprinted Ticket *****

Gross: 62380 POU In Scale 1-INBOU
Tare: 28820 POU P.T.
Net: 33560 POU

Truck Type: TA
Route: BROKER/SUB OUT VARIOUS BRC
Profile: M23-3540/RIVERVIEW INNOVATION Manifest: 18633

Generator: 01698-001/MODERN DISPOSAL INC
Service Site:
Comment:

Origin	Materials & Services	Quantity	Unit
146400/Tonawanda, Town Of	DC Industrial Waste - General	16.78	TON

Driver: _____

Weighmaster: Michelle Petrea

MODERN NON-HAZARDOUS WASTE & ASBESTOS WASTE SHIPMENT RECORDS

Landfill

If waste is asbestos waste, complete Sections I, II, III and IV
 If waste is **NOT** asbestos waste, complete Sections I, II and III

0018634

Section I GENERATOR (Generator completes Section I, a-q)

a: Generator's US EPA ID Number:		b: Manifest Document Number: 0018634			
c: Generator's Name and Location: Riverview Innovation and Technology Campus 3875 River Road Tonawanda, New York 14150		e: Generator's Mailing Address: Riverview Innovation and Technology Campus 140 Lee Street, Suite 200 Buffalo, New York 14210			
d: Generators Phone: 716-560-3006		f: Phone: 716-560-3006			
If owner of the generating facility differs from the generator, provide: g. Owner's Name:		h. Owner's Phone:			
i. Waste Profile #: M23-3540	j. Exp. Date: 1/27/24	k. Waste Shipping Name and Description: Clean out of COG lines - Residuals	l. Containers No. Type 1 DT		m. Total Quantity: 20 T EST.
n. Unit Wt/Vol: Tons					
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.					
o. Generator Authorized Agent Name (Print): Matt Reardon		p. Signature: <i>MGR</i>		q. Date: 4/28/23	

Section II TRANSPORTER (Generator completes Sec. II, a-b; Transporter completes Sec. II, c-e)

a: Transporter's Name and Address: PARISO LOGICS 3649 RIVER RD.		
b: Phone: 716 875 6168		
c. Transporter Authorized Agent Name (Print): <i>JA Gman</i>	d. Signature: <i>[Signature]</i>	e. Date: 4/28/23

Section III DESTINATION (Generator completes Sec. III, a-c; Destination Site completes Sec. III, d-g)

a: Disposal Facility and Site Address: Modern Landfill, Inc. 1445 Pletcher Rd. Model City, NY 14107	b: Phone: 716-754-8226	c: US EPA Number:	d: Discrepancy Indication Space:
I hereby certify that the above named material has been accepted and to the best of my knowledge, the foregoing is true and accurate.			
e: Authorized Agent Name (Print): Michelle Petrea	f. Signature: <i>Michelle Petrea</i>	g. Date: 4/28/23	

Section IV ASBESTOS (Generator completes Sec. IV, a-d; Operator completes Sec. IV, e-g)

a: Operator's Name and Address:		c: Special Handling Instructions and Additional Information:	
b: Phone:		d: Friable, Non-Friable or Both:	
e: Percentage Friable/NonFriable: 0% Friable and 0% Non-Friable		OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.	
e. Operator's Name and Title (Print):	f. Signature:	g. Date:	
*Operator refers to the company which owns, leases, operates, controls or supervises the facility being demolished or renovated, or the demolition or renovation operation or both.			

RETURN TO GENERATOR

MODERN Corporation

1445 Pletcher Road
Model City, NY 14107
(716) 754-8226



Ticket: 1003311200
Date: 4/28/2023
Time: 11:21:05 - 11:21:43
Scale

Gross: 51780 POU In Scale 1-INBOI
Tare: 28120 POU P.T.
Net: 23660 POU

***** Reprinted Ticket *****

Truck: PARISO-33
Customer: 0005730123/OSC TONAWANDA COKE
Carrier: PARI-002/Pariso Hauling

Truck Type: TA
Route: PARISO/PARISO
Profile: M23-3540/RIVERVIEW INNOVATIO Manifest: 18634
PO: .

Generator: 01698-001/MODERN DISPOSAL INC
Service Site:
Comment:

Origin	Materials & Services	Quantity	Unit
146400/Tonawanda, Town Of	DC Industrial Waste - General	11.83	TON

Driver: _____

Weighmaster: Michelle Petrea

MODERN Corporation

1445 Pletcher Road
Model City, NY 14107
(716) 754-8226



Ticket: 1003311200
Date: 4/28/2023
Time: 11:21:05 - 11:21:43
Scale

Gross: 51780 POU In Scale 1-INBOI
Tare: 28120 POU P.T.
Net: 23660 POU

***** Reprinted Ticket *****

Truck: PARISO-33
Customer: 0005730123/OSC TONAWANDA COKE
Carrier: PARI-002/Pariso Hauling

Truck Type: TA
Route: PARISO/PARISO
Profile: M23-3540/RIVERVIEW INNOVATIO Manifest: 18634
PO: .

Generator: 01698-001/MODERN DISPOSAL INC
Service Site:
Comment:

Origin	Materials & Services	Quantity	Unit
146400/Tonawanda, Town Of	DC Industrial Waste - General	11.83	TON

Driver: _____

Weighmaster: Michelle Petrea

Trk 6656

77720

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number NYD 088 413 877	2. Page 1 of 1	3. Emergency Response Phone (800) 839-3975	4. Manifest Tracking Number 017760941 FLE		
5. Generator's Name and Mailing Address 140 LEE ST STE 200 BUFFALO, NY 14210				Generator's Site Address (if different than mailing address) 3875 RIVER ROAD TONAWANDA, NY 14150			
Generator's Phone: (716) 856-3333				U.S. EPA ID Number NYD986969947			
6. Transporter 1 Company Name Page ETC Inc				U.S. EPA ID Number			
7. Transporter 2 Company Name				U.S. EPA ID Number			
8. Designated Facility Name and Site Address MICHIGAN DISPOSAL WASTE TREATMEN 49350 N I-94 SERVICE DRIVE BELLEVILLE, MI 48111				U.S. EPA ID Number MID 000 724 831			
Facility's Phone: (800) 592-5489							
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
		No.	Type				
X	1. RQ, NA3077, Waste, Hazardous, solid, n.o.s., (Benzene), 9, PGIII, (Benzene), ERG #171	1	DT	23 EST	T	D018	
	2.						
	3.						
	4.						
14. Special Handling Instructions and Additional Information 1. J220030MDI / Debris - D018							
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.							
Generator's/Offeror's Printed/Typed Name Kirsten Colligan on behalf of RITC				Signature <i>[Signature]</i>		Month Day Year 11 17 22	
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____							
17. Transporter Acknowledgment of Receipt of Materials							
Transporter 1 Printed/Typed Name David Youngs				Signature <i>[Signature]</i>		Month Day Year 11 17 22	
Transporter 2 Printed/Typed Name				Signature		Month Day Year	
18. Discrepancy							
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection							
Manifest Reference Number:							
18b. Alternate Facility (or Generator)						U.S. EPA ID Number	
Facility's Phone:							
18c. Signature of Alternate Facility (or Generator)						Month Day Year	
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)							
1. H110		2.		3.		4.	
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a				Signature <i>[Signature]</i>		Month Day Year 11 18 22	
Printed/Typed Name Mary M. Lazarus							

GENERATOR

INT'L

TRANSPORTER

DESIGNATED FACILITY

CERTIFICATE OF DISPOSAL



This certificate is to verify the wastes specified on Manifest # 017760941A/E have been properly disposed of in accordance with all local, state and federal regulation.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40CFR et sea.

FACILITY NAME:
(Please check one)



Michigan Disposal Waste Treatment Plant
(EPA I.D. # MID000724831)

Wayne Disposal, Inc.
(EPA I.D. # MID048090633)

ADDRESS:

49350 N. I-94 Service Drive
Bellville, Michigan 48111

PHONE NUMBER:

1-800-592-5489

FAX NUMBER:

1-800-593-5329

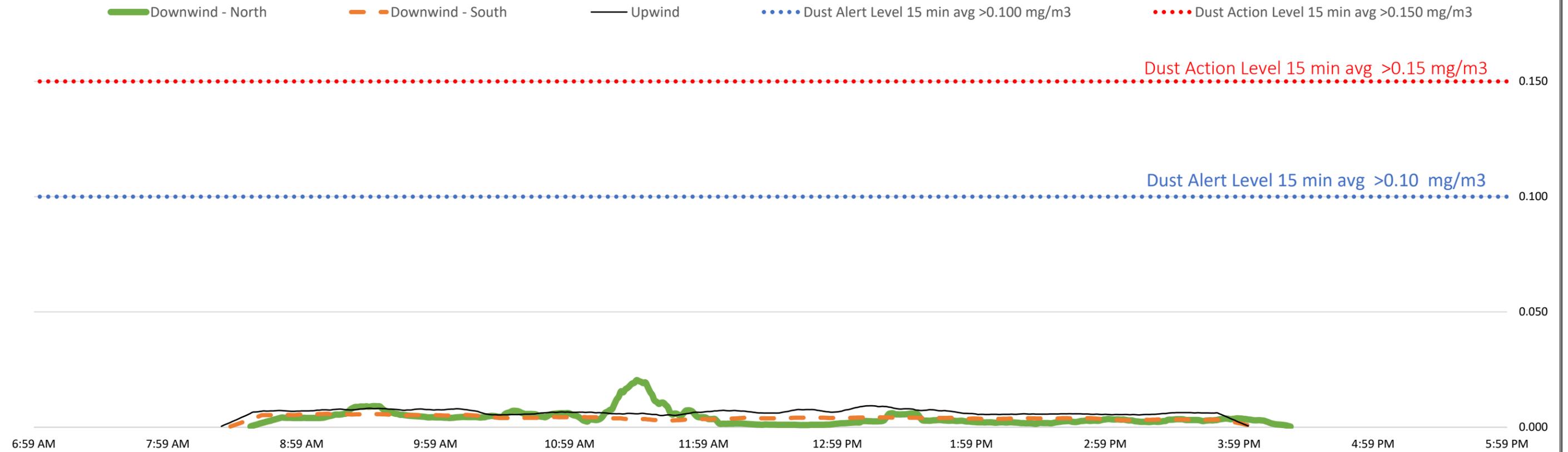
Authorized Signature: _____

Appendix C: CAMP Data

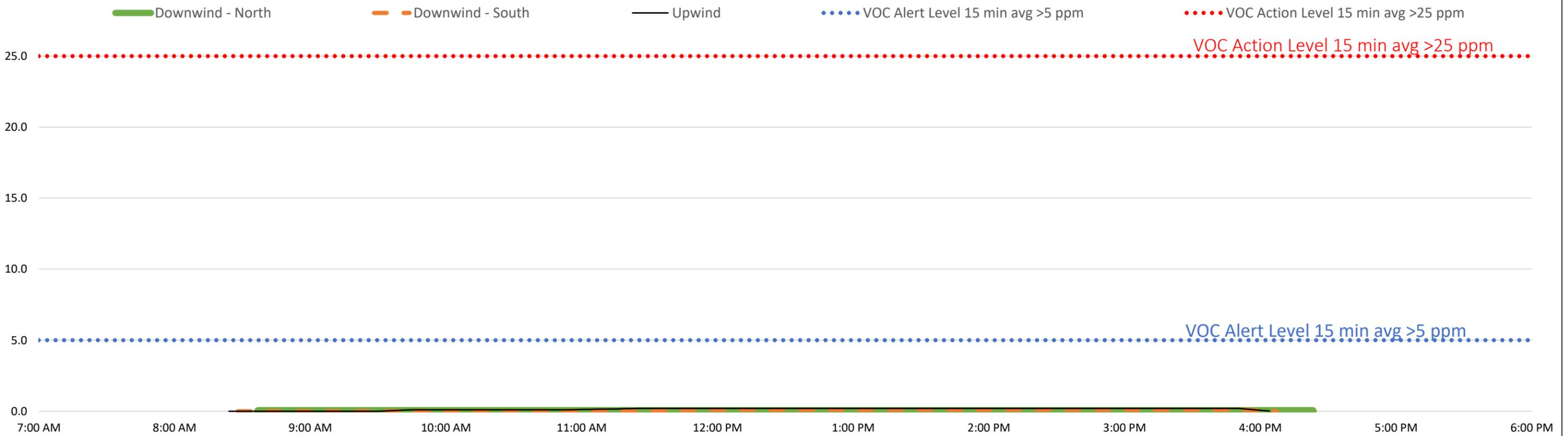


Fixed Station Daily Air Monitoring - November 16, 2021

Dust (mg/m3) 15 min avg

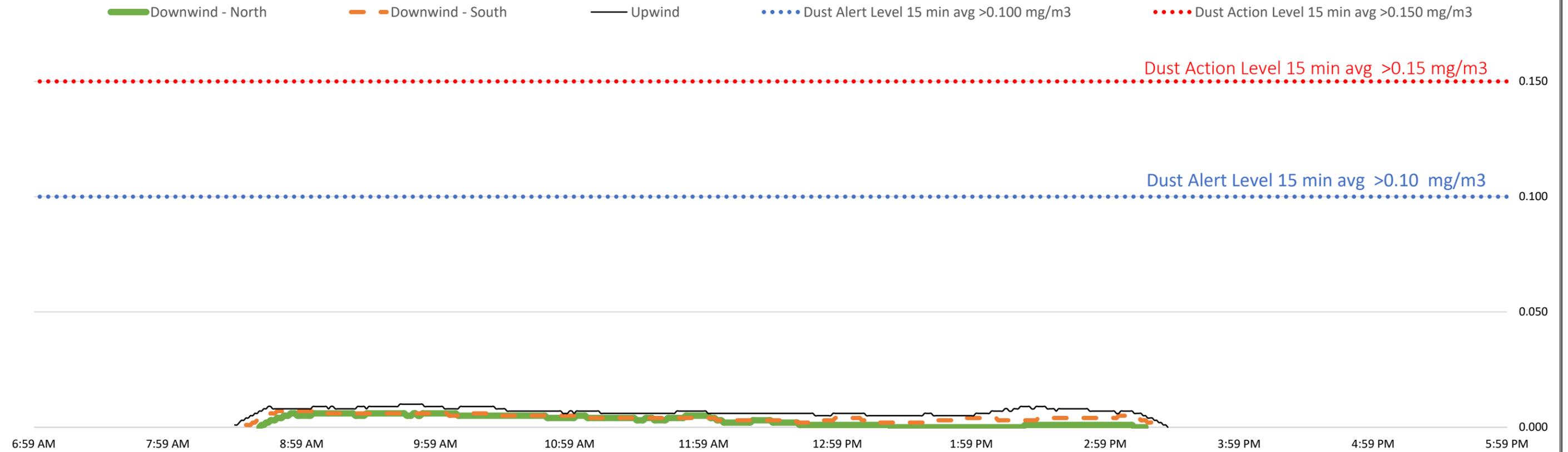


VOC (ppm) 15 min avg

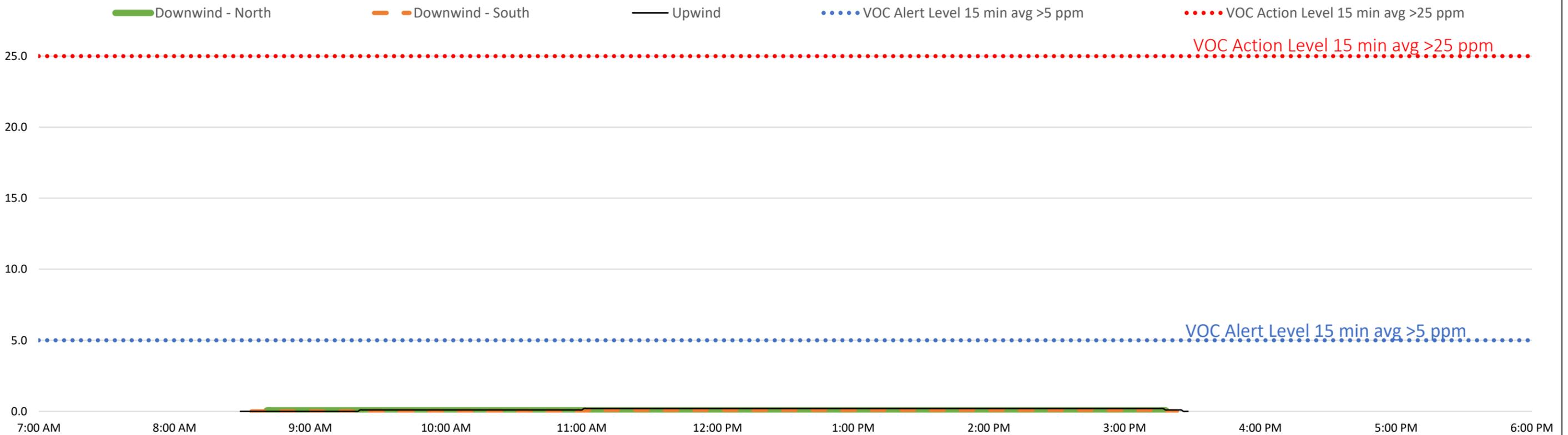


Fixed Station Daily Air Monitoring - November 19, 2021

Dust (mg/m3) 15 min avg

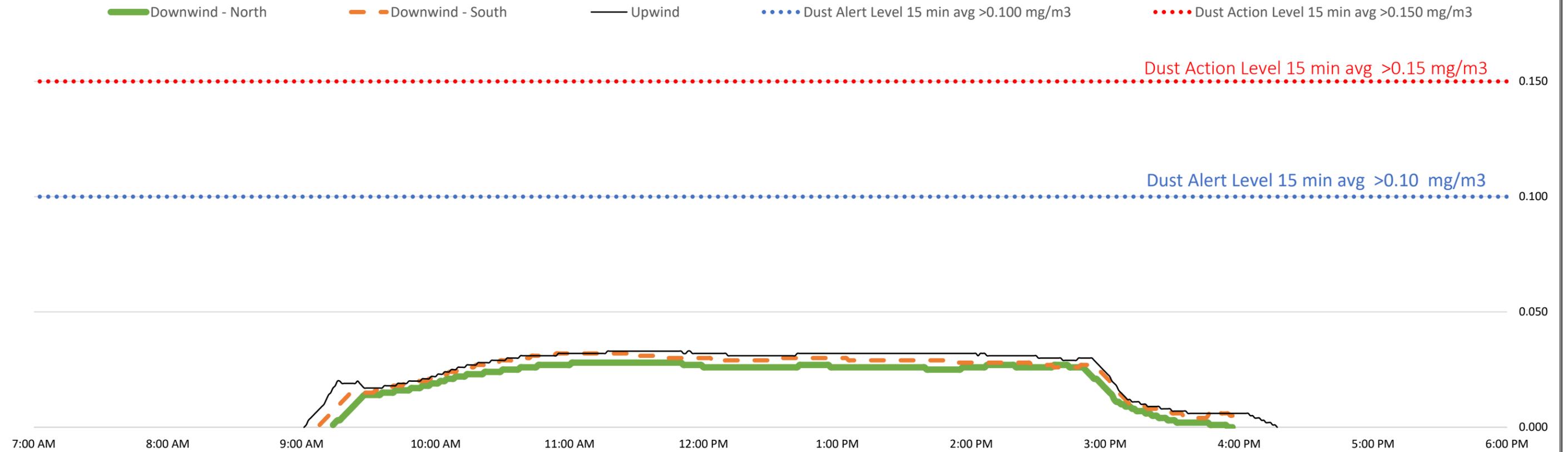


VOC (ppm) 15 min avg

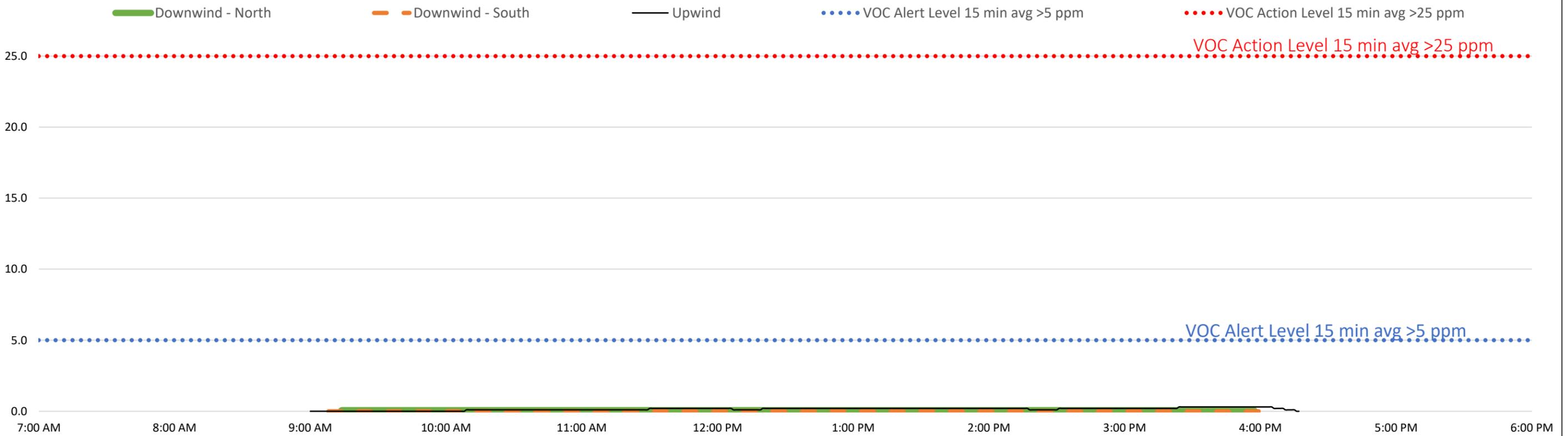


Fixed Station Daily Air Monitoring - December 2, 2021

Dust (mg/m3) 15 min avg

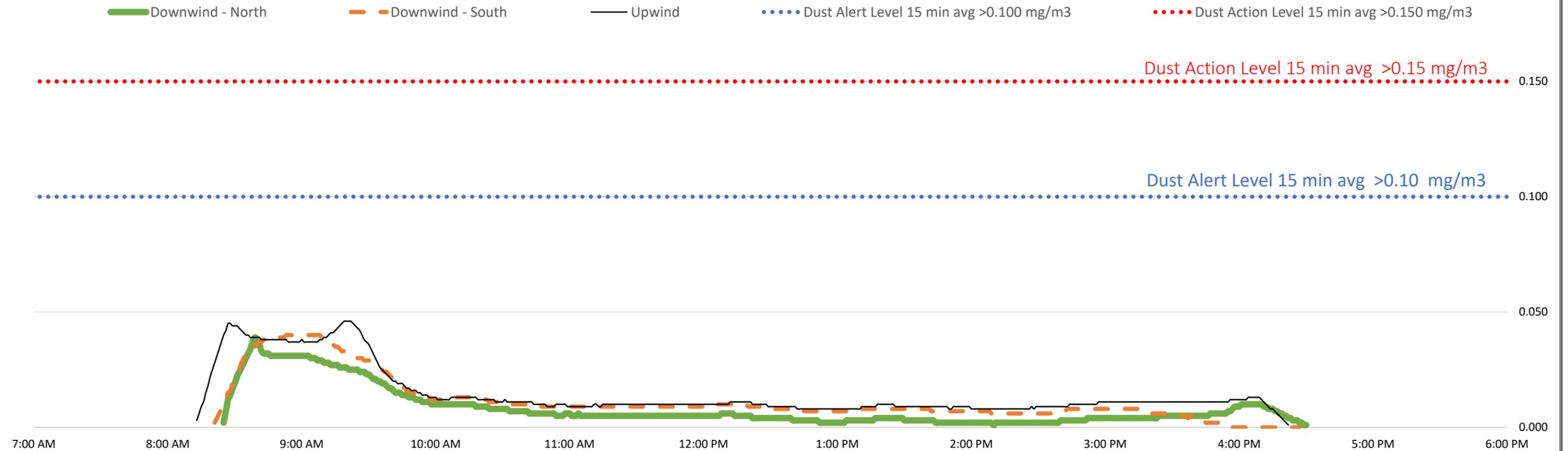


VOC (ppm) 15 min avg

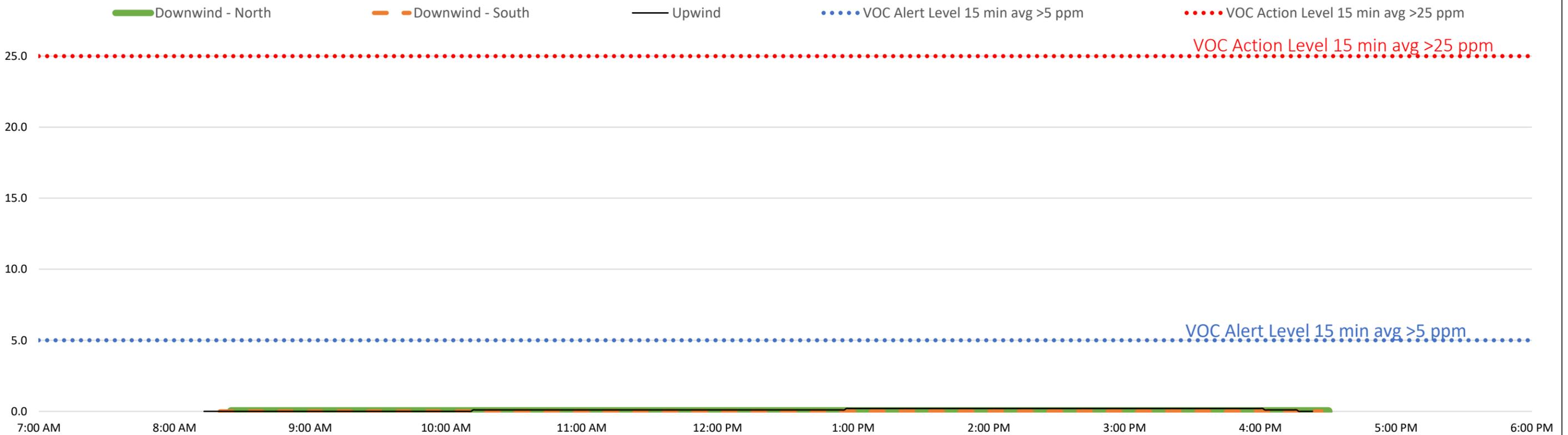


Fixed Station Daily Air Monitoring - December 14, 2021

Dust (mg/m3) 15 min avg

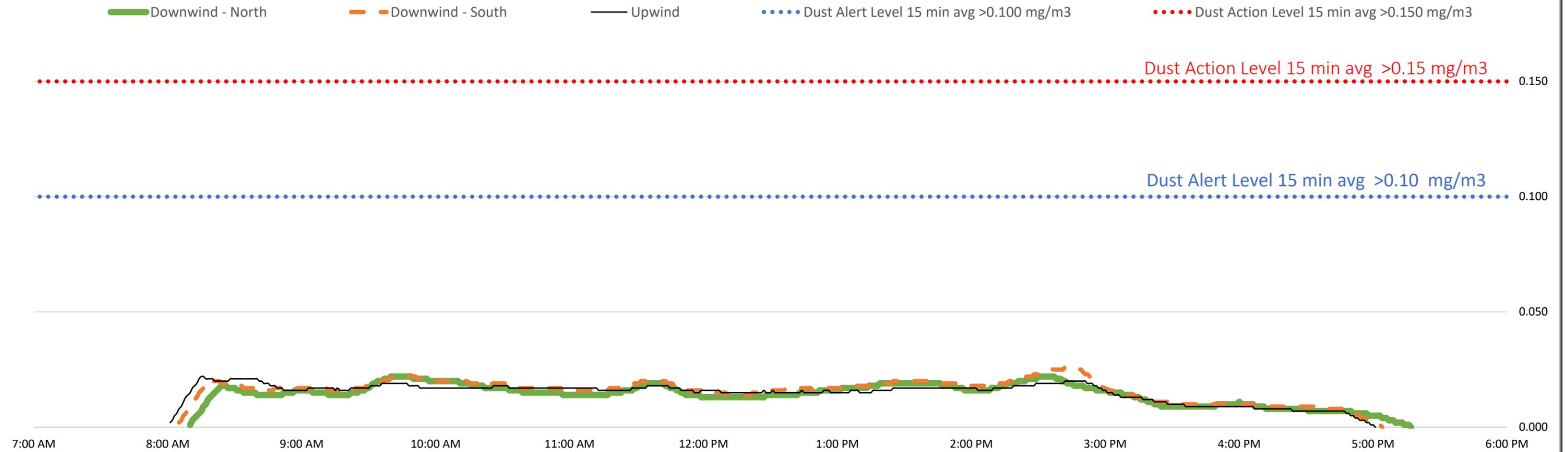


VOC (ppm) 15 min avg

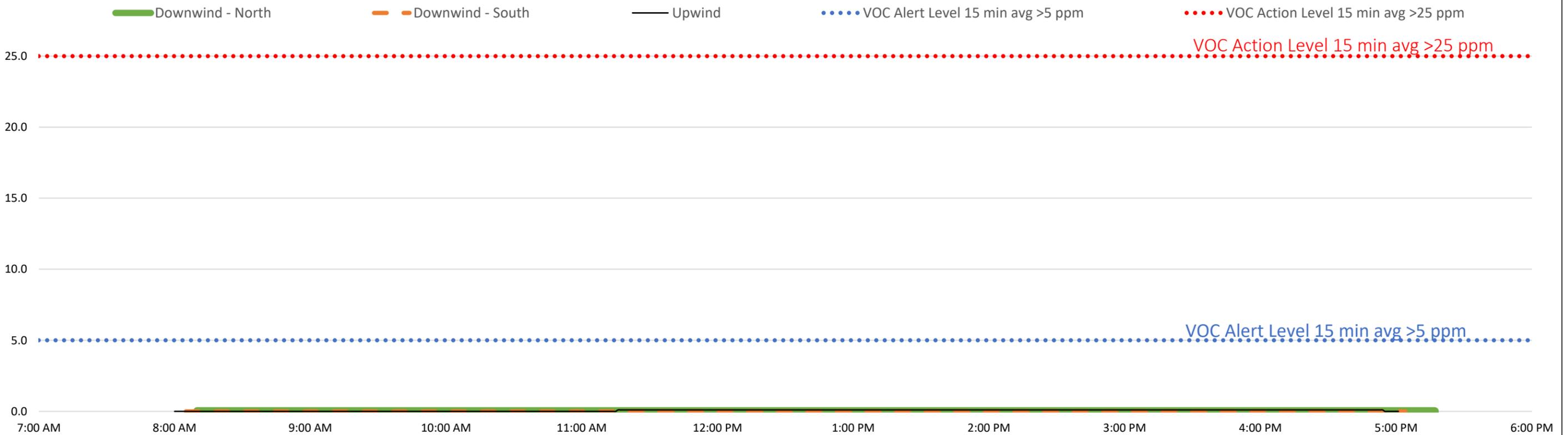


Fixed Station Daily Air Monitoring - February 22, 2022

Dust (mg/m3) 15 min avg

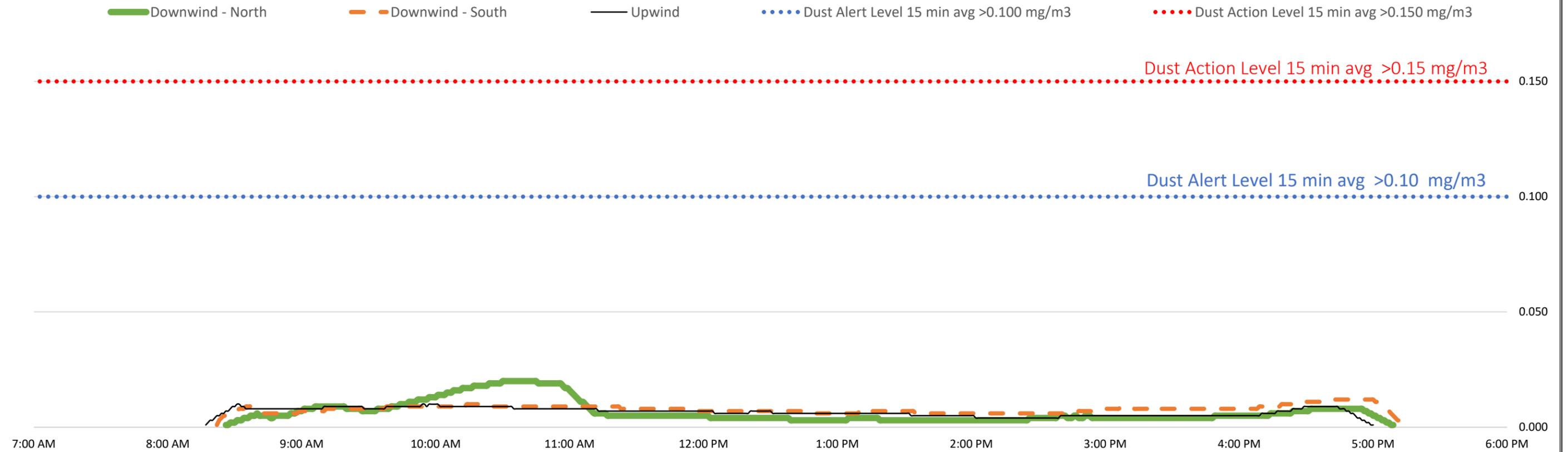


VOC (ppm) 15 min avg

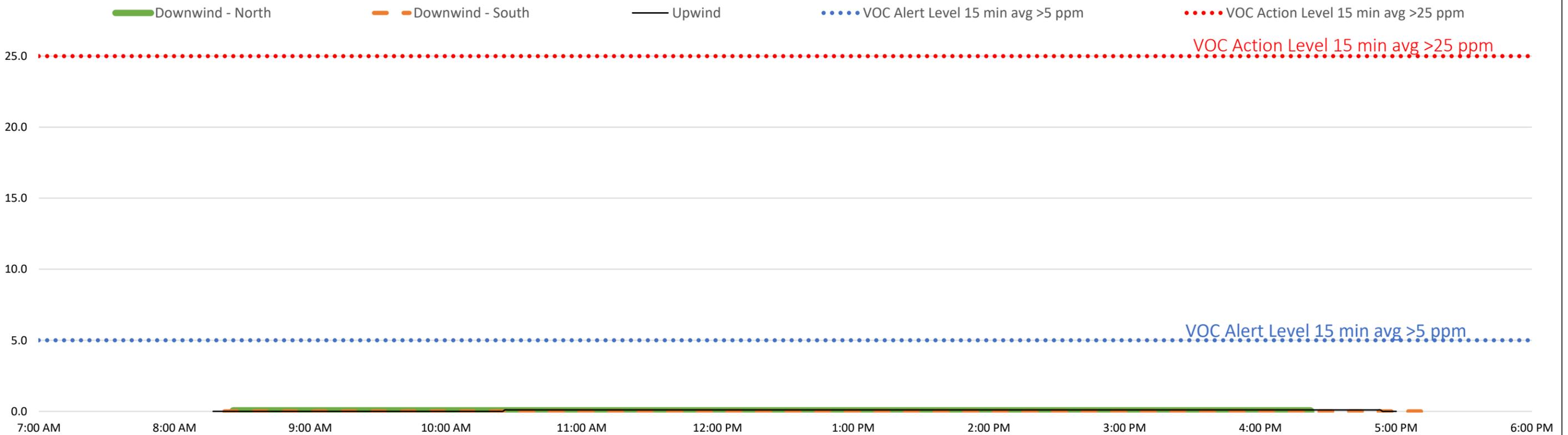


Fixed Station Daily Air Monitoring - February 23, 2022

Dust (mg/m3) 15 min avg

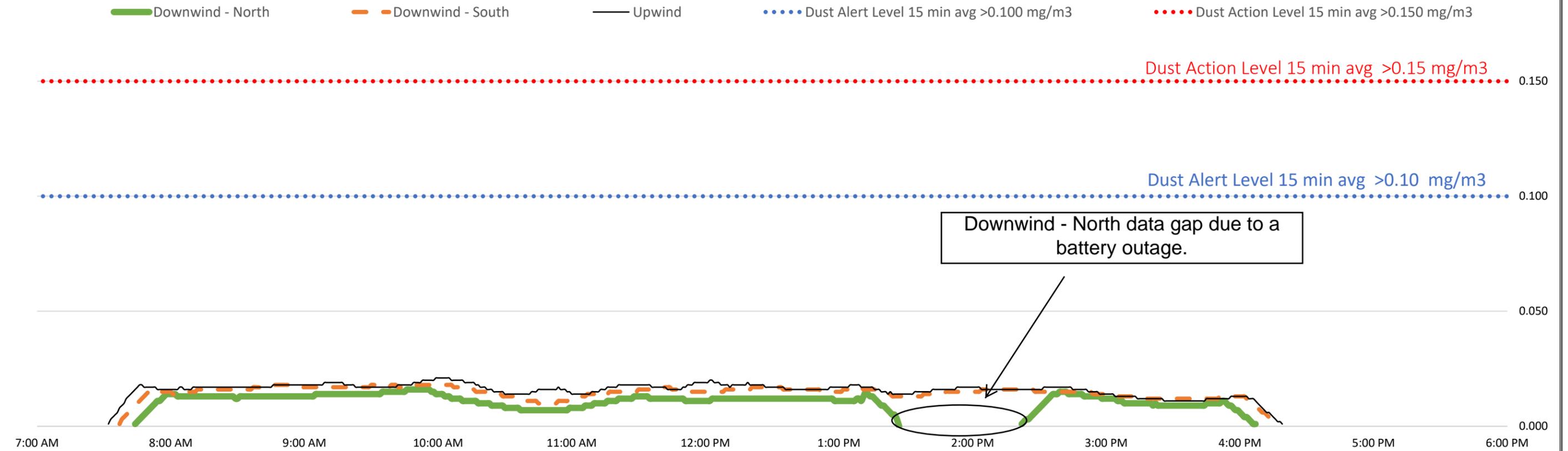


VOC (ppm) 15 min avg

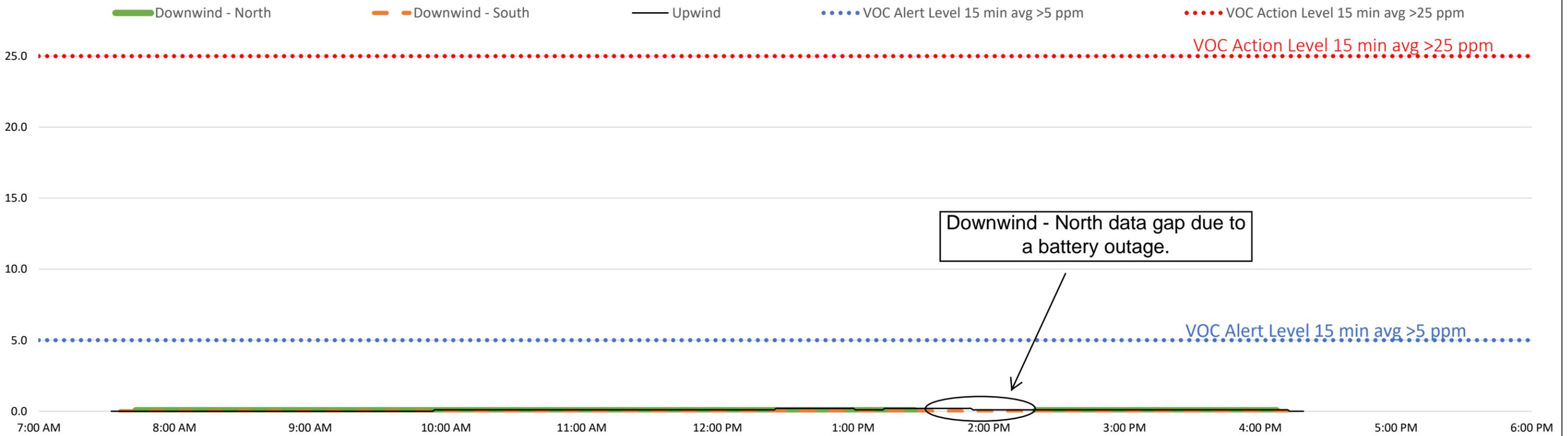


Fixed Station Daily Air Monitoring - March 9, 2022

Dust (mg/m3) 15 min avg

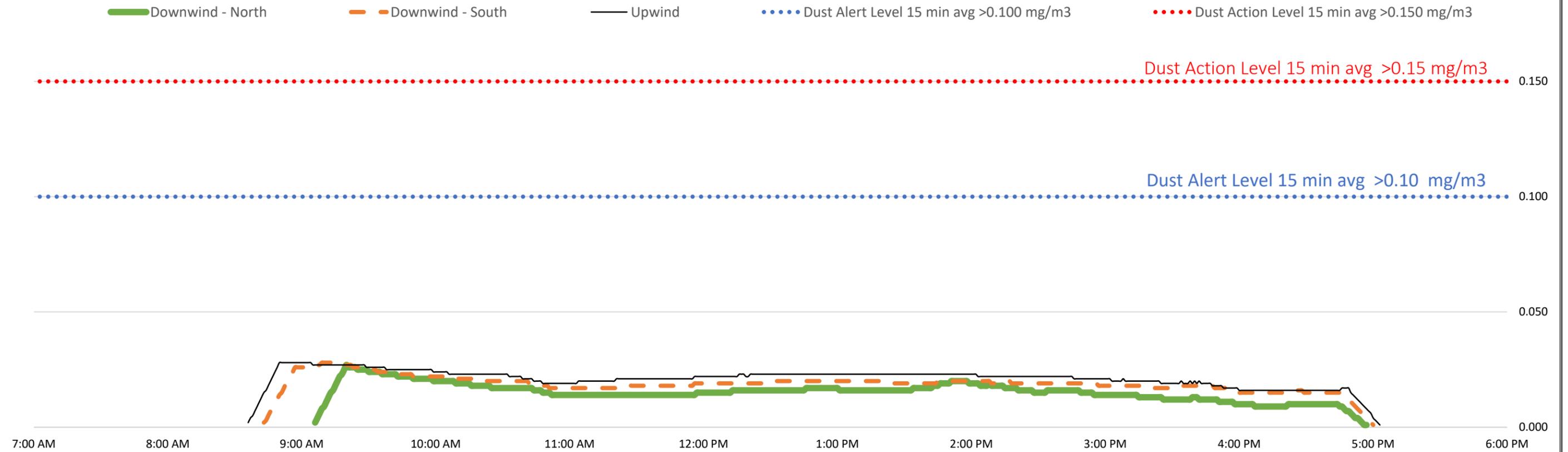


VOC (ppm) 15 min avg

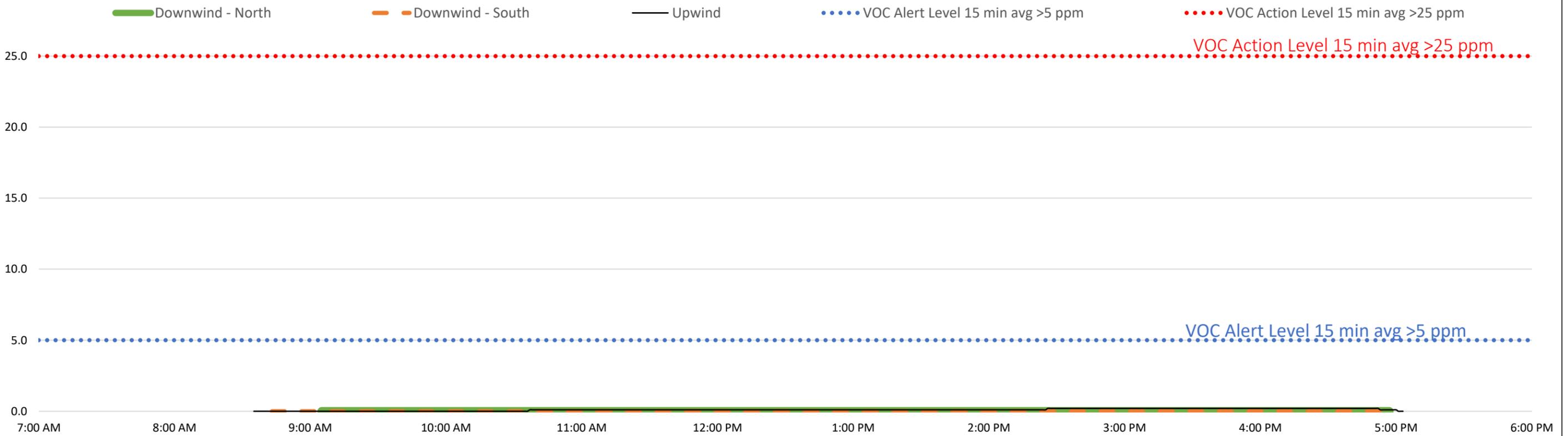


Fixed Station Daily Air Monitoring - March 14, 2022

Dust (mg/m3) 15 min avg

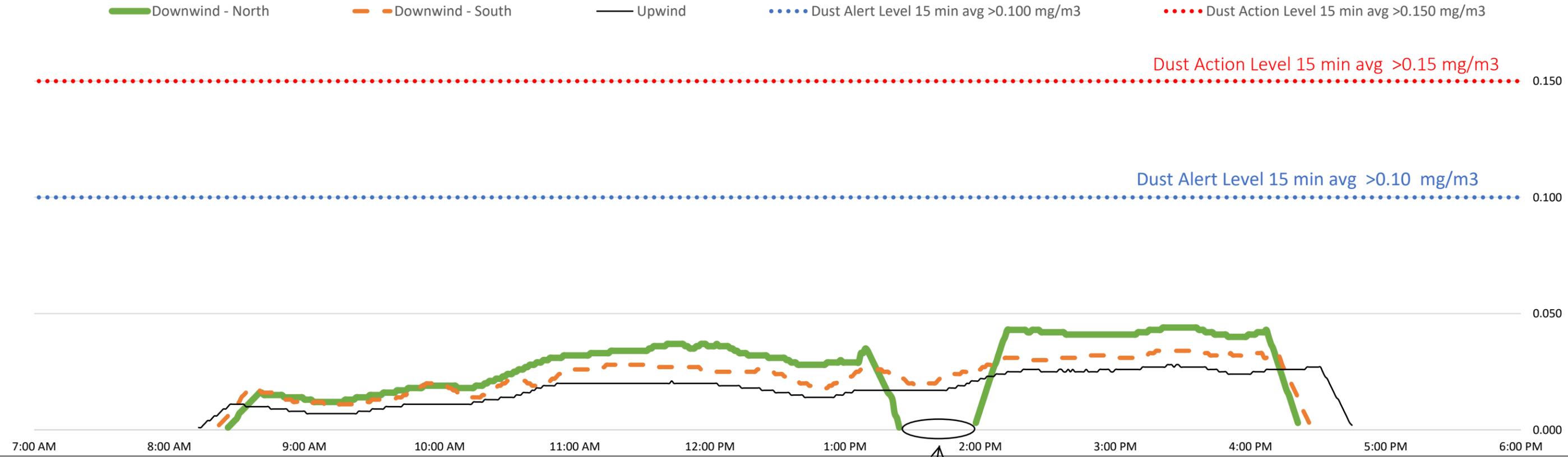


VOC (ppm) 15 min avg

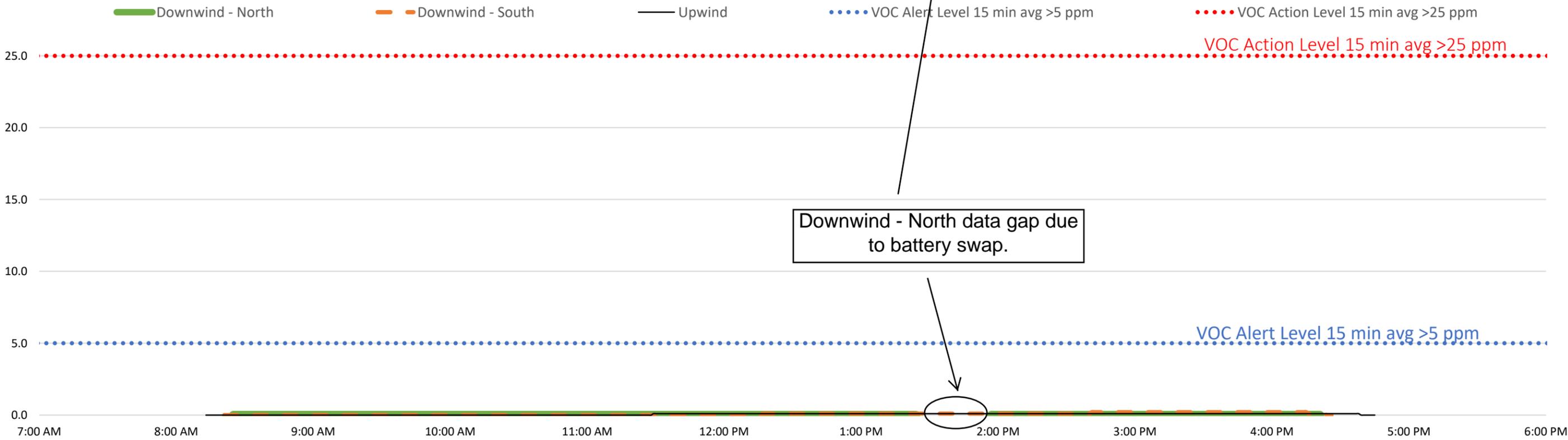


Fixed Station Daily Air Monitoring - May 19, 2022

Dust (mg/m3) 15 min avg



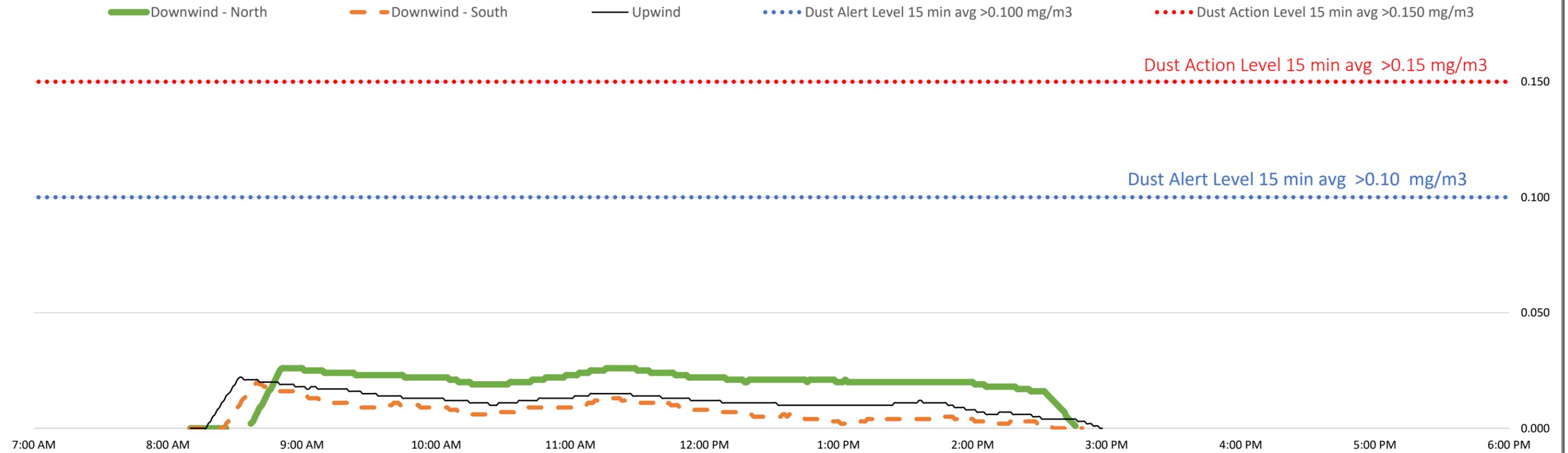
VOC (ppm) 15 min avg



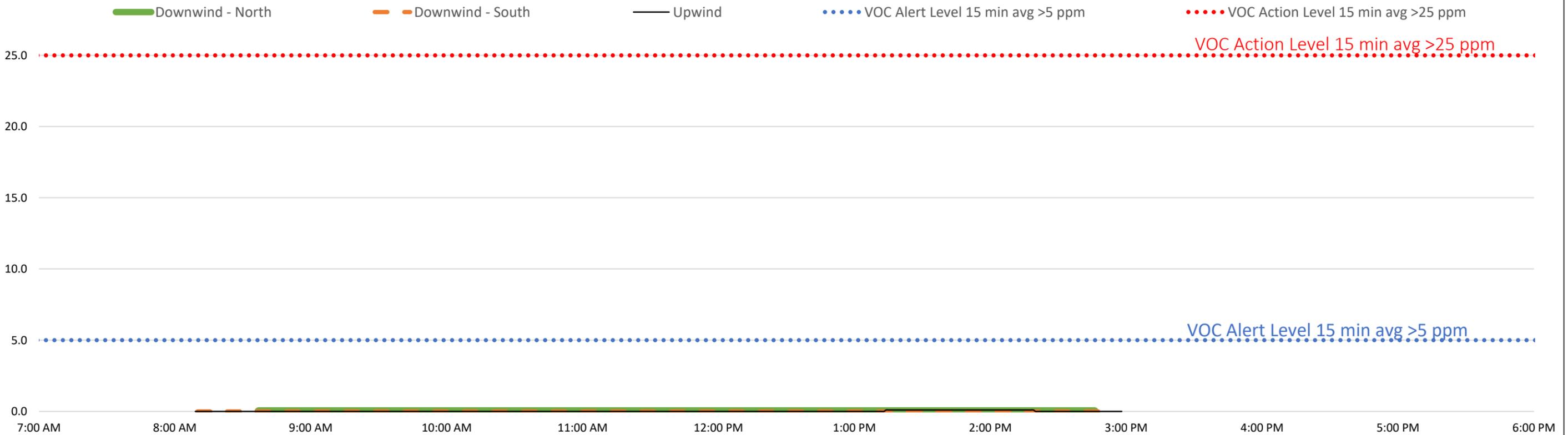
Downwind - North data gap due to battery swap.

Fixed Station Daily Air Monitoring - May 20, 2022

Dust (mg/m3) 15 min avg

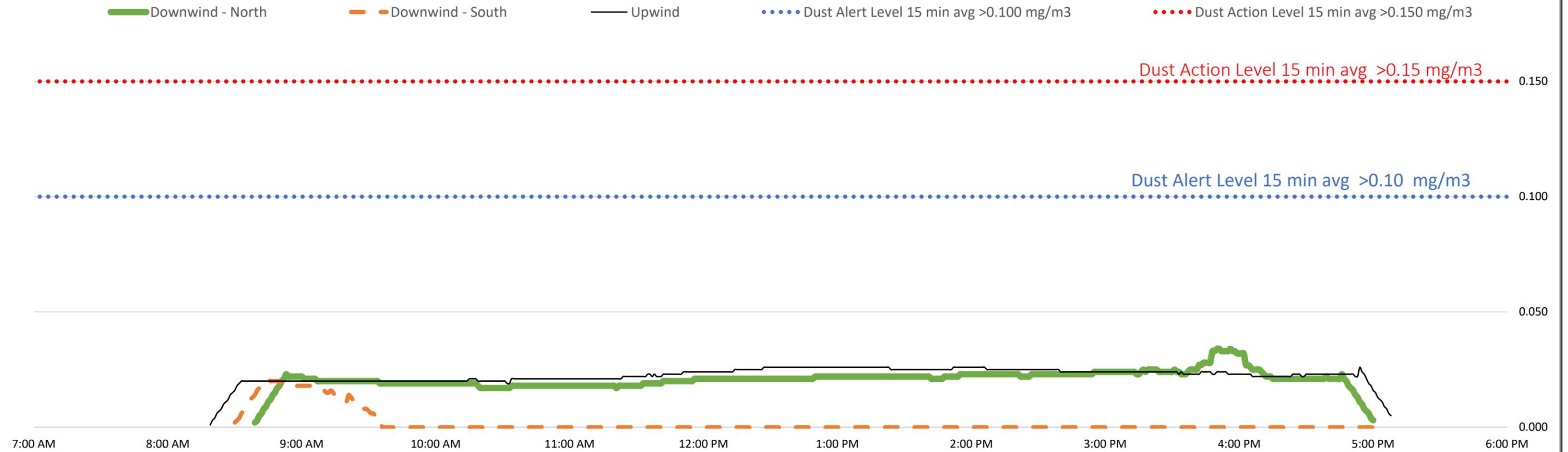


VOC (ppm) 15 min avg

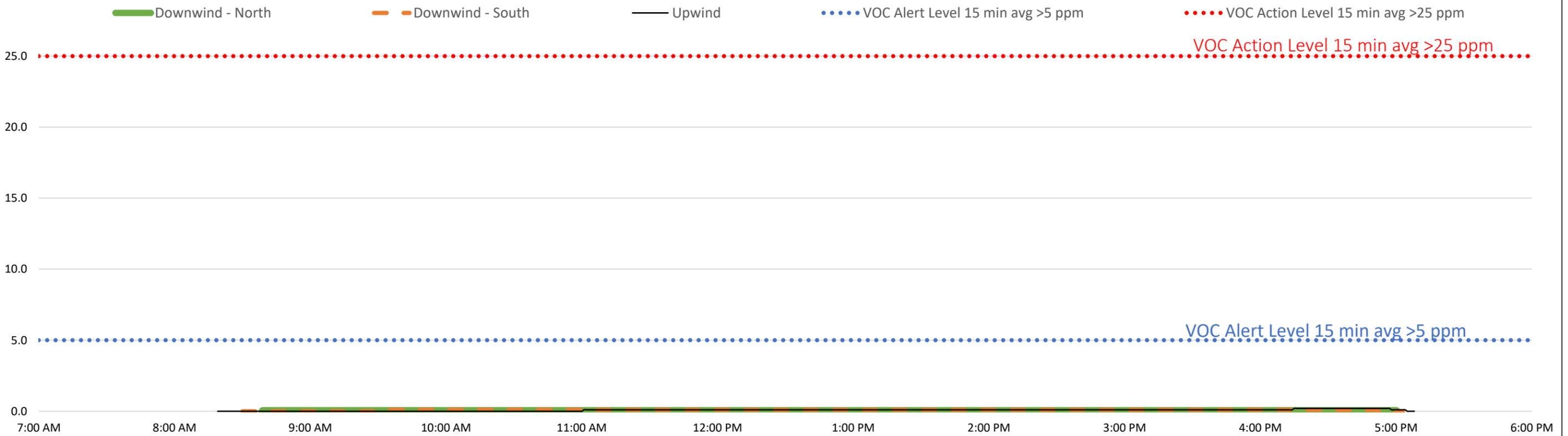


Fixed Station Daily Air Monitoring - June 21, 2022

Dust (mg/m3) 15 min avg

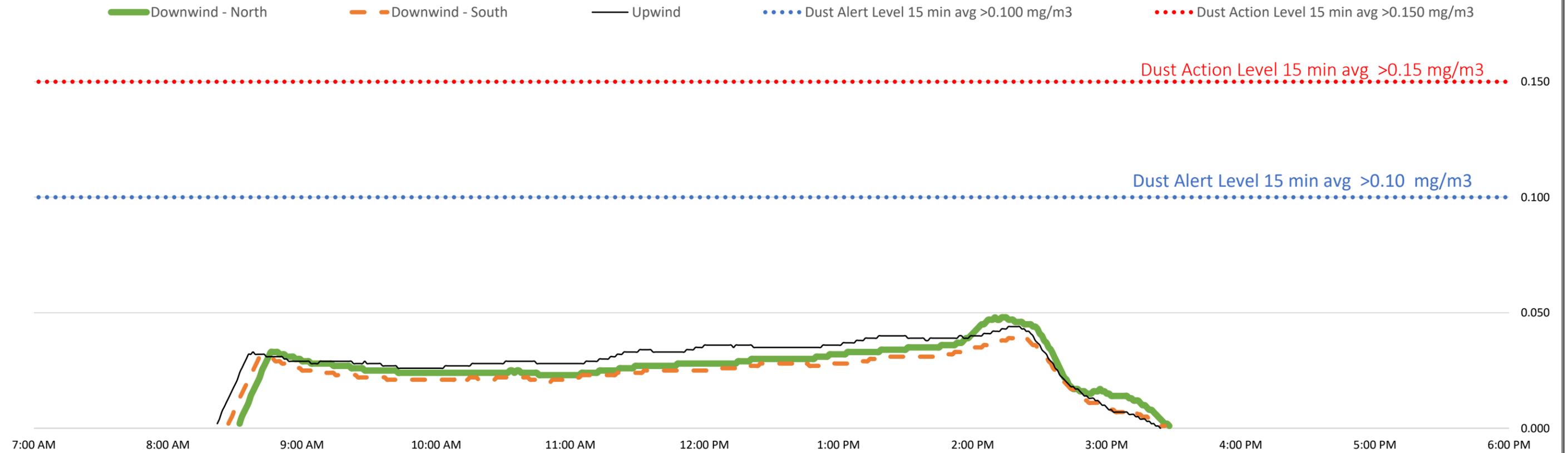


VOC (ppm) 15 min avg

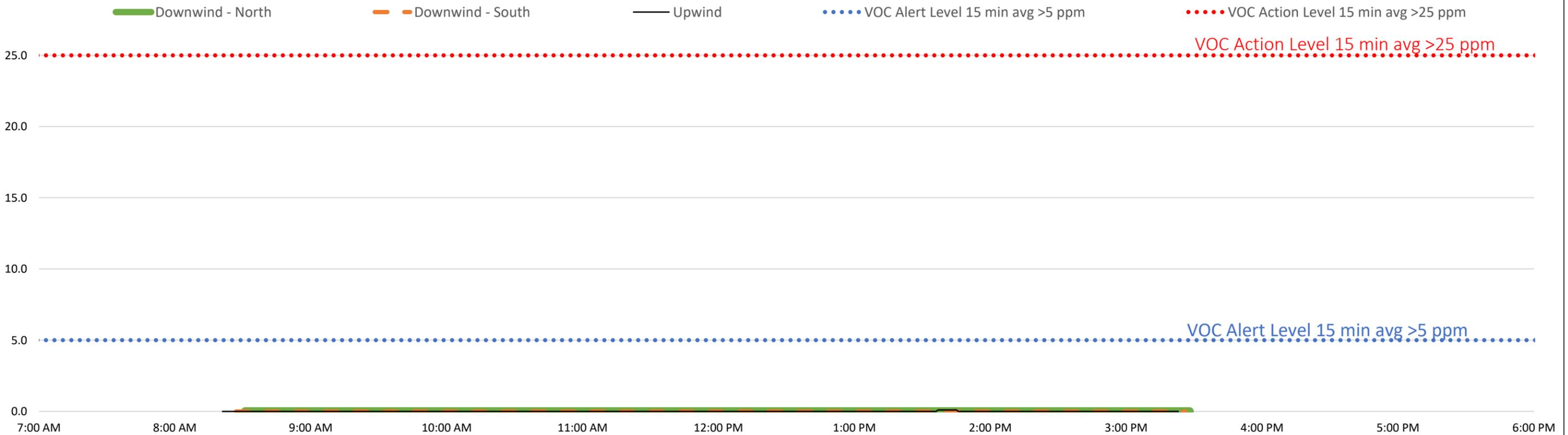


Fixed Station Daily Air Monitoring - June 22, 2022

Dust (mg/m3) 15 min avg

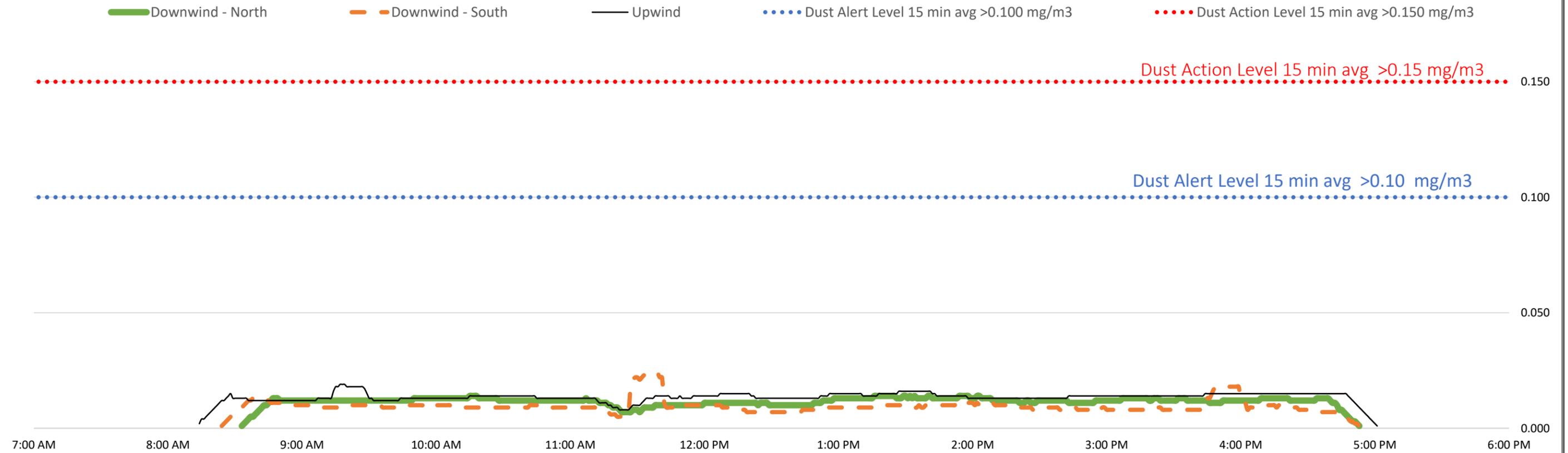


VOC (ppm) 15 min avg

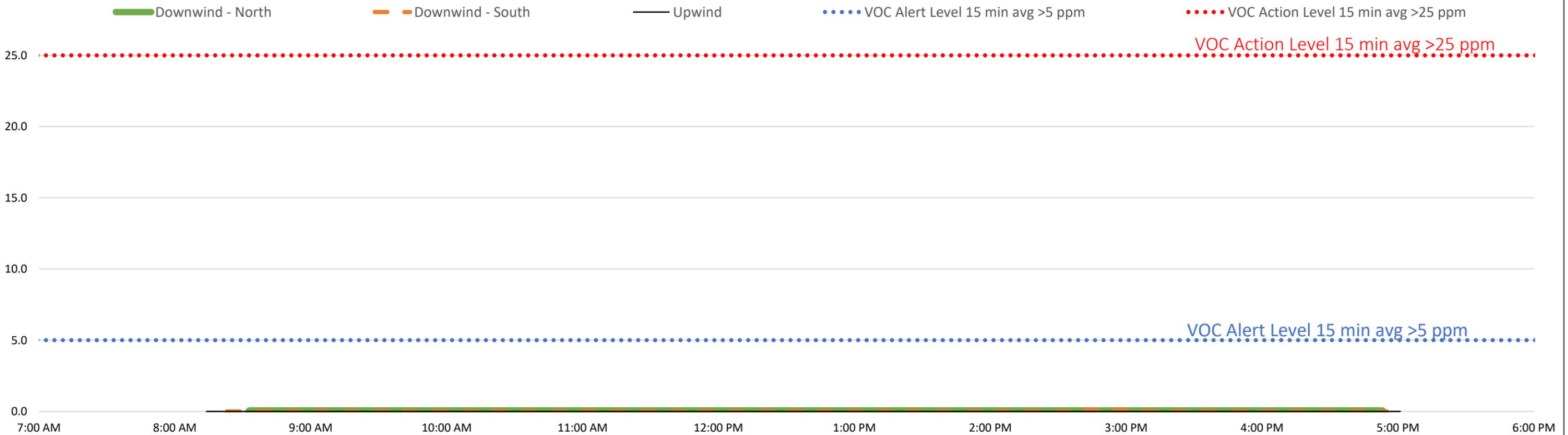


Fixed Station Daily Air Monitoring - June 29, 2022

Dust (mg/m3) 15 min avg

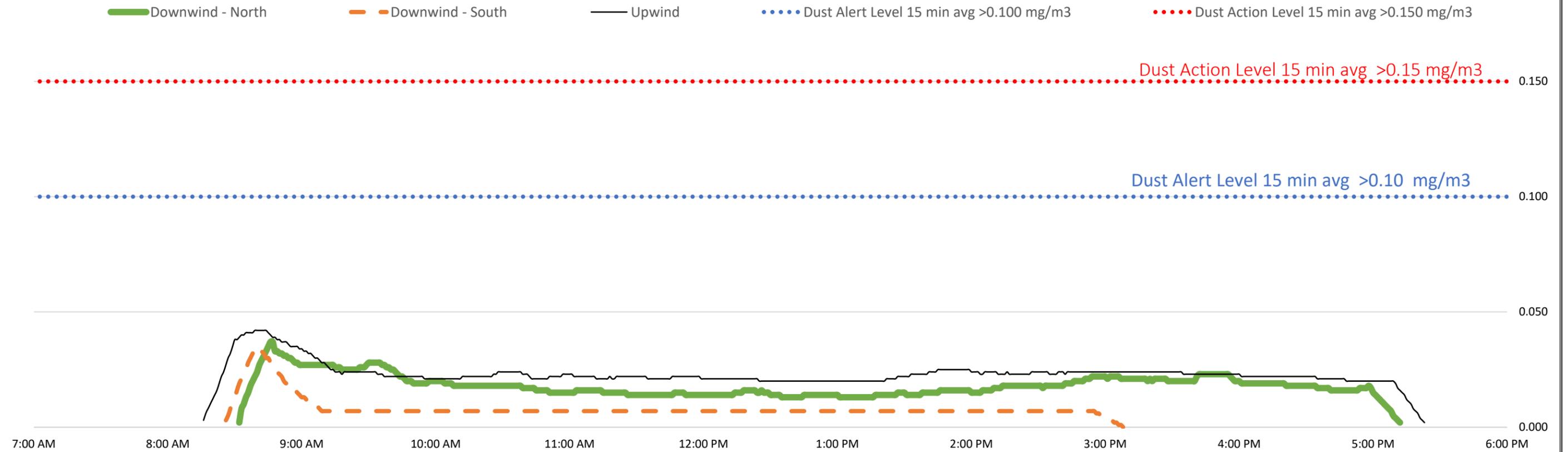


VOC (ppm) 15 min avg

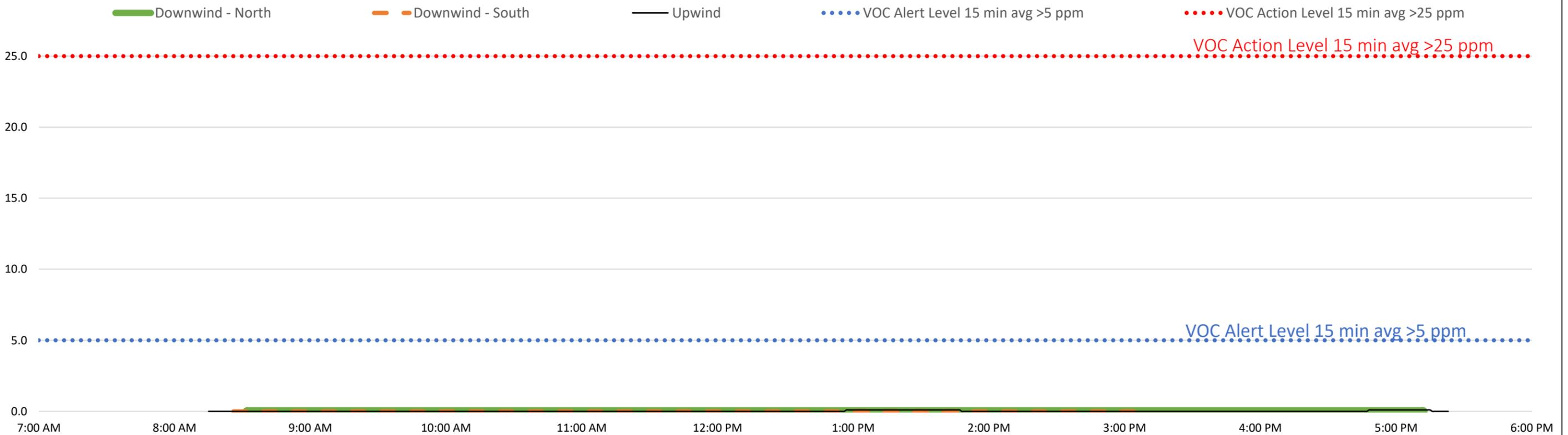


Fixed Station Daily Air Monitoring - June 30, 2022

Dust (mg/m3) 15 min avg

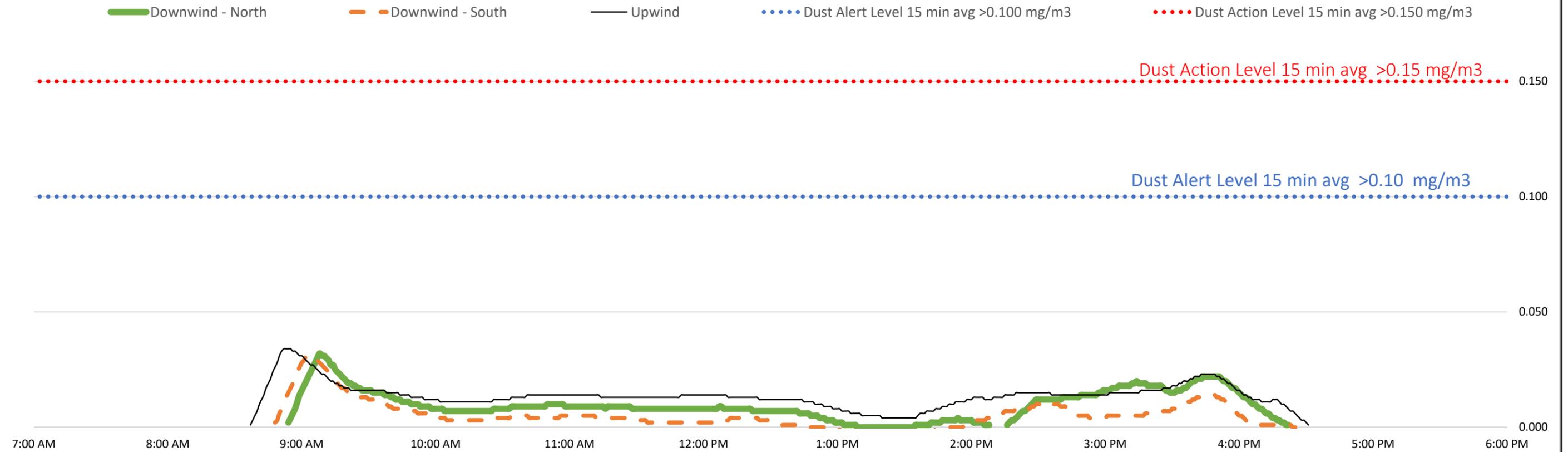


VOC (ppm) 15 min avg

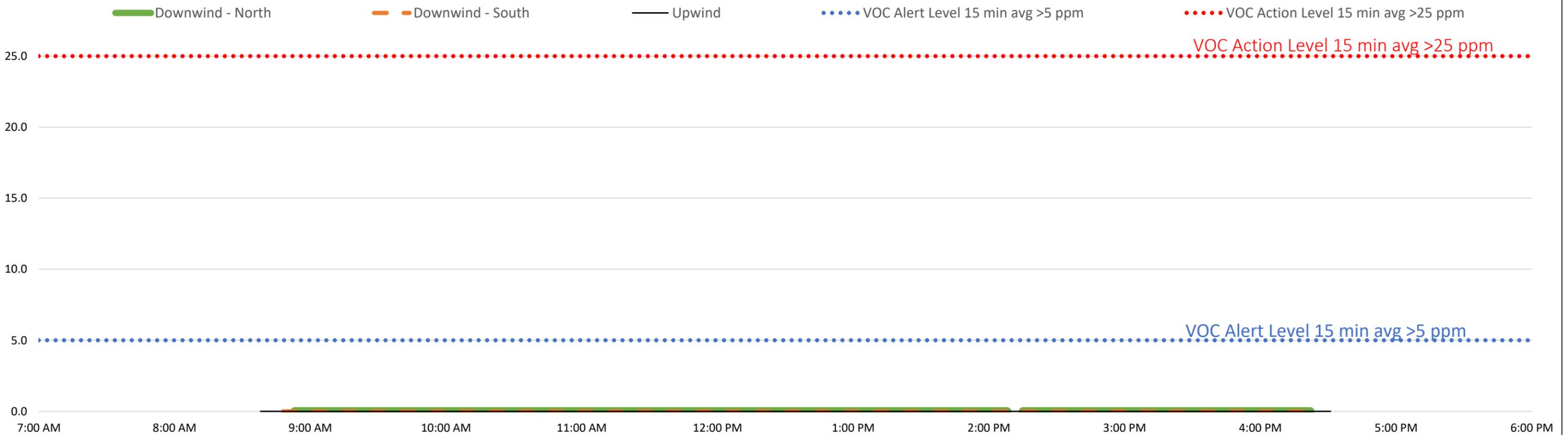


Fixed Station Daily Air Monitoring - July 18, 2022

Dust (mg/m3) 15 min avg

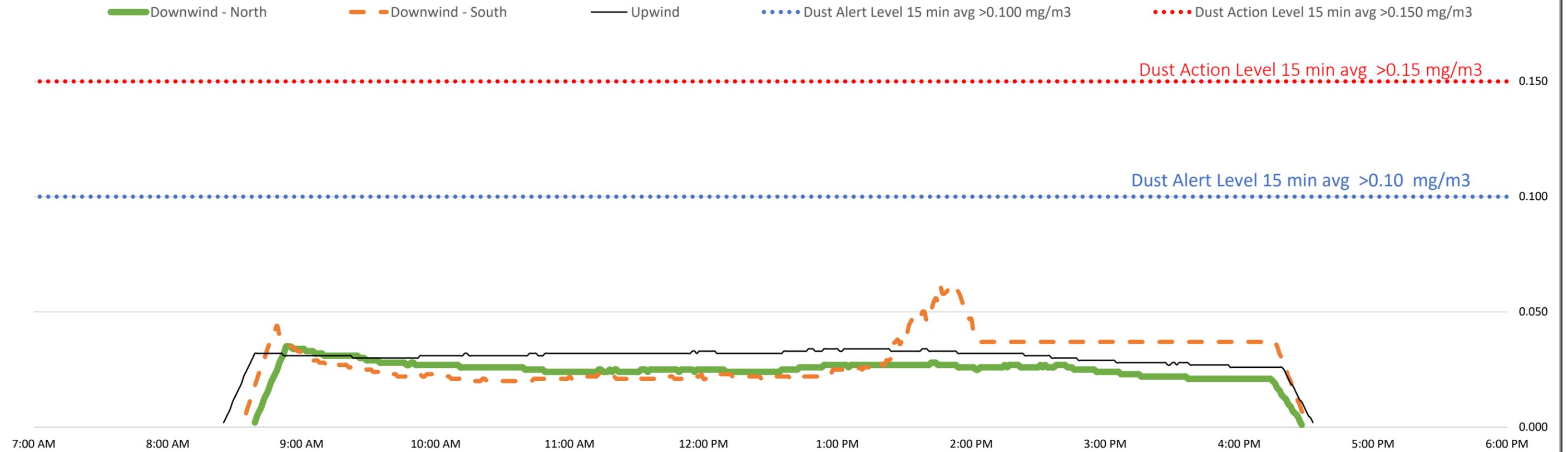


VOC (ppm) 15 min avg

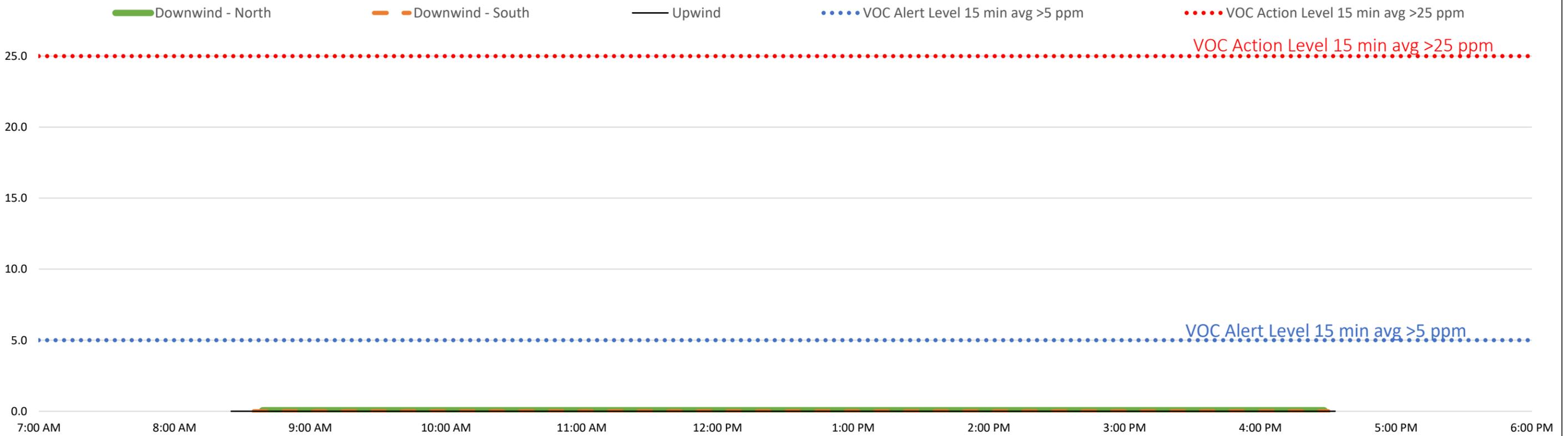


Fixed Station Daily Air Monitoring - July 19, 2022

Dust (mg/m3) 15 min avg

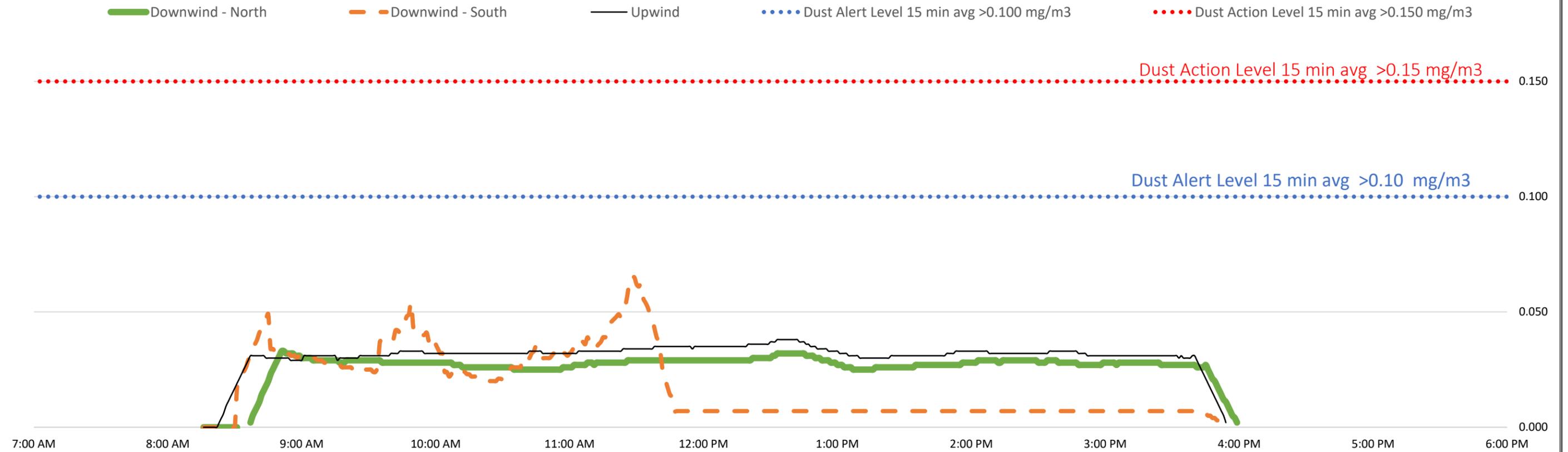


VOC (ppm) 15 min avg

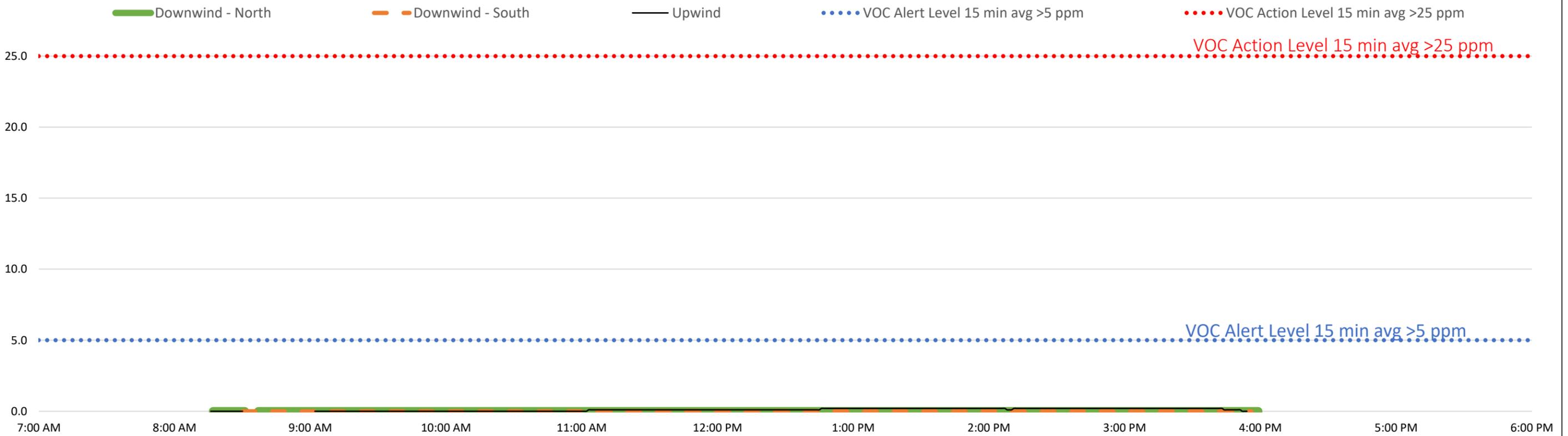


Fixed Station Daily Air Monitoring - July 20, 2022

Dust (mg/m3) 15 min avg

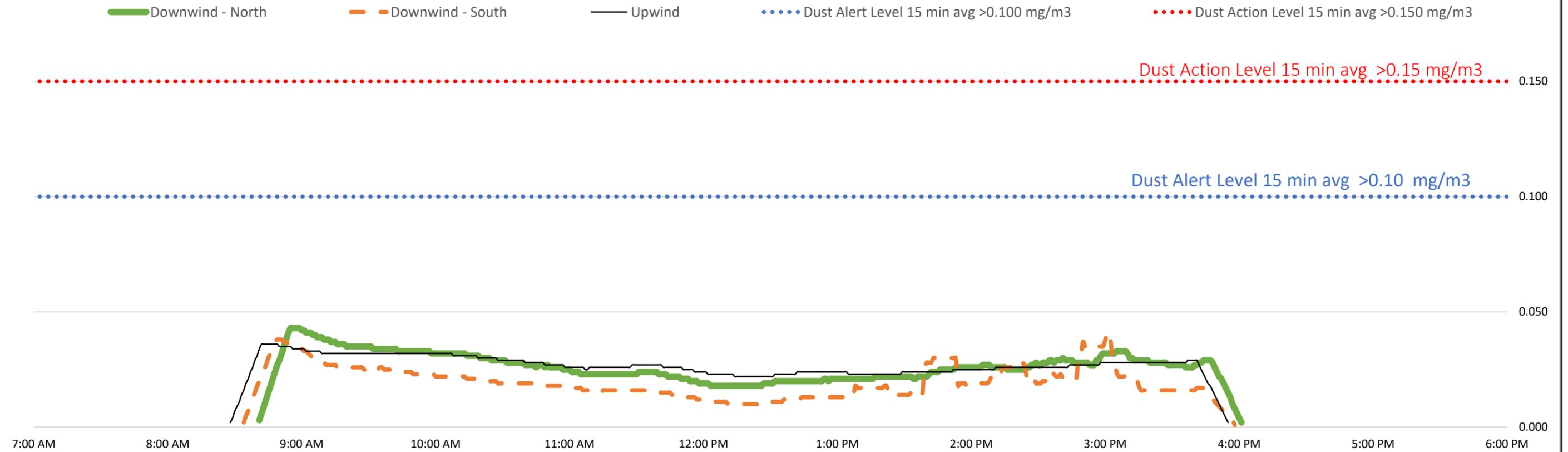


VOC (ppm) 15 min avg

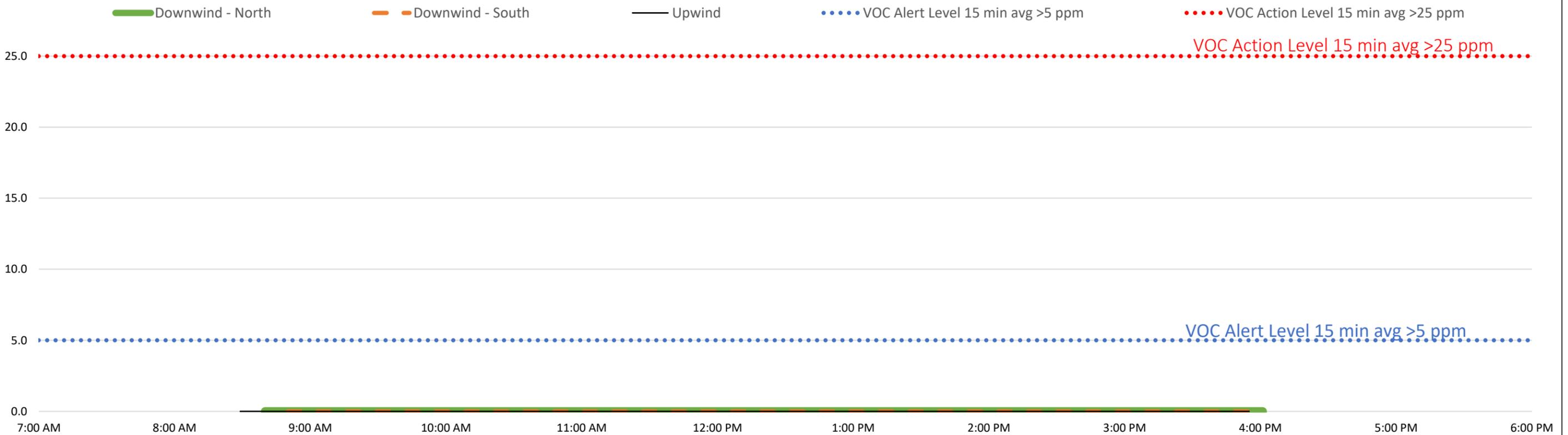


Fixed Station Daily Air Monitoring - July 21, 2022

Dust (mg/m3) 15 min avg

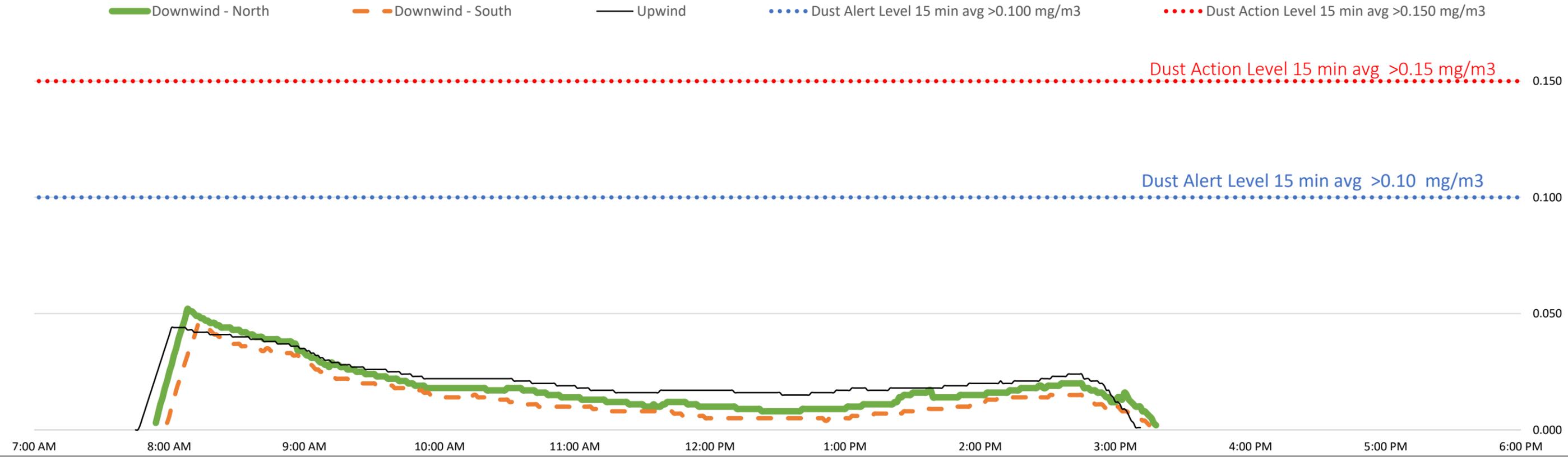


VOC (ppm) 15 min avg

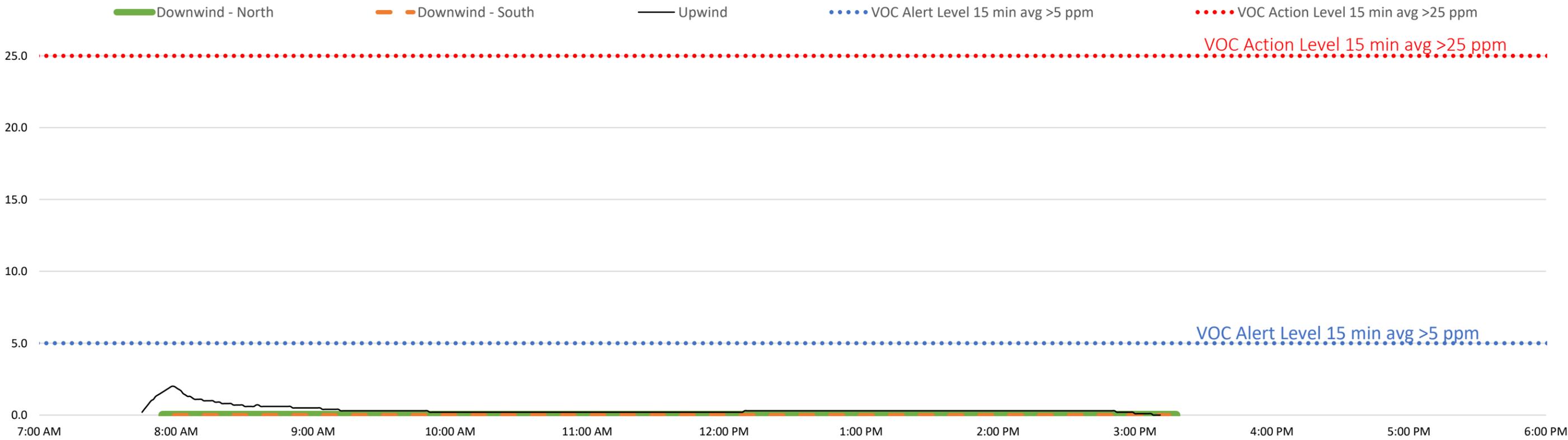


Fixed Station Daily Air Monitoring - July 22, 2022

Dust (mg/m3) 15 min avg

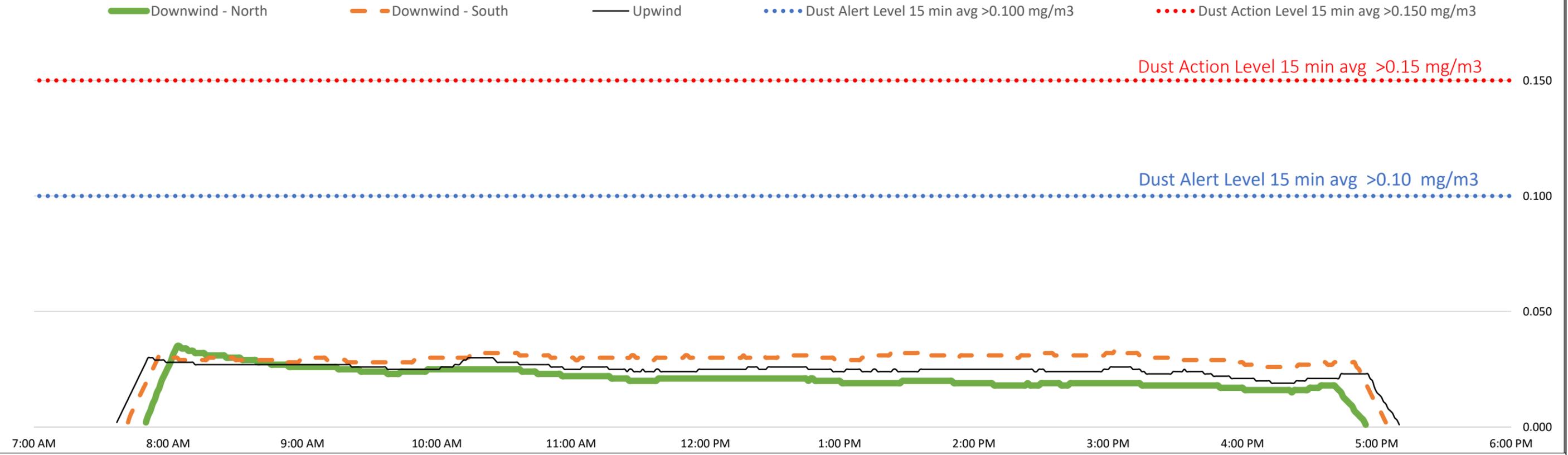


VOC (ppm) 15 min avg

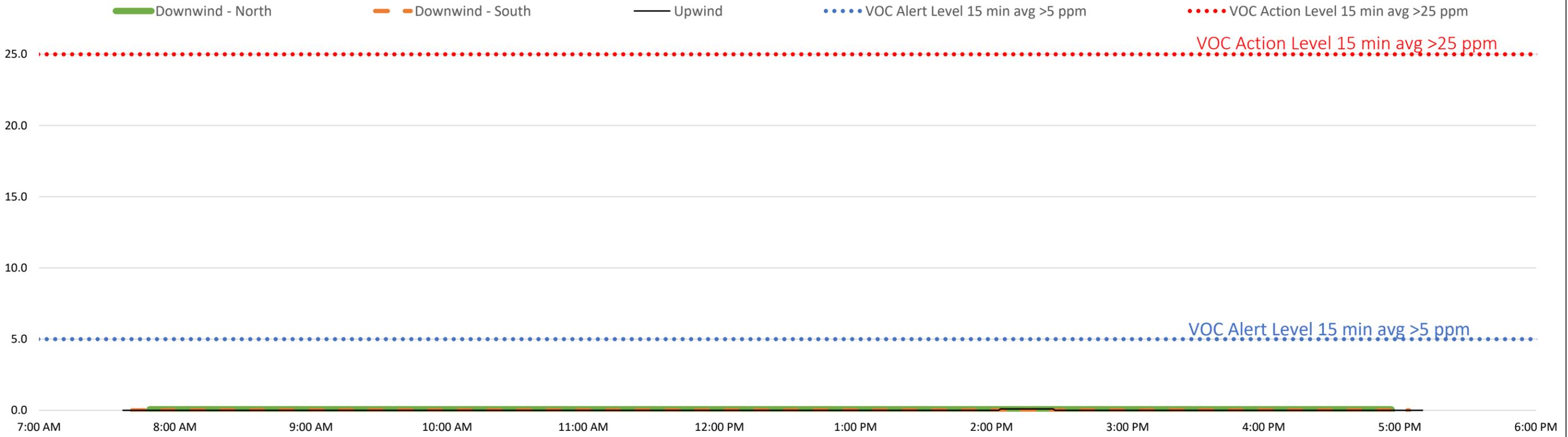


Fixed Station Daily Air Monitoring - August 23, 2022

Dust (mg/m3) 15 min avg

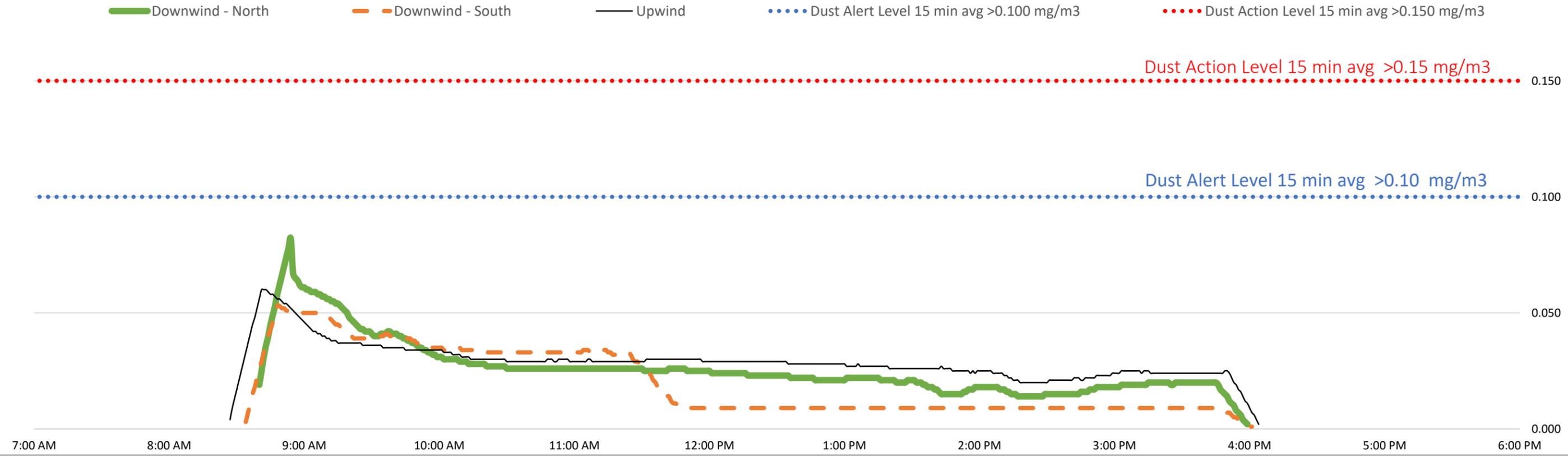


VOC (ppm) 15 min avg

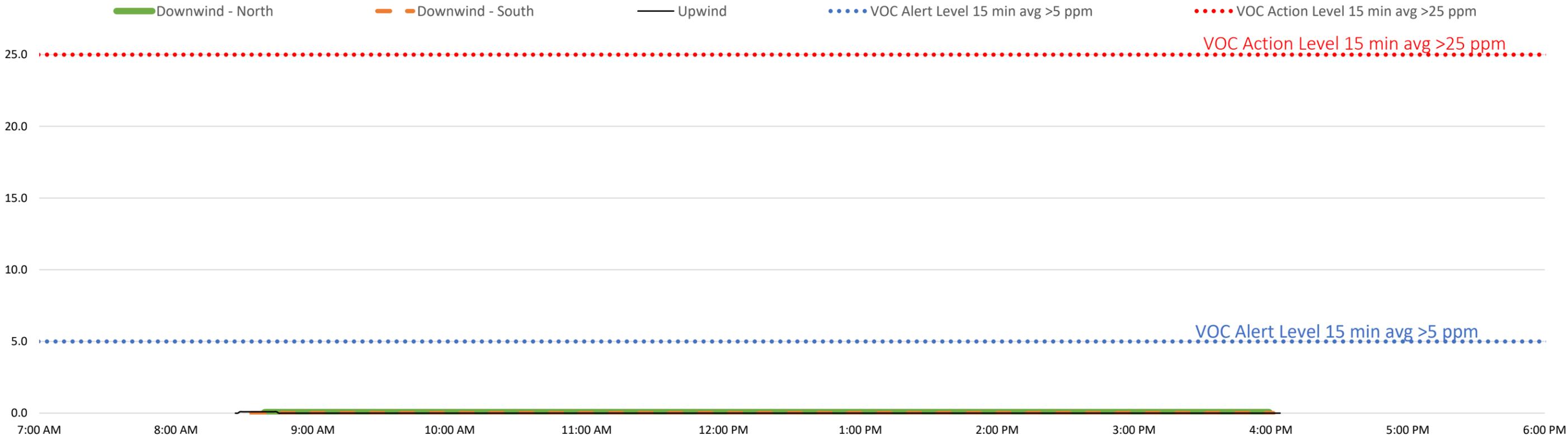


Fixed Station Daily Air Monitoring - August 25, 2022

Dust (mg/m3) 15 min avg

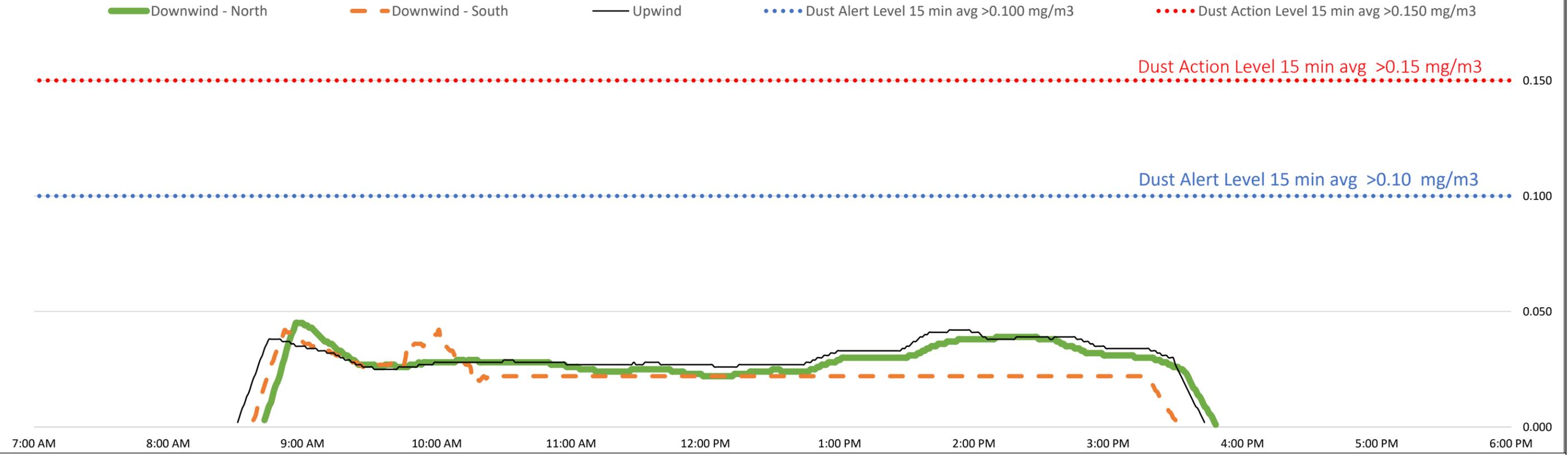


VOC (ppm) 15 min avg

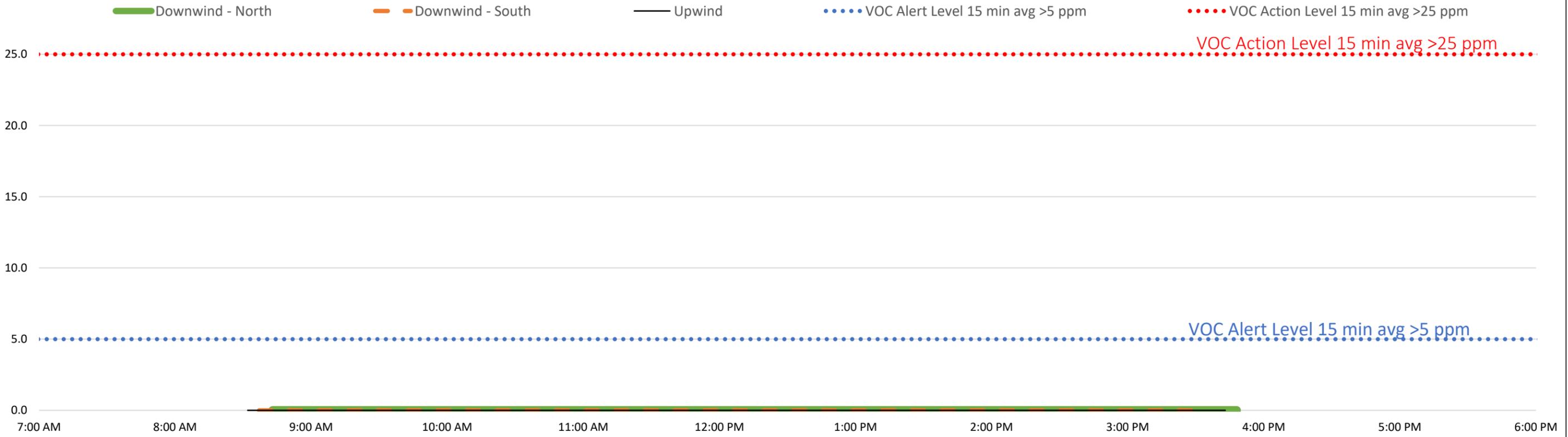


Fixed Station Daily Air Monitoring - August 26, 2022

Dust (mg/m3) 15 min avg

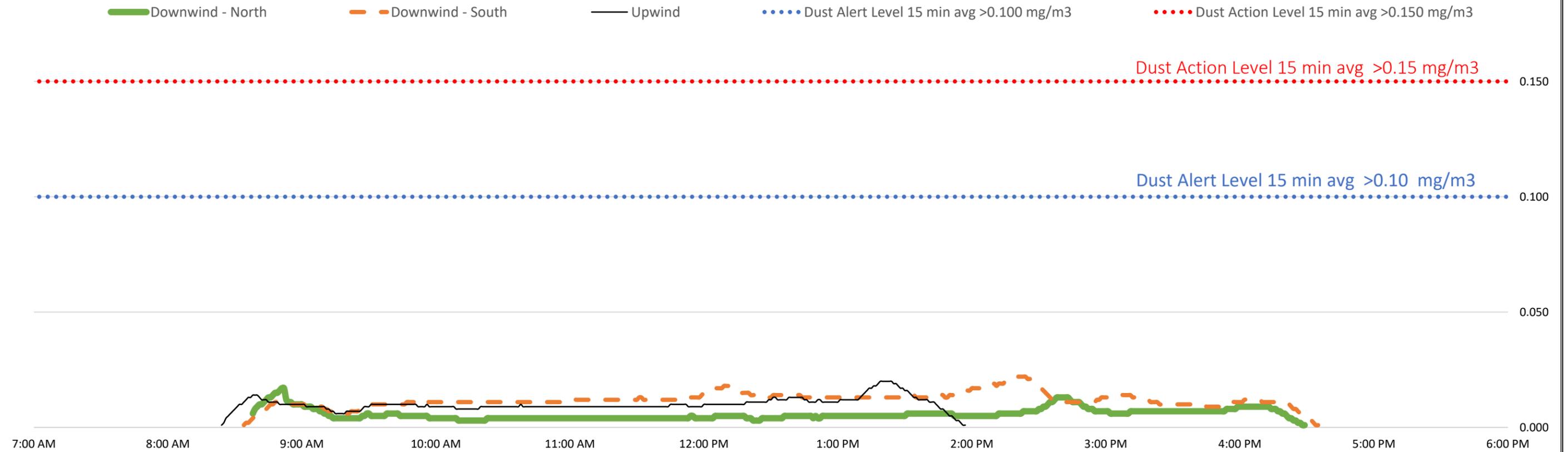


VOC (ppm) 15 min avg

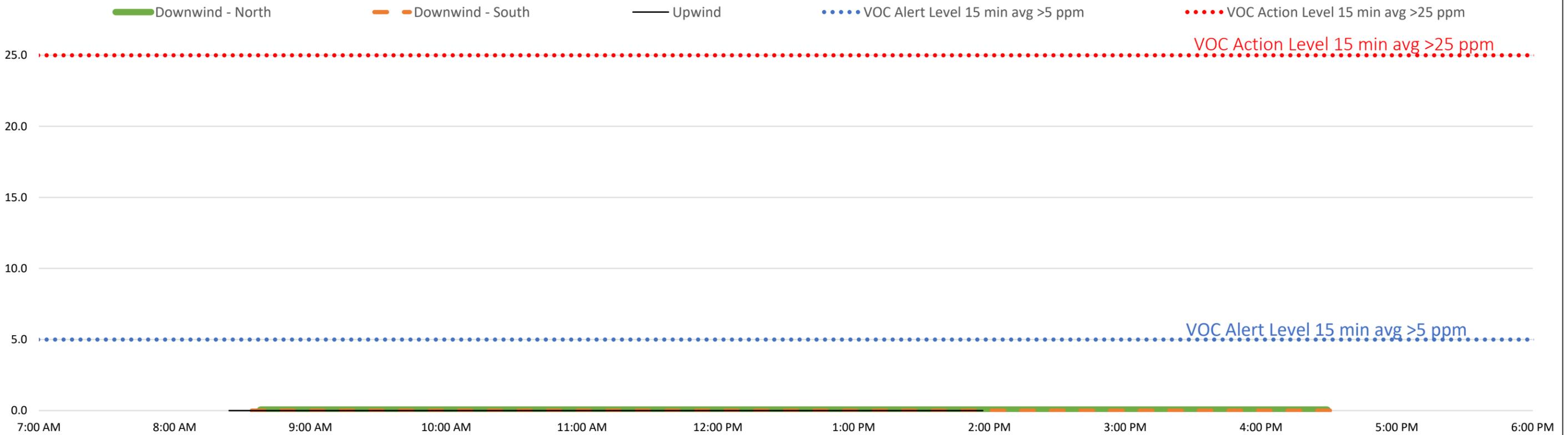


Fixed Station Daily Air Monitoring - September 13, 2022

Dust (mg/m3) 15 min avg

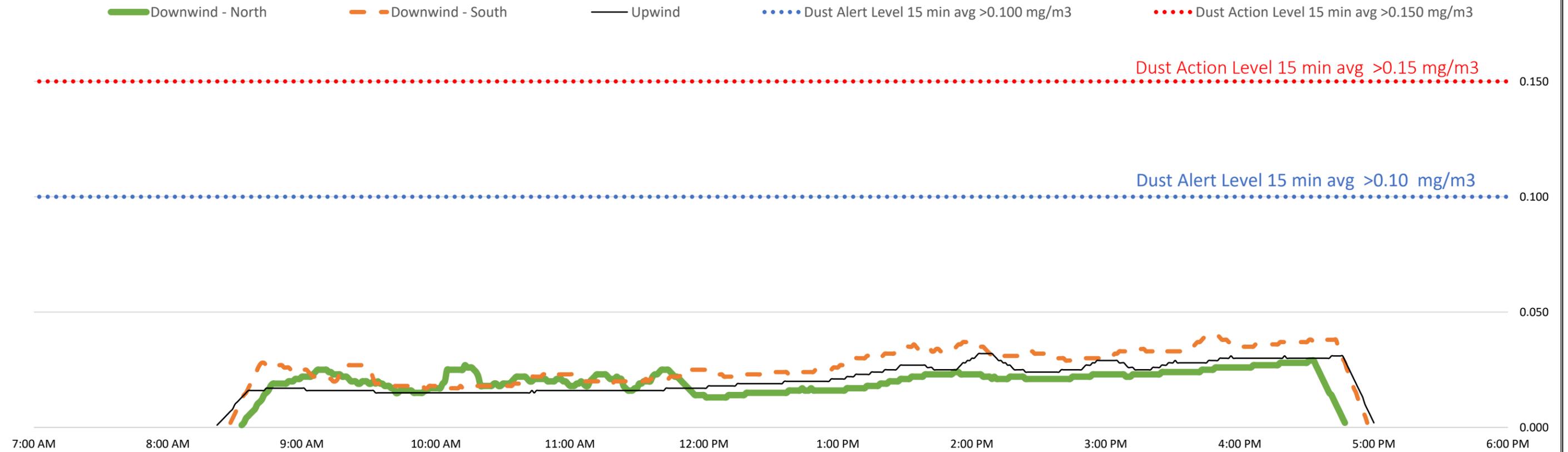


VOC (ppm) 15 min avg

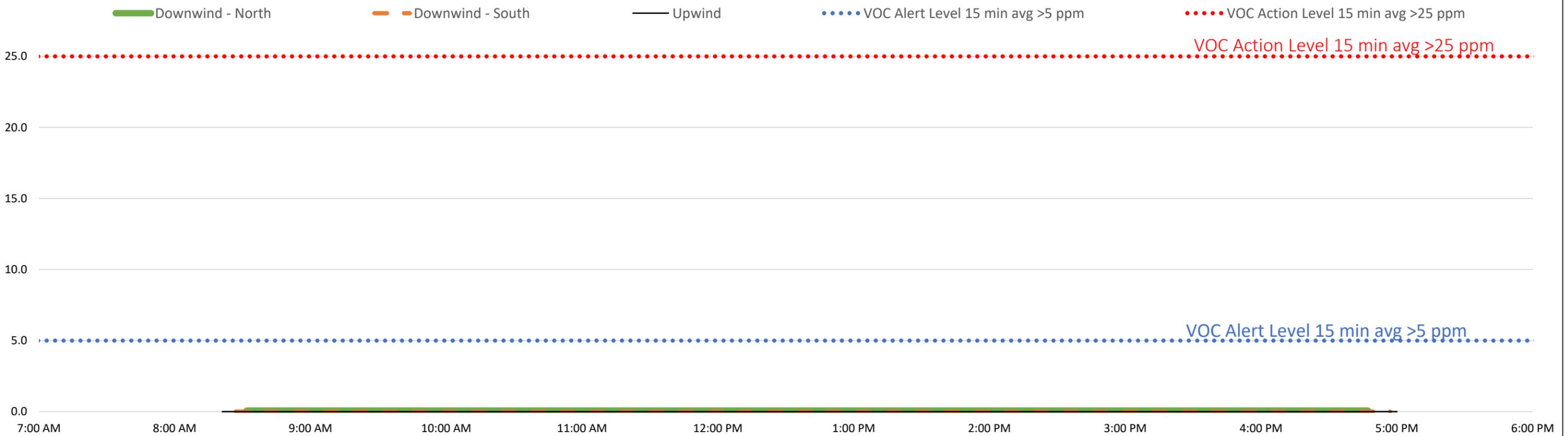


Fixed Station Daily Air Monitoring - September 14, 2022

Dust (mg/m3) 15 min avg

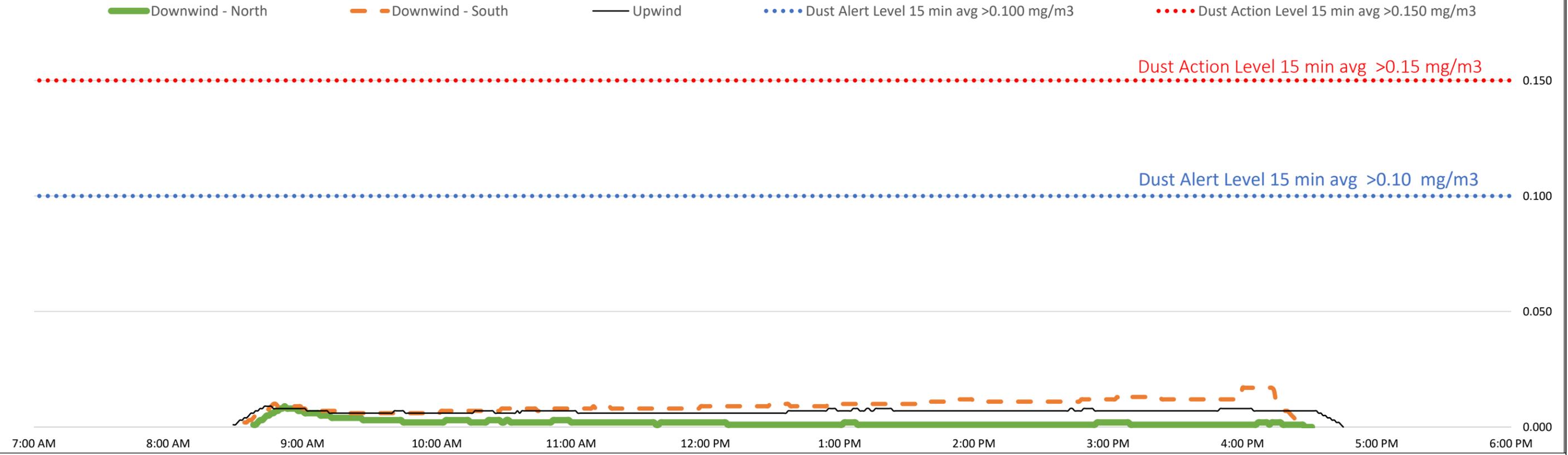


VOC (ppm) 15 min avg

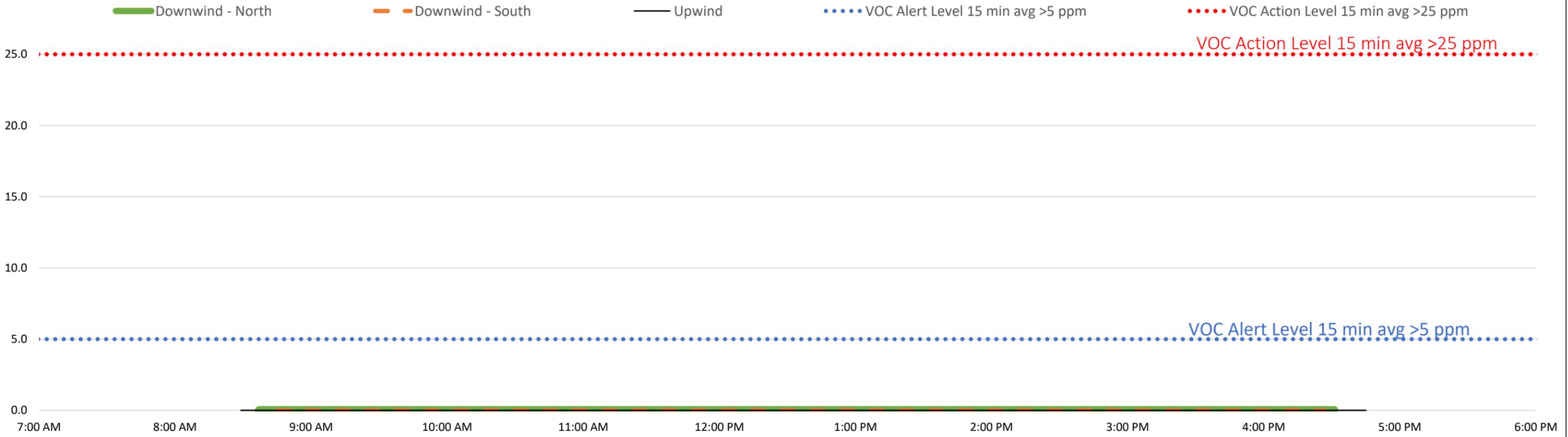


Fixed Station Daily Air Monitoring - September 15, 2022

Dust (mg/m3) 15 min avg

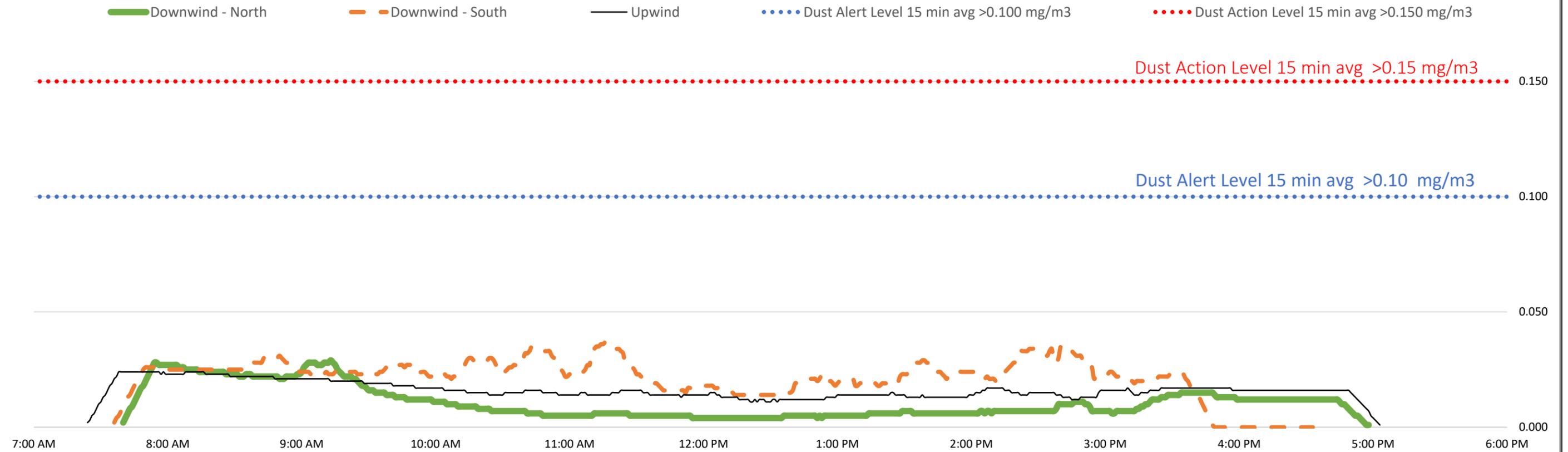


VOC (ppm) 15 min avg

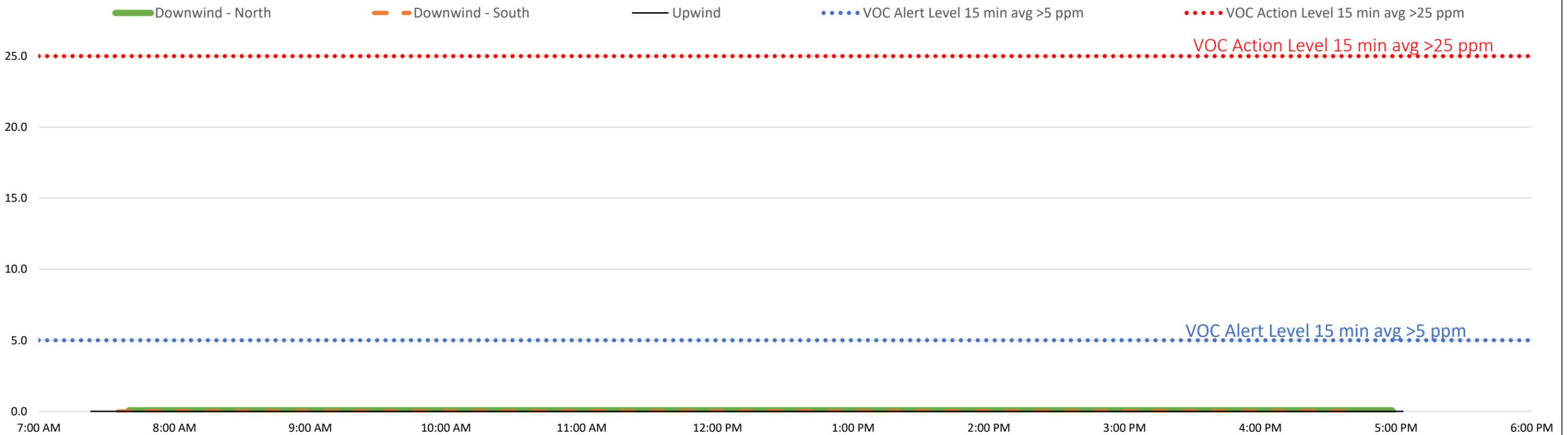


Fixed Station Daily Air Monitoring - September 20, 2022

Dust (mg/m3) 15 min avg

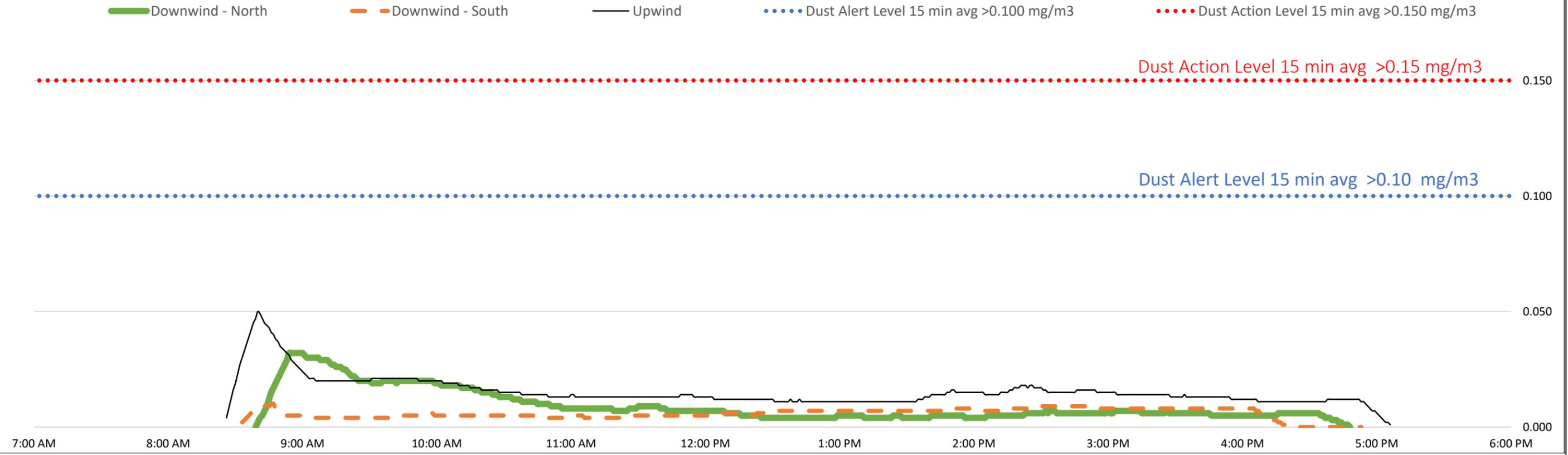


VOC (ppm) 15 min avg

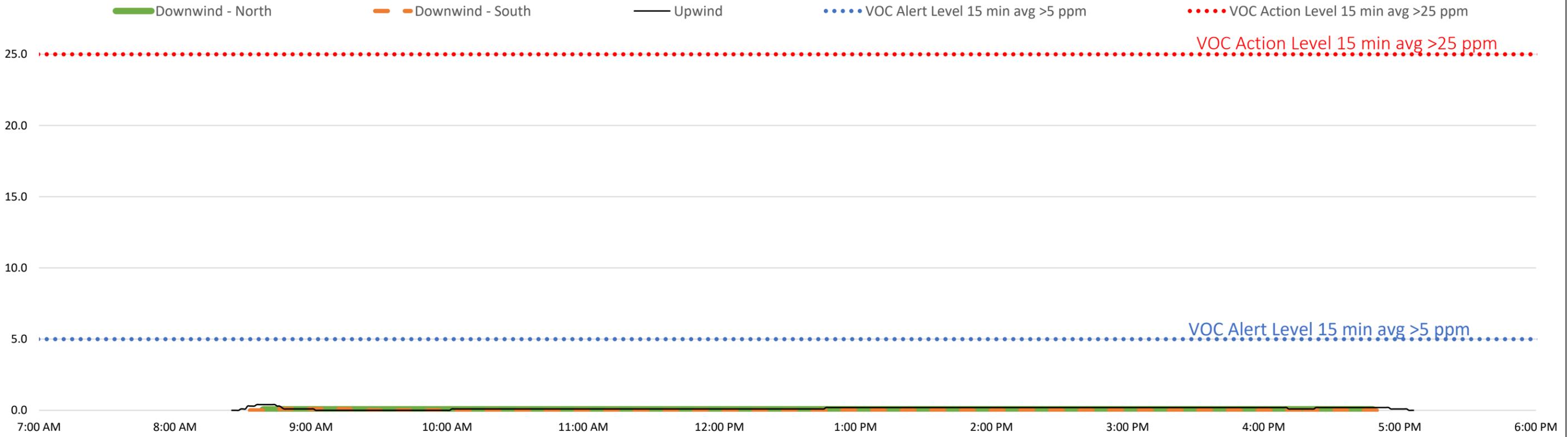


Fixed Station Daily Air Monitoring - October 5, 2022

Dust (mg/m3) 15 min avg

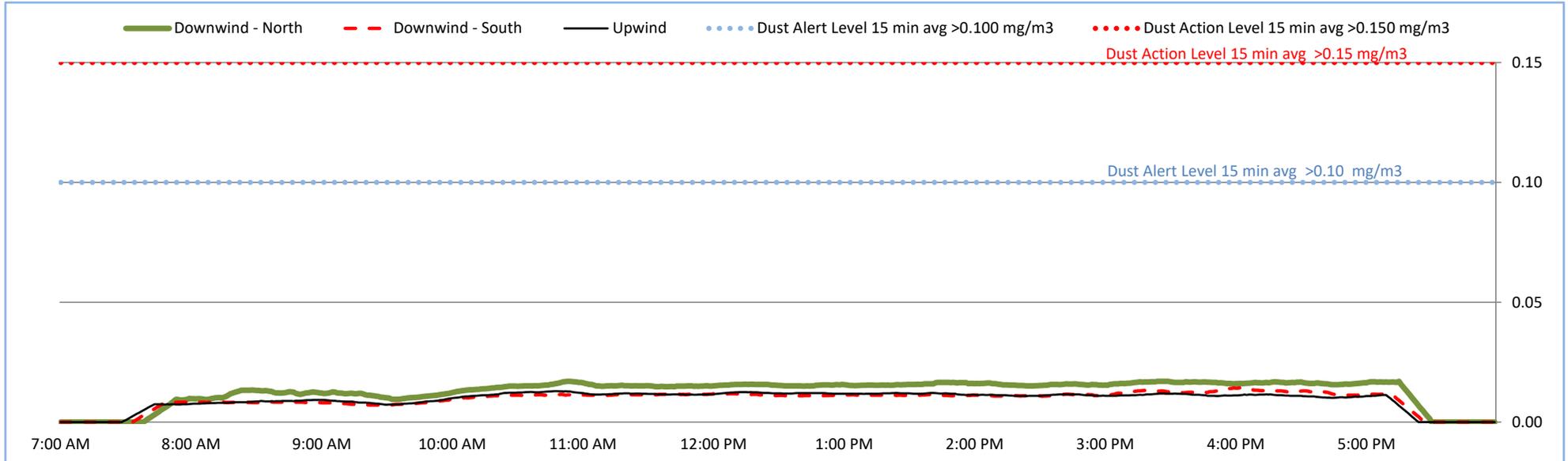


VOC (ppm) 15 min avg

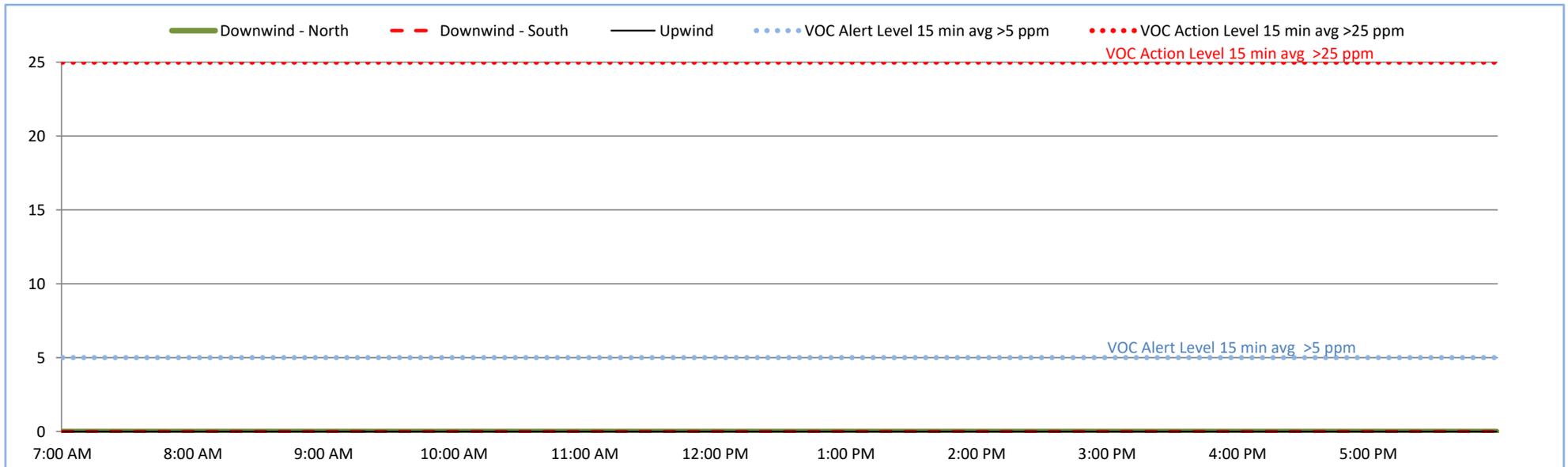


Fixed Station Daily Air Monitoring - October 20, 2022

Dust (mg/m³) 15 min avg

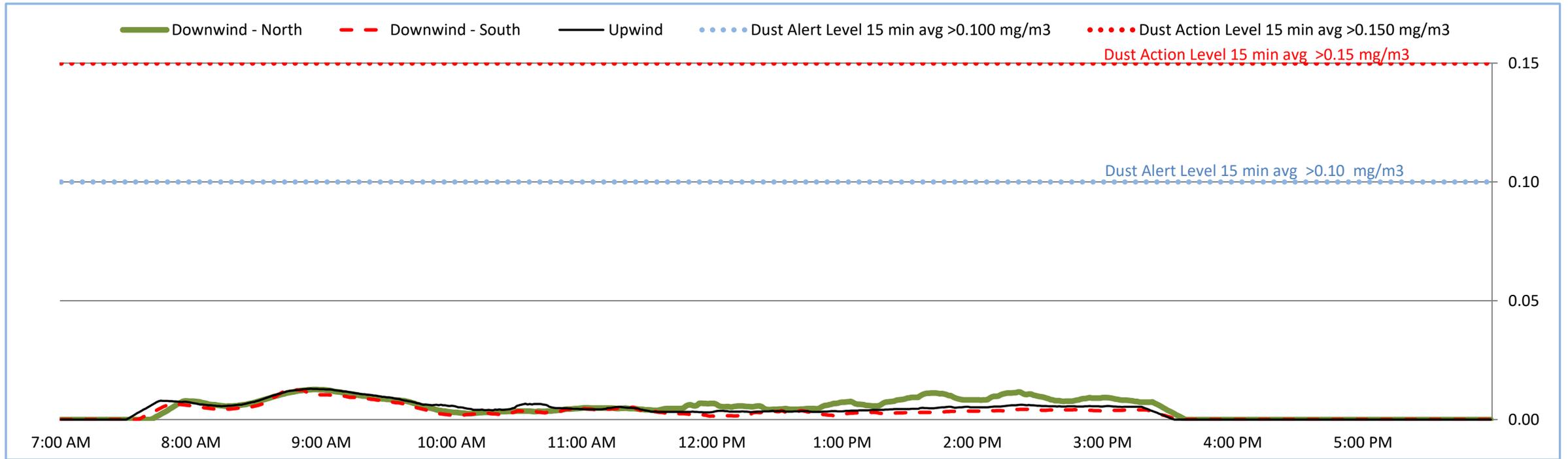


VOC (ppm) 15 min avg

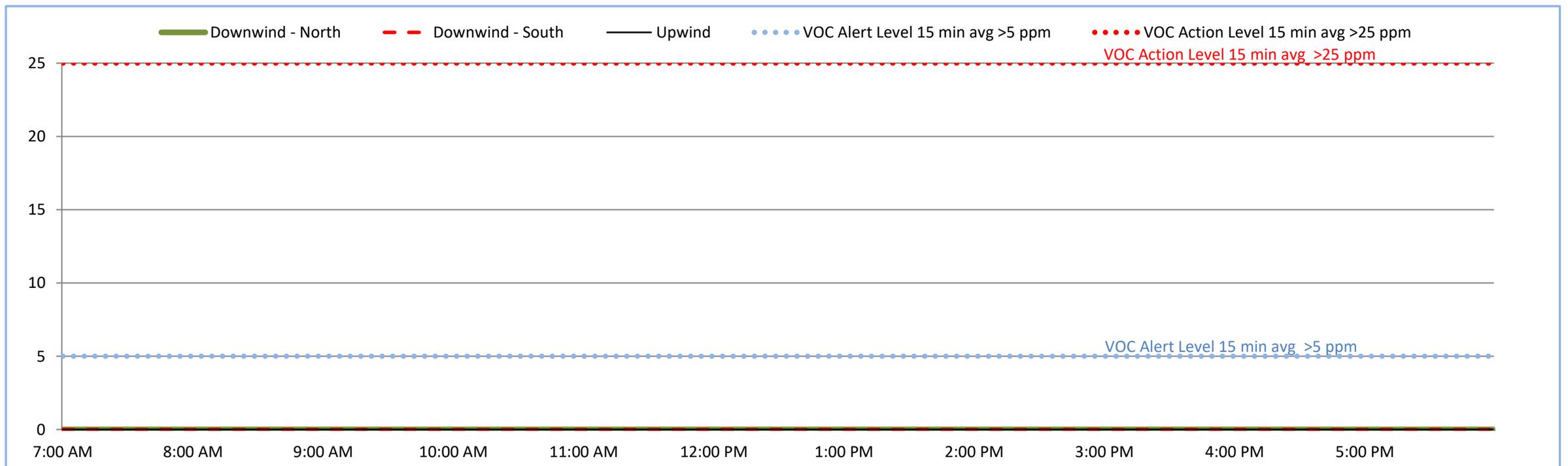


Fixed Station Daily Air Monitoring - November 17, 2022

Dust (mg/m3) 15 min avg

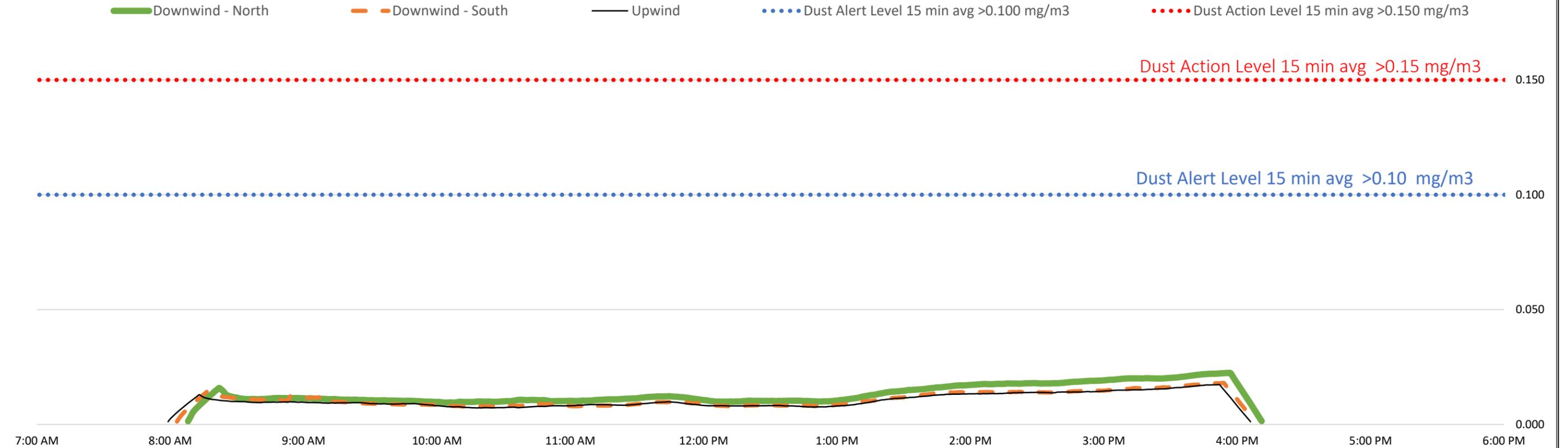


VOC (ppm) 15 min avg

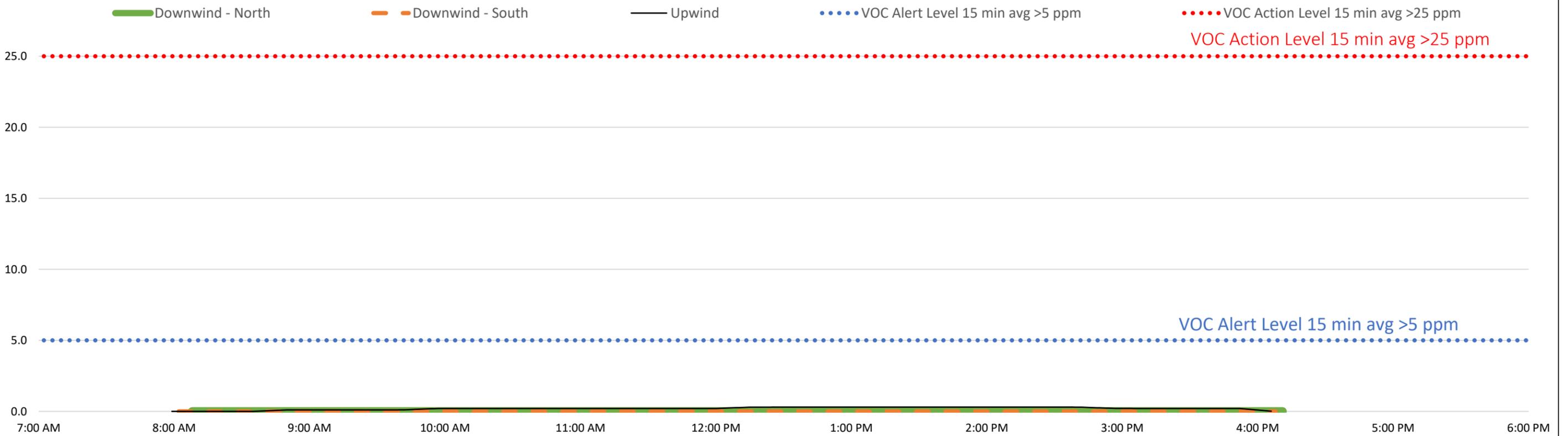


Fixed Station Daily Air Monitoring - April 6, 2023

Dust (mg/m3) 15 min avg

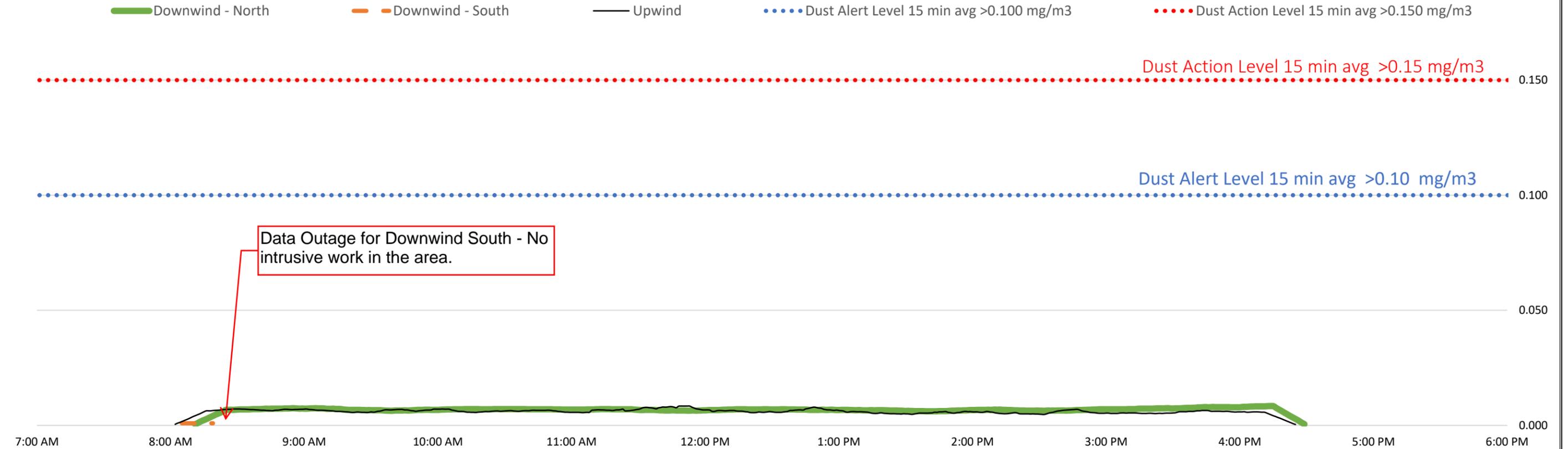


VOC (ppm) 15 min avg

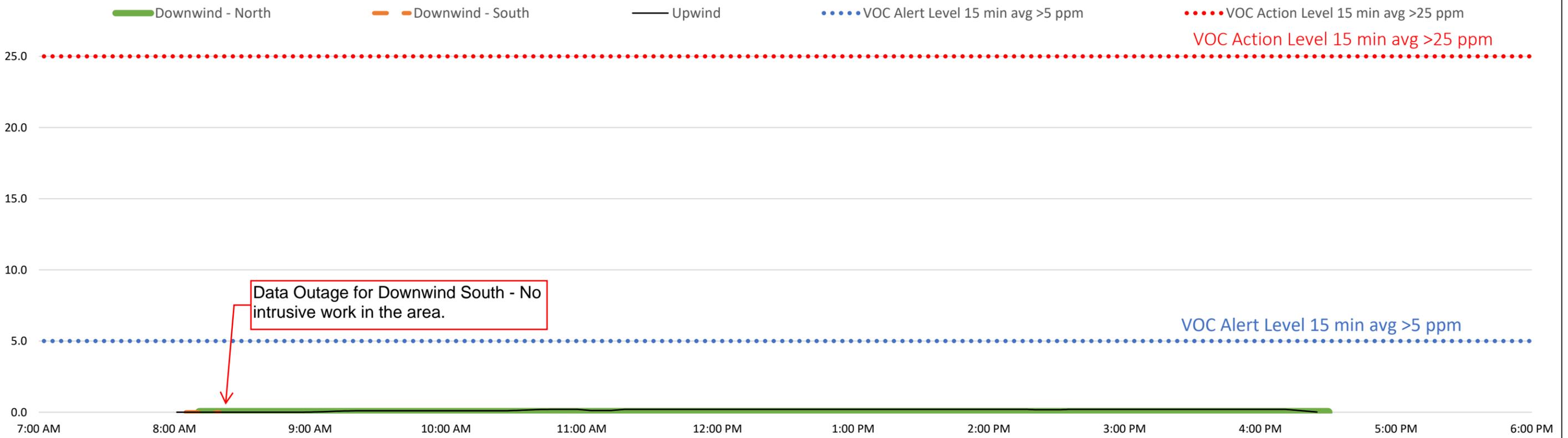


Fixed Station Daily Air Monitoring - April 7, 2023

Dust (mg/m3) 15 min avg

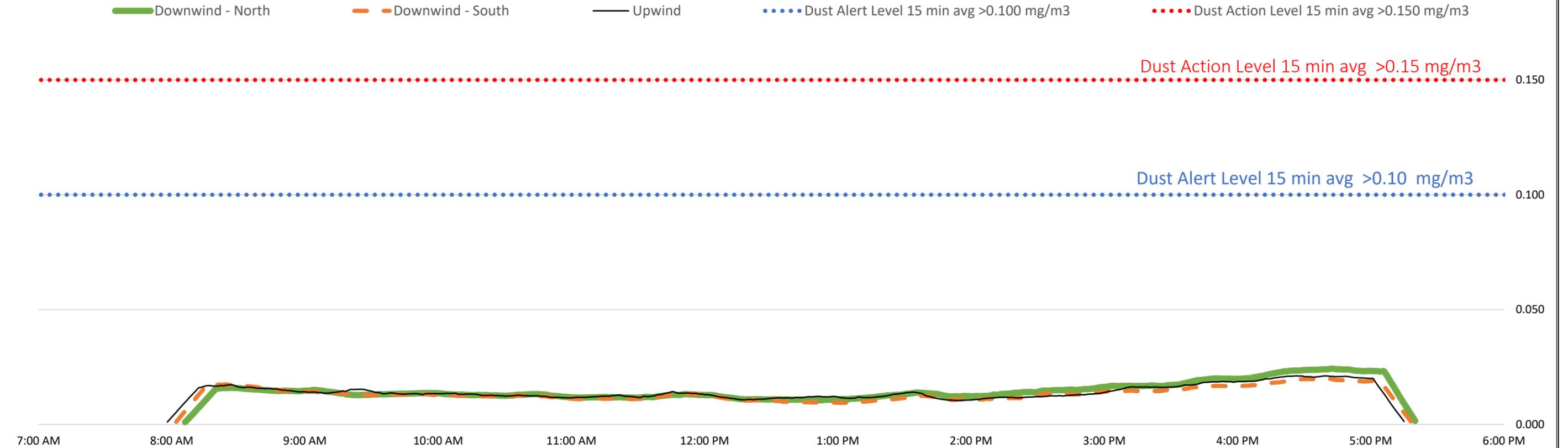


VOC (ppm) 15 min avg

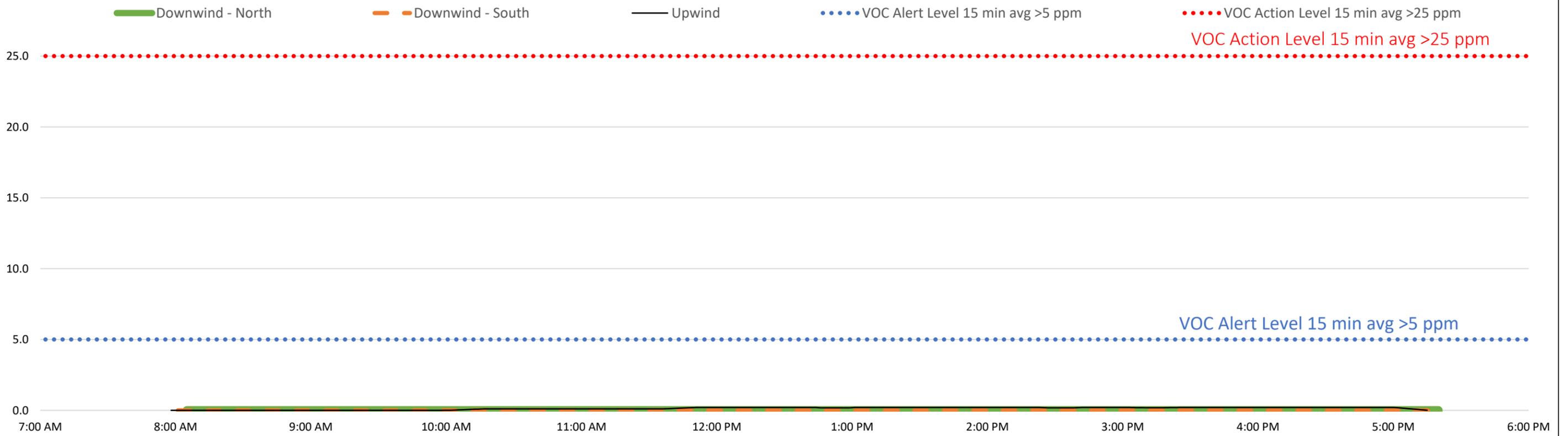


Fixed Station Daily Air Monitoring - April 10, 2023

Dust (mg/m3) 15 min avg

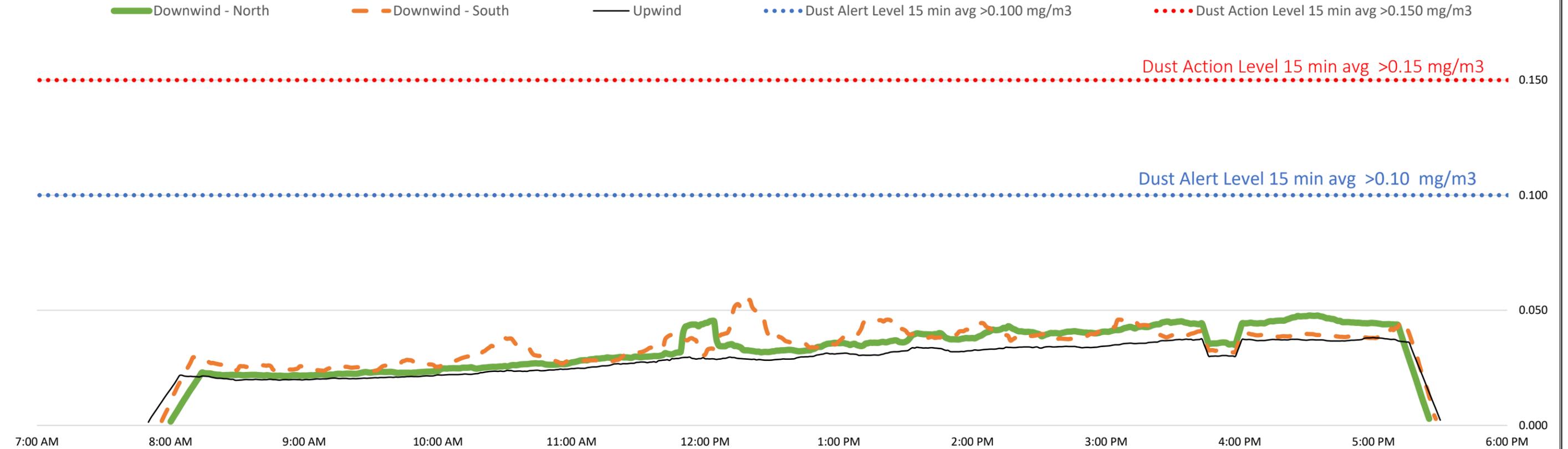


VOC (ppm) 15 min avg

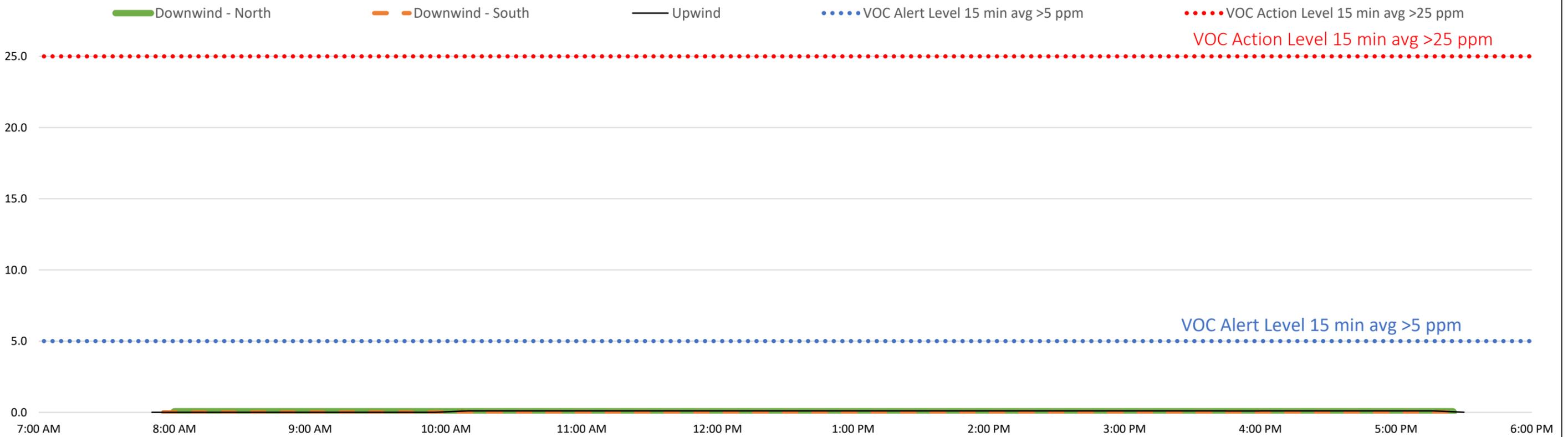


Fixed Station Daily Air Monitoring - April 11, 2023

Dust (mg/m3) 15 min avg

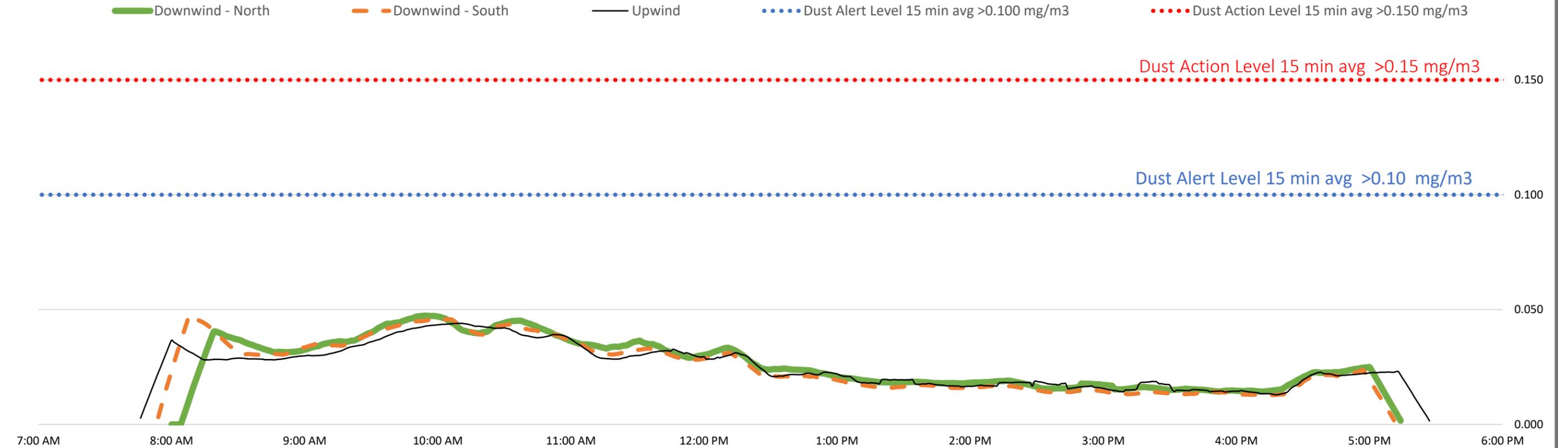


VOC (ppm) 15 min avg

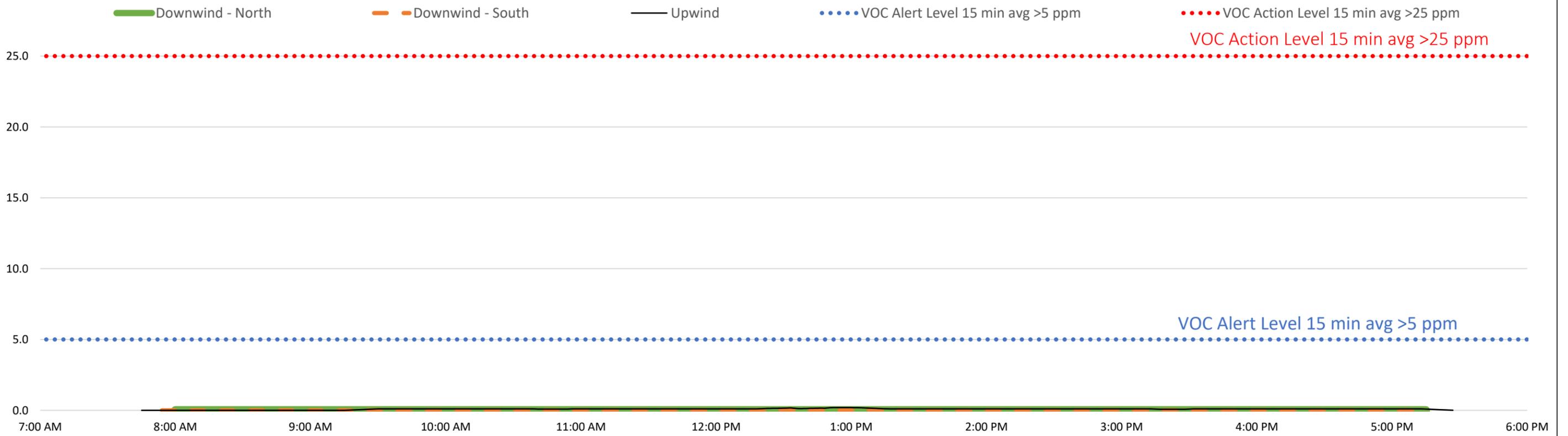


Fixed Station Daily Air Monitoring - April 27, 2023

Dust (mg/m3) 15 min avg

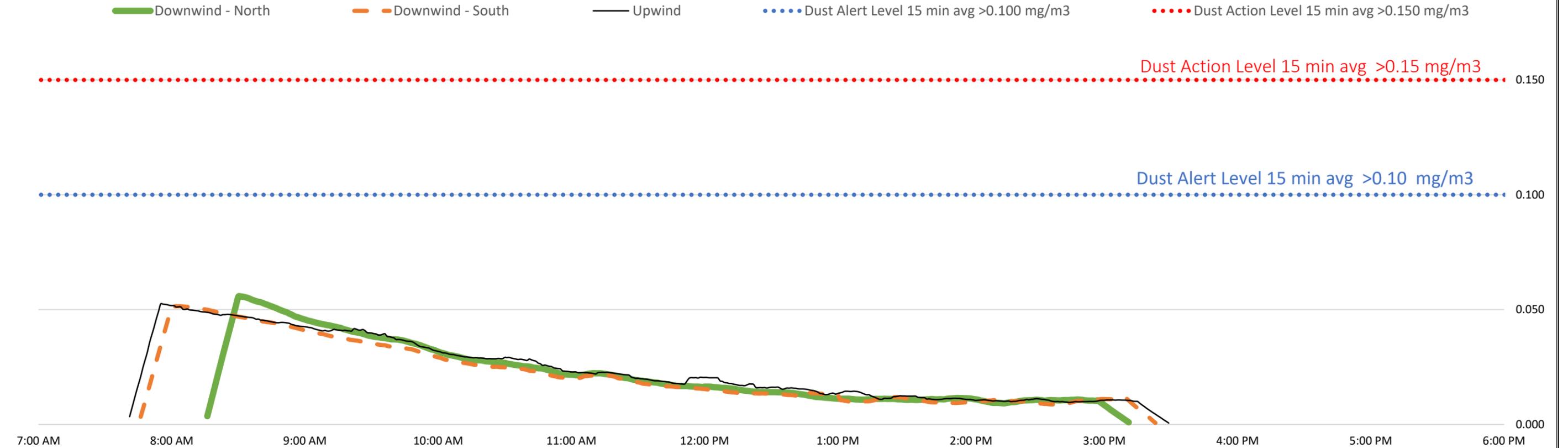


VOC (ppm) 15 min avg

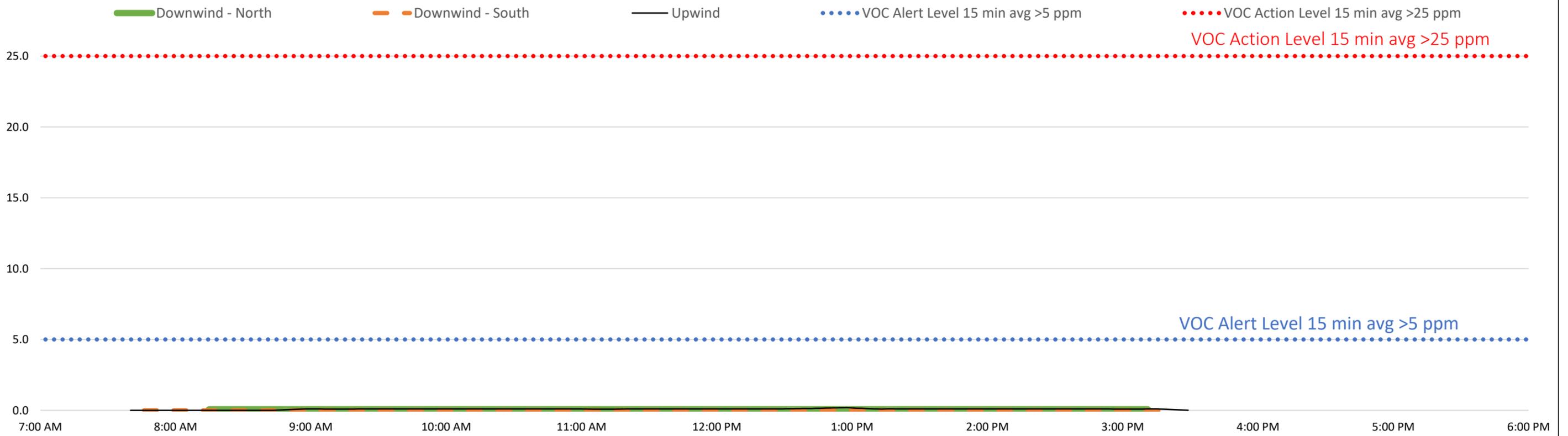


Fixed Station Daily Air Monitoring - April 28, 2023

Dust (mg/m3) 15 min avg



VOC (ppm) 15 min avg



Appendix D: Laboratory Reports





PARADIGM
ENVIRONMENTAL SERVICES, INC.

Analytical Report For
Inventum Engineering, P.C.

For Lab Project ID

213873

Referencing

Bench Scale Test

Prepared

Monday, September 22, 2025

This project has been re-issued to include additional compounds, per client request.

Any noncompliant QC parameters or other notes impacting data interpretation are flagged or documented on the final report or are noted below:

Portions of the enclosed report reflects analysis that has been subcontracted and are presented in their original form.

Emily Farmer

Certifies that this report has been approved by the Technical Director or Designee

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.



Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: SD-RACKCOG-08252021

Lab Sample ID: 213873-01

Date Sampled: 8/25/2021

Matrix: Solid

Date Received: 8/26/2021

Corrosivity as pH

Analyte	Result	Units	Qualifier	Date Analyzed
Corrosivity (as pH)	6.77 @ 22.2 C	S.U.		8/31/2021 10:53

Method Reference(s): EPA 9045D

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.



Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: SD-RACKCOG-08252021

Lab Sample ID: 213873-01

Date Sampled: 8/25/2021

Matrix: Solid

Date Received: 8/26/2021

Flash Point

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Flash Point, Celsius	>70.0	C		8/31/2021

Method Reference(s): EPA 1010A

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.



Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: SD-RACKCOG-08252021

Lab Sample ID: 213873-01

Date Sampled: 8/25/2021

Matrix: Solid

Date Received: 8/26/2021

Mercury

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Mercury	94.6	mg/Kg		9/1/2021 10:56

Method Reference(s): EPA 7471B
Preparation Date: 8/31/2021
Data File: Hg210901B

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.



Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: SD-RACKCOG-08252021

Lab Sample ID: 213873-01

Date Sampled: 8/25/2021

Matrix: Solid

Date Received: 8/26/2021

TAL Metals (ICP)

Analyte	Result	Units	Qualifier	Date Analyzed
Aluminum	24.1	mg/Kg	DM	8/31/2021 13:52
Antimony	< 2.97	mg/Kg		8/31/2021 13:52
Arsenic	1.89	mg/Kg		9/1/2021 15:29
Barium	< 4.95	mg/Kg		8/31/2021 13:52
Beryllium	< 0.248	mg/Kg		8/31/2021 13:52
Cadmium	1.56	mg/Kg	D	8/31/2021 13:52
Calcium	< 124	mg/Kg		8/31/2021 13:52
Chromium	10.2	mg/Kg	D	8/31/2021 13:52
Cobalt	< 2.48	mg/Kg		8/31/2021 13:52
Copper	2.77	mg/Kg	D	9/2/2021 11:36
Iron	23900	mg/Kg	D	8/31/2021 14:24
Lead	17.6	mg/Kg	D	8/31/2021 13:52
Magnesium	< 124	mg/Kg		8/31/2021 13:52
Manganese	374	mg/Kg	DM	8/31/2021 14:24
Nickel	< 1.98	mg/Kg		8/31/2021 13:52
Potassium	< 124	mg/Kg		8/31/2021 13:52
Selenium	< 0.990	mg/Kg		8/31/2021 13:52
Silver	< 0.495	mg/Kg	M	8/31/2021 13:52
Sodium	< 124	mg/Kg		8/31/2021 13:52
Sulfur	110000	mg/Kg	A	8/31/2021 07:58
Thallium	< 1.24	mg/Kg	M	8/31/2021 13:52
Vanadium	15.8	mg/Kg	DM	8/31/2021 13:52
Zinc	14.1	mg/Kg	B	9/1/2021 15:29

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: SD-RACKCOG-08252021

Lab Sample ID: 213873-01

Date Sampled: 8/25/2021

Matrix: Solid

Date Received: 8/26/2021

Method Reference(s): EPA 6010C

EPA 3050B

Preparation Date: 8/30/2021

Data File: 210831B

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: SD-RACKCOG-08252021

Lab Sample ID: 213873-01

Date Sampled: 8/25/2021

Matrix: Solid

Date Received: 8/26/2021

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed
PCB-1016	< 2.79	mg/Kg		9/1/2021 21:48
PCB-1221	< 2.79	mg/Kg		9/1/2021 21:48
PCB-1232	< 2.79	mg/Kg		9/1/2021 21:48
PCB-1242	< 2.79	mg/Kg		9/1/2021 21:48
PCB-1248	< 2.79	mg/Kg		9/1/2021 21:48
PCB-1254	< 2.79	mg/Kg		9/1/2021 21:48
PCB-1260	< 2.79	mg/Kg		9/1/2021 21:48
PCB-1262	< 2.79	mg/Kg		9/1/2021 21:48
PCB-1268	< 2.79	mg/Kg		9/1/2021 21:48

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	NC	18.5 - 93.4		9/1/2021 21:48

Reporting limit elevated due to sample matrix

Method Reference(s): EPA 8082A

EPA 3546

Preparation Date: 8/30/2021

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: SD-RACKCOG-08252021

Lab Sample ID: 213873-01

Date Sampled: 8/25/2021

Matrix: Solid

Date Received: 8/26/2021

Semi-Volatile Organics (Acid/Base Neutrals)

Analyte	Result	Units	Qualifier	Date Analyzed
1,1-Biphenyl	< 19400000	ug/Kg		9/1/2021 19:54
1,2,4,5-Tetrachlorobenzene	< 19400000	ug/Kg		9/1/2021 19:54
1,2,4-Trichlorobenzene	< 19400000	ug/Kg		9/1/2021 19:54
1,2-Dichlorobenzene	< 19400000	ug/Kg		9/1/2021 19:54
1,3-Dichlorobenzene	< 19400000	ug/Kg		9/1/2021 19:54
1,4-Dichlorobenzene	< 19400000	ug/Kg		9/1/2021 19:54
2,2-Oxybis (1-chloropropane)	< 19400000	ug/Kg		9/1/2021 19:54
2,3,4,6-Tetrachlorophenol	< 19400000	ug/Kg		9/1/2021 19:54
2,4,5-Trichlorophenol	< 19400000	ug/Kg		9/1/2021 19:54
2,4,6-Trichlorophenol	< 19400000	ug/Kg		9/1/2021 19:54
2,4-Dichlorophenol	< 19400000	ug/Kg		9/1/2021 19:54
2,4-Dimethylphenol	< 19400000	ug/Kg		9/1/2021 19:54
2,4-Dinitrophenol	< 77700000	ug/Kg		9/1/2021 19:54
2,4-Dinitrotoluene	< 19400000	ug/Kg		9/1/2021 19:54
2,6-Dinitrotoluene	< 19400000	ug/Kg		9/1/2021 19:54
2-Chloronaphthalene	< 19400000	ug/Kg		9/1/2021 19:54
2-Chlorophenol	< 19400000	ug/Kg		9/1/2021 19:54
2-Methylnapthalene	< 19400000	ug/Kg		9/1/2021 19:54
2-Methylphenol	< 19400000	ug/Kg		9/1/2021 19:54
2-Nitroaniline	< 19400000	ug/Kg		9/1/2021 19:54
2-Nitrophenol	< 19400000	ug/Kg		9/1/2021 19:54
3&4-Methylphenol	< 19400000	ug/Kg		9/1/2021 19:54
3,3'-Dichlorobenzidine	< 19400000	ug/Kg		9/1/2021 19:54

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier:	SD-RACKCOG-08252021		
Lab Sample ID:	213873-01	Date Sampled:	8/25/2021
Matrix:	Solid	Date Received:	8/26/2021
3-Nitroaniline	< 19400000	ug/Kg	9/1/2021 19:54
4,6-Dinitro-2-methylphenol	< 19400000	ug/Kg	9/1/2021 19:54
4-Bromophenyl phenyl ether	< 19400000	ug/Kg	9/1/2021 19:54
4-Chloro-3-methylphenol	< 19400000	ug/Kg	9/1/2021 19:54
4-Chloroaniline	< 19400000	ug/Kg	9/1/2021 19:54
4-Chlorophenyl phenyl ether	< 19400000	ug/Kg	9/1/2021 19:54
4-Nitroaniline	< 19400000	ug/Kg	9/1/2021 19:54
4-Nitrophenol	< 19400000	ug/Kg	9/1/2021 19:54
Acenaphthene	< 19400000	ug/Kg	9/1/2021 19:54
Acenaphthylene	< 19400000	ug/Kg	9/1/2021 19:54
Acetophenone	< 19400000	ug/Kg	9/1/2021 19:54
Anthracene	< 19400000	ug/Kg	9/1/2021 19:54
Atrazine	< 19400000	ug/Kg	9/1/2021 19:54
Benzaldehyde	< 19400000	ug/Kg	9/1/2021 19:54
Benzo (a) anthracene	< 19400000	ug/Kg	9/1/2021 19:54
Benzo (a) pyrene	< 19400000	ug/Kg	9/1/2021 19:54
Benzo (b) fluoranthene	< 19400000	ug/Kg	9/1/2021 19:54
Benzo (g,h,i) perylene	< 19400000	ug/Kg	9/1/2021 19:54
Benzo (k) fluoranthene	< 19400000	ug/Kg	9/1/2021 19:54
Bis (2-chloroethoxy) methane	< 19400000	ug/Kg	9/1/2021 19:54
Bis (2-chloroethyl) ether	< 19400000	ug/Kg	9/1/2021 19:54
Bis (2-ethylhexyl) phthalate	< 19400000	ug/Kg	9/1/2021 19:54
Butylbenzylphthalate	< 19400000	ug/Kg	9/1/2021 19:54
Caprolactam	< 19400000	ug/Kg	9/1/2021 19:54
Carbazole	< 19400000	ug/Kg	9/1/2021 19:54

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier:	SD-RACKCOG-08252021		
Lab Sample ID:	213873-01	Date Sampled:	8/25/2021
Matrix:	Solid	Date Received:	8/26/2021
Chrysene	< 19400000	ug/Kg	9/1/2021 19:54
Dibenz (a,h) anthracene	< 19400000	ug/Kg	9/1/2021 19:54
Dibenzofuran	< 19400000	ug/Kg	9/1/2021 19:54
Diethyl phthalate	< 77700000	ug/Kg	9/1/2021 19:54
Dimethyl phthalate	< 77700000	ug/Kg	9/1/2021 19:54
Di-n-butyl phthalate	< 77700000	ug/Kg	9/1/2021 19:54
Di-n-octylphthalate	< 77700000	ug/Kg	9/1/2021 19:54
Fluoranthene	< 19400000	ug/Kg	9/1/2021 19:54
Fluorene	< 19400000	ug/Kg	9/1/2021 19:54
Hexachlorobenzene	< 19400000	ug/Kg	9/1/2021 19:54
Hexachlorobutadiene	< 19400000	ug/Kg	9/1/2021 19:54
Hexachlorocyclopentadiene	< 38800000	ug/Kg	9/1/2021 19:54
Hexachloroethane	< 19400000	ug/Kg	9/1/2021 19:54
Indeno (1,2,3-cd) pyrene	< 19400000	ug/Kg	9/1/2021 19:54
Isophorone	< 19400000	ug/Kg	9/1/2021 19:54
Naphthalene	479000000	ug/Kg	9/1/2021 19:54
Nitrobenzene	< 19400000	ug/Kg	9/1/2021 19:54
N-Nitroso-di-n-propylamine	< 19400000	ug/Kg	9/1/2021 19:54
N-Nitrosodiphenylamine	< 19400000	ug/Kg	9/1/2021 19:54
Pentachlorophenol	< 38800000	ug/Kg	9/1/2021 19:54
Phenanthrene	< 19400000	ug/Kg	9/1/2021 19:54
Phenol	< 19400000	ug/Kg	9/1/2021 19:54
Pyrene	< 19400000	ug/Kg	9/1/2021 19:54

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: SD-RACKCOG-08252021

Lab Sample ID: 213873-01

Date Sampled: 8/25/2021

Matrix: Solid

Date Received: 8/26/2021

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
2,4,6-Tribromophenol	NC	36.4 - 87.2		9/1/2021 19:54
2-Fluorobiphenyl	NC	44 - 84		9/1/2021 19:54
2-Fluorophenol	NC	43.2 - 82.1		9/1/2021 19:54
Nitrobenzene-d5	NC	36.4 - 82.2		9/1/2021 19:54
Phenol-d5	NC	41.1 - 81.4		9/1/2021 19:54
Terphenyl-d14	NC	43.8 - 103		9/1/2021 19:54

Method Reference(s): EPA 8270D

EPA 3546

Preparation Date: 8/31/2021

Data File: B56651.D

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: SD-RACKCOG-08252021

Lab Sample ID: 213873-01

Date Sampled: 8/25/2021

Matrix: Solid

Date Received: 8/26/2021

Volatile Organics

Analyte	Result	Units	Qualifier	Date Analyzed
1,1,1,2-Tetrachloroethane	< 41700	ug/Kg		9/1/2021 13:26
1,1,1-Trichloroethane	< 41700	ug/Kg		9/1/2021 13:26
1,1,2,2-Tetrachloroethane	< 41700	ug/Kg		9/1/2021 13:26
1,1,2-Trichloroethane	< 41700	ug/Kg		9/1/2021 13:26
1,1-Dichloroethane	< 41700	ug/Kg		9/1/2021 13:26
1,1-Dichloroethene	< 41700	ug/Kg		9/1/2021 13:26
1,1-Dichloropropene	< 41700	ug/Kg		9/1/2021 13:26
1,2,3-Trichlorobenzene	< 104000	ug/Kg		9/1/2021 13:26
1,2,3-Trichloropropane	< 41700	ug/Kg		9/1/2021 13:26
1,2,4-Trichlorobenzene	< 104000	ug/Kg		9/1/2021 13:26
1,2,4-Trimethylbenzene	< 41700	ug/Kg		9/1/2021 13:26
1,2-Dibromo-3-Chloropropane	< 208000	ug/Kg		9/1/2021 13:26
1,2-Dibromoethane	< 41700	ug/Kg		9/1/2021 13:26
1,2-Dichlorobenzene	< 41700	ug/Kg		9/1/2021 13:26
1,2-Dichloroethane	< 41700	ug/Kg		9/1/2021 13:26
1,2-Dichloropropane	< 41700	ug/Kg		9/1/2021 13:26
1,3,5-Trimethylbenzene	< 41700	ug/Kg		9/1/2021 13:26
1,3-Dichlorobenzene	< 41700	ug/Kg		9/1/2021 13:26
1,3-Dichloropropane	< 41700	ug/Kg		9/1/2021 13:26
1,4-Dichlorobenzene	< 41700	ug/Kg		9/1/2021 13:26
1,4-Dioxane	< 417000	ug/Kg		9/1/2021 13:26
2,2-Dichloropropane	< 41700	ug/Kg		9/1/2021 13:26
2-Butanone	< 208000	ug/Kg		9/1/2021 13:26

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier:	SD-RACKCOG-08252021		
Lab Sample ID:	213873-01	Date Sampled:	8/25/2021
Matrix:	Solid	Date Received:	8/26/2021
2-Chlorotoluene	< 41700	ug/Kg	9/1/2021 13:26
2-Hexanone	< 104000	ug/Kg	9/1/2021 13:26
4-Chlorotoluene	< 41700	ug/Kg	9/1/2021 13:26
4-Methyl-2-pentanone	< 104000	ug/Kg	9/1/2021 13:26
Acetone	< 208000	ug/Kg	9/1/2021 13:26
Benzene	< 41700	ug/Kg	9/1/2021 13:26
Bromobenzene	< 104000	ug/Kg	9/1/2021 13:26
Bromochloromethane	< 104000	ug/Kg	9/1/2021 13:26
Bromodichloromethane	< 41700	ug/Kg	9/1/2021 13:26
Bromoform	< 104000	ug/Kg	9/1/2021 13:26
Bromomethane	< 41700	ug/Kg	9/1/2021 13:26
Carbon disulfide	< 41700	ug/Kg	9/1/2021 13:26
Carbon Tetrachloride	< 41700	ug/Kg	9/1/2021 13:26
Chlorobenzene	< 41700	ug/Kg	9/1/2021 13:26
Chloroethane	< 41700	ug/Kg	9/1/2021 13:26
Chloroform	< 41700	ug/Kg	9/1/2021 13:26
Chloromethane	< 41700	ug/Kg	9/1/2021 13:26
cis-1,2-Dichloroethene	< 41700	ug/Kg	9/1/2021 13:26
cis-1,3-Dichloropropene	< 41700	ug/Kg	9/1/2021 13:26
Cyclohexane	< 208000	ug/Kg	9/1/2021 13:26
Dibromochloromethane	< 41700	ug/Kg	9/1/2021 13:26
Dibromomethane	< 41700	ug/Kg	9/1/2021 13:26
Dichlorodifluoromethane	< 41700	ug/Kg	9/1/2021 13:26
Ethylbenzene	< 41700	ug/Kg	9/1/2021 13:26
Freon 113	< 41700	ug/Kg	9/1/2021 13:26

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier:	SD-RACKCOG-08252021			
Lab Sample ID:	213873-01		Date Sampled:	8/25/2021
Matrix:	Solid		Date Received:	8/26/2021
Isopropylbenzene	< 41700	ug/Kg		9/1/2021 13:26
m,p-Xylene	< 41700	ug/Kg		9/1/2021 13:26
Methyl acetate	< 41700	ug/Kg		9/1/2021 13:26
Methyl tert-butyl Ether	< 41700	ug/Kg		9/1/2021 13:26
Methylcyclohexane	< 41700	ug/Kg		9/1/2021 13:26
Methylene chloride	< 104000	ug/Kg		9/1/2021 13:26
Naphthalene	35200000	ug/Kg	E	9/1/2021 13:26
n-Butylbenzene	< 41700	ug/Kg		9/1/2021 13:26
n-Propylbenzene	< 41700	ug/Kg		9/1/2021 13:26
o-Xylene	< 41700	ug/Kg		9/1/2021 13:26
p-Isopropyltoluene	< 41700	ug/Kg		9/1/2021 13:26
sec-Butylbenzene	< 41700	ug/Kg		9/1/2021 13:26
Styrene	< 104000	ug/Kg		9/1/2021 13:26
tert-Butylbenzene	< 41700	ug/Kg		9/1/2021 13:26
Tetrachloroethene	< 41700	ug/Kg		9/1/2021 13:26
Toluene	< 41700	ug/Kg		9/1/2021 13:26
trans-1,2-Dichloroethene	< 41700	ug/Kg		9/1/2021 13:26
trans-1,3-Dichloropropene	< 41700	ug/Kg		9/1/2021 13:26
Trichloroethene	< 41700	ug/Kg		9/1/2021 13:26
Trichlorofluoromethane	< 41700	ug/Kg		9/1/2021 13:26
Vinyl chloride	< 41700	ug/Kg		9/1/2021 13:26

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: SD-RACKCOG-08252021

Lab Sample ID: 213873-01

Date Sampled: 8/25/2021

Matrix: Solid

Date Received: 8/26/2021

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
1,2-Dichloroethane-d4	120	88.8 - 123	*	9/1/2021 13:26
4-Bromofluorobenzene	124	68.7 - 115	*	9/1/2021 13:26
Pentafluorobenzene	108	80.2 - 112		9/1/2021 13:26
Toluene-D8	95.4	83.5 - 123		9/1/2021 13:26

Method Reference(s): EPA 8260C
EPA 5035A -- H
Data File: z03865.D

This sample was not collected following SW846 5035A specifications. Accordingly, any Volatiles soil results that are less than 200 ug/Kg, including Non Detects, may be biased low, per ELAP method 5035 guidance document from 11/15/2012.

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: SD-RACKCOG-08252021

Lab Sample ID: 213873-01

Date Sampled: 8/25/2021

Matrix: Solid

Date Received: 8/26/2021

Dioxane

Analyte	Result	Units	Qualifier	Date Analyzed
1,4-Dioxane	< 2500	ug/Kg		9/3/2021 15:54

Method Reference(s): EPA 8270D SIM

EPA 3546

Preparation Date: 9/3/2021

Data File: B56708.D

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: SD-RACKCOG-08252021

Lab Sample ID: 213873-01A

Date Sampled: 8/25/2021

Matrix: TCLP Extract

Date Received: 8/26/2021

TCLP Semi-Volatile Organics

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
1,4-Dichlorobenzene	< 50.0	ug/L	7500		8/31/2021 20:07
2,4,5-Trichlorophenol	< 50.0	ug/L	400000		8/31/2021 20:07
2,4,6-Trichlorophenol	< 50.0	ug/L	2000		8/31/2021 20:07
2,4-Dinitrotoluene	< 50.0	ug/L	130		8/31/2021 20:07
Cresols (as m,p,o-Cresol)	679	ug/L	200000		8/31/2021 20:07
Hexachlorobenzene	< 50.0	ug/L	130		8/31/2021 20:07
Hexachlorobutadiene	< 50.0	ug/L	500		8/31/2021 20:07
Hexachloroethane	< 50.0	ug/L	3000		8/31/2021 20:07
Nitrobenzene	< 50.0	ug/L	2000		8/31/2021 20:07
Pentachlorophenol	< 100	ug/L	100000		8/31/2021 20:07
Pyridine	38.3	ug/L	5000	J	8/31/2021 20:07

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
2,4,6-Tribromophenol	83.5	55.4 - 111		8/31/2021 20:07
2-Fluorobiphenyl	56.9	30.9 - 98.1		8/31/2021 20:07
2-Fluorophenol	61.9	10 - 105		8/31/2021 20:07
Nitrobenzene-d5	74.7	49.6 - 104		8/31/2021 20:07
Phenol-d5	19.3	10 - 105		8/31/2021 20:07
Terphenyl-d14	76.8	56.5 - 118		8/31/2021 20:07

Method Reference(s): EPA 8270D
 EPA 1311 / 3510C
 Preparation Date: 8/31/2021
 Data File: B56632.D

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: SD-RACKCOG-08252021

Lab Sample ID: 213873-01A

Date Sampled: 8/25/2021

Matrix: TCLP Extract

Date Received: 8/26/2021

TCLP Mercury

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Regulatory Limit</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Mercury	< 0.00200	mg/L	0.2		8/31/2021 10:49

Method Reference(s): EPA 7470A

EPA 1311

Preparation Date: 8/30/2021

Data File: Hg210831A

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: SD-RACKCOG-08252021

Lab Sample ID: 213873-01A

Date Sampled: 8/25/2021

Matrix: TCLP Extract

Date Received: 8/26/2021

TCLP Pesticides

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
Chlordane	12.4	ug/L	30		9/2/2021 13:46
Endrin	48.6	ug/L	20	P	9/2/2021 13:46
gamma-BHC (Lindane)	14.5	ug/L	400	JP	9/2/2021 13:46
Heptachlor	< 20.0	ug/L	8		9/2/2021 13:46
Heptachlor Epoxide	< 20.0	ug/L	8		9/2/2021 13:46
Methoxychlor	< 40.0	ug/L	10000		9/2/2021 13:46
Toxaphene	< 400	ug/L	500		9/2/2021 13:46

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Decachlorobiphenyl (1)	NC	10 - 185		9/2/2021 13:46
Tetrachloro-m-xylene (1)	NC	20.4 - 124		9/2/2021 13:46

Method Reference(s): EPA 8081B
EPA 1311 / 3510C

Preparation Date: 9/1/2021

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Lab Project ID: 213873

Client: **Inventum Engineering, P.C.**

Project Reference: Bench Scale Test

Sample Identifier: SD-RACKCOG-08252021

Lab Sample ID: 213873-01A

Date Sampled: 8/25/2021

Matrix: TCLP Extract

Date Received: 8/26/2021

TCLP RCRA Metals (ICP)

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
Arsenic	< 0.500	mg/L	5		8/30/2021 18:01
Barium	< 0.500	mg/L	100		8/30/2021 18:01
Boron	0.656	mg/L	N/A		8/30/2021 18:01
Cadmium	< 0.0250	mg/L	1		8/30/2021 18:01
Chromium	< 0.500	mg/L	5		8/30/2021 18:01
Lead	< 0.500	mg/L	5		8/30/2021 18:01
Selenium	< 0.500	mg/L	1		8/30/2021 18:01
Silver	< 0.500	mg/L	5		8/30/2021 18:01

Method Reference(s): EPA 6010C
 EPA 1311 / 3005A
 Preparation Date: 8/30/2021
 Data File: 210830B

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: SD-RACKCOG-08252021

Lab Sample ID: 213873-01A

Date Sampled: 8/25/2021

Matrix: TCLP Extract

Date Received: 8/26/2021

TCLP Volatile Organics

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
1,1-Dichloroethene	< 200	ug/L	700		8/30/2021 16:04
1,2-Dichloroethane	< 200	ug/L	500		8/30/2021 16:04
2-Butanone	< 1000	ug/L	200000		8/30/2021 16:04
Benzene	< 200	ug/L	500		8/30/2021 16:04
Carbon Tetrachloride	< 200	ug/L	500		8/30/2021 16:04
Chlorobenzene	< 200	ug/L	100000		8/30/2021 16:04
Chloroform	< 200	ug/L	6000		8/30/2021 16:04
Tetrachloroethene	< 200	ug/L	700		8/30/2021 16:04
Trichloroethene	< 200	ug/L	500		8/30/2021 16:04
Vinyl chloride	< 200	ug/L	200		8/30/2021 16:04

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
1,2-Dichloroethane-d4	120	83 - 120		8/30/2021 16:04
4-Bromofluorobenzene	107	65.5 - 118		8/30/2021 16:04
Pentafluorobenzene	107	91.2 - 109		8/30/2021 16:04
Toluene-D8	91.9	79.7 - 112		8/30/2021 16:04

Reporting limit elevated due to non-target compounds

Method Reference(s): EPA 8260C
 EPA 1311 / 5030C
 Data File: z03823.D

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: AQ-COGAQ-08252021

Lab Sample ID: 213873-02

Date Sampled: 8/25/2021

Matrix: Water

Date Received: 8/26/2021

Corrosivity as pH

Analyte	Result	Units	Qualifier	Date Analyzed
Corrosivity (as pH)	6.82 @ 11.5 C	S.U.		8/30/2021 09:45

Method Reference(s): EPA 9045D

ELAP does not offer this test for approval as part of their laboratory certification program.

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: AQ-COGAQ-08252021

Lab Sample ID: 213873-02

Date Sampled: 8/25/2021

Matrix: Water

Date Received: 8/26/2021

Flash Point

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Flash Point, Celsius	>70.0	C		9/1/2021

Method Reference(s): EPA 1010A

ELAP does not offer this test for approval as part of their laboratory certification program.

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: AQ-COGAQ-08252021

Lab Sample ID: 213873-02

Date Sampled: 8/25/2021

Matrix: Water

Date Received: 8/26/2021

TAL Metals (ICP)

Analyte	Result	Units	Qualifier	Date Analyzed
Aluminum	0.251	mg/L		8/31/2021 12:10
Antimony	< 0.0600	mg/L		8/31/2021 12:10
Arsenic	0.00810	mg/L	J	8/31/2021 12:10
Barium	0.0755	mg/L	J	8/31/2021 12:10
Beryllium	< 0.00500	mg/L		8/31/2021 12:10
Cadmium	< 0.00500	mg/L		8/31/2021 12:10
Calcium	235	mg/L		8/31/2021 12:10
Chromium	< 0.0100	mg/L		8/31/2021 12:10
Cobalt	< 0.0500	mg/L		8/31/2021 12:10
Copper	< 0.0200	mg/L		8/31/2021 12:10
Iron	33.6	mg/L		8/31/2021 12:10
Lead	< 0.0100	mg/L		8/31/2021 12:10
Magnesium	42.1	mg/L		8/31/2021 12:10
Manganese	7.44	mg/L		8/31/2021 12:10
Nickel	< 0.0400	mg/L		8/31/2021 12:10
Potassium	50.5	mg/L		8/31/2021 12:10
Selenium	< 0.0200	mg/L		8/31/2021 12:10
Silver	< 0.0100	mg/L		8/31/2021 12:10
Sodium	46.8	mg/L		8/31/2021 12:10
Thallium	< 0.0250	mg/L		8/31/2021 12:10
Vanadium	< 0.0250	mg/L		8/31/2021 12:10
Zinc	< 0.0600	mg/L		8/31/2021 12:10

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: AQ-COGAQ-08252021

Lab Sample ID: 213873-02

Date Sampled: 8/25/2021

Matrix: Water

Date Received: 8/26/2021

Method Reference(s): EPA 6010C

EPA 3005A

Preparation Date: 8/30/2021

Data File: 210831B

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: AQ-COGAQ-08252021

Lab Sample ID: 213873-02

Date Sampled: 8/25/2021

Matrix: Water

Date Received: 8/26/2021

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed
PCB-1016	< 1.00	ug/L		9/2/2021 10:00
PCB-1221	< 1.00	ug/L		9/2/2021 10:00
PCB-1232	< 1.00	ug/L		9/2/2021 10:00
PCB-1242	< 1.00	ug/L		9/2/2021 10:00
PCB-1248	< 1.00	ug/L		9/2/2021 10:00
PCB-1254	< 1.00	ug/L		9/2/2021 10:00
PCB-1260	< 1.00	ug/L		9/2/2021 10:00
PCB-1262	< 1.00	ug/L		9/2/2021 10:00
PCB-1268	< 1.00	ug/L		9/2/2021 10:00

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	45.2	21.7 - 95.7		9/2/2021 10:00

Method Reference(s): EPA 8082A
EPA 3510C
Preparation Date: 9/2/2021

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: AQ-COGAQ-08252021

Lab Sample ID: 213873-02

Date Sampled: 8/25/2021

Matrix: Water

Date Received: 8/26/2021

Semi-Volatile Organics (Acid/Base Neutrals)

Analyte	Result	Units	Qualifier	Date Analyzed
1,1-Biphenyl	< 4840	ug/L		9/3/2021 06:24
1,2,4,5-Tetrachlorobenzene	< 4840	ug/L		9/3/2021 06:24
1,2,4-Trichlorobenzene	< 4840	ug/L		9/3/2021 06:24
1,2-Dichlorobenzene	< 4840	ug/L		9/3/2021 06:24
1,3-Dichlorobenzene	< 4840	ug/L		9/3/2021 06:24
1,4-Dichlorobenzene	< 4840	ug/L		9/3/2021 06:24
2,2-Oxybis (1-chloropropane)	< 4840	ug/L		9/3/2021 06:24
2,3,4,6-Tetrachlorophenol	< 4840	ug/L		9/3/2021 06:24
2,4,5-Trichlorophenol	< 4840	ug/L		9/3/2021 06:24
2,4,6-Trichlorophenol	< 4840	ug/L		9/3/2021 06:24
2,4-Dichlorophenol	< 4840	ug/L		9/3/2021 06:24
2,4-Dimethylphenol	< 4840	ug/L		9/3/2021 06:24
2,4-Dinitrophenol	< 9690	ug/L		9/3/2021 06:24
2,4-Dinitrotoluene	< 4840	ug/L		9/3/2021 06:24
2,6-Dinitrotoluene	< 4840	ug/L		9/3/2021 06:24
2-Chloronaphthalene	< 4840	ug/L		9/3/2021 06:24
2-Chlorophenol	< 4840	ug/L		9/3/2021 06:24
2-Methylnaphthalene	3560	ug/L	J	9/3/2021 06:24
2-Methylphenol	< 4840	ug/L		9/3/2021 06:24
2-Nitroaniline	< 4840	ug/L		9/3/2021 06:24
2-Nitrophenol	< 4840	ug/L		9/3/2021 06:24
3&4-Methylphenol	< 4840	ug/L		9/3/2021 06:24
3,3'-Dichlorobenzidine	< 4840	ug/L		9/3/2021 06:24

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier:	AQ-COGAQ-08252021			
Lab Sample ID:	213873-02		Date Sampled:	8/25/2021
Matrix:	Water		Date Received:	8/26/2021
3-Nitroaniline	< 4840	ug/L		9/3/2021 06:24
4,6-Dinitro-2-methylphenol	< 4840	ug/L		9/3/2021 06:24
4-Bromophenyl phenyl ether	< 4840	ug/L		9/3/2021 06:24
4-Chloro-3-methylphenol	< 4840	ug/L		9/3/2021 06:24
4-Chloroaniline	< 4840	ug/L		9/3/2021 06:24
4-Chlorophenyl phenyl ether	< 4840	ug/L		9/3/2021 06:24
4-Nitroaniline	< 4840	ug/L		9/3/2021 06:24
4-Nitrophenol	< 4840	ug/L		9/3/2021 06:24
Acenaphthene	< 4840	ug/L		9/3/2021 06:24
Acenaphthylene	< 4840	ug/L		9/3/2021 06:24
Acetophenone	2500	ug/L	J	9/3/2021 06:24
Anthracene	< 4840	ug/L		9/3/2021 06:24
Atrazine	< 4840	ug/L		9/3/2021 06:24
Benzaldehyde	< 9690	ug/L		9/3/2021 06:24
Benzo (a) anthracene	< 4840	ug/L		9/3/2021 06:24
Benzo (a) pyrene	< 4840	ug/L		9/3/2021 06:24
Benzo (b) fluoranthene	< 4840	ug/L		9/3/2021 06:24
Benzo (g,h,i) perylene	< 4840	ug/L		9/3/2021 06:24
Benzo (k) fluoranthene	< 4840	ug/L		9/3/2021 06:24
Bis (2-chloroethoxy) methane	< 4840	ug/L		9/3/2021 06:24
Bis (2-chloroethyl) ether	< 4840	ug/L		9/3/2021 06:24
Bis (2-ethylhexyl) phthalate	< 4840	ug/L		9/3/2021 06:24
Butylbenzylphthalate	< 4840	ug/L		9/3/2021 06:24
Caprolactam	< 4840	ug/L		9/3/2021 06:24
Carbazole	< 4840	ug/L		9/3/2021 06:24

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier:	AQ-COGAQ-08252021		
Lab Sample ID:	213873-02	Date Sampled:	8/25/2021
Matrix:	Water	Date Received:	8/26/2021
Chrysene	< 4840	ug/L	9/3/2021 06:24
Dibenz (a,h) anthracene	< 4840	ug/L	9/3/2021 06:24
Dibenzofuran	< 4840	ug/L	9/3/2021 06:24
Diethyl phthalate	< 9690	ug/L	9/3/2021 06:24
Dimethyl phthalate	< 9690	ug/L	9/3/2021 06:24
Di-n-butyl phthalate	< 9690	ug/L	9/3/2021 06:24
Di-n-octylphthalate	< 9690	ug/L	9/3/2021 06:24
Fluoranthene	< 4840	ug/L	9/3/2021 06:24
Fluorene	< 4840	ug/L	9/3/2021 06:24
Hexachlorobenzene	< 4840	ug/L	9/3/2021 06:24
Hexachlorobutadiene	< 4840	ug/L	9/3/2021 06:24
Hexachlorocyclopentadiene	< 4840	ug/L	9/3/2021 06:24
Hexachloroethane	< 4840	ug/L	9/3/2021 06:24
Indeno (1,2,3-cd) pyrene	< 4840	ug/L	9/3/2021 06:24
Isophorone	< 4840	ug/L	9/3/2021 06:24
Naphthalene	54400	ug/L	9/3/2021 06:24
Nitrobenzene	< 4840	ug/L	9/3/2021 06:24
N-Nitroso-di-n-propylamine	< 4840	ug/L	9/3/2021 06:24
N-Nitrosodiphenylamine	< 4840	ug/L	9/3/2021 06:24
Pentachlorophenol	< 9690	ug/L	9/3/2021 06:24
Phenanthrene	< 4840	ug/L	9/3/2021 06:24
Phenol	< 4840	ug/L	9/3/2021 06:24
Pyrene	< 4840	ug/L	9/3/2021 06:24

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: AQ-COGAQ-08252021

Lab Sample ID: 213873-02

Date Sampled: 8/25/2021

Matrix: Water

Date Received: 8/26/2021

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
2,4,6-Tribromophenol	NC	55.4 - 111		9/3/2021 06:24
2-Fluorobiphenyl	NC	30.9 - 98.1		9/3/2021 06:24
2-Fluorophenol	NC	10 - 105		9/3/2021 06:24
Nitrobenzene-d5	NC	49.6 - 104		9/3/2021 06:24
Phenol-d5	NC	10 - 105		9/3/2021 06:24
Terphenyl-d14	NC	56.5 - 118		9/3/2021 06:24

Method Reference(s): EPA 8270D

EPA 3510C

Preparation Date: 8/31/2021

Data File: B56695.D

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: AQ-COGAQ-08252021

Lab Sample ID: 213873-02

Date Sampled: 8/25/2021

Matrix: Water

Date Received: 8/26/2021

Volatile Organics

Analyte	Result	Units	Qualifier	Date Analyzed
1,1,1,2-Tetrachloroethane	< 200	ug/L		8/30/2021 16:45
1,1,1-Trichloroethane	< 200	ug/L		8/30/2021 16:45
1,1,2,2-Tetrachloroethane	< 200	ug/L		8/30/2021 16:45
1,1,2-Trichloroethane	< 200	ug/L		8/30/2021 16:45
1,1-Dichloroethane	< 200	ug/L		8/30/2021 16:45
1,1-Dichloroethene	< 200	ug/L		8/30/2021 16:45
1,1-Dichloropropene	< 200	ug/L		8/30/2021 16:45
1,2,3-Trichlorobenzene	< 500	ug/L		8/30/2021 16:45
1,2,3-Trichloropropane	< 200	ug/L		8/30/2021 16:45
1,2,4-Trichlorobenzene	< 500	ug/L		8/30/2021 16:45
1,2,4-Trimethylbenzene	758	ug/L		8/30/2021 16:45
1,2-Dibromo-3-Chloropropane	< 1000	ug/L		8/30/2021 16:45
1,2-Dibromoethane	< 200	ug/L		8/30/2021 16:45
1,2-Dichlorobenzene	< 200	ug/L		8/30/2021 16:45
1,2-Dichloroethane	< 200	ug/L		8/30/2021 16:45
1,2-Dichloropropane	< 200	ug/L		8/30/2021 16:45
1,3,5-Trimethylbenzene	431	ug/L		8/30/2021 16:45
1,3-Dichlorobenzene	< 200	ug/L		8/30/2021 16:45
1,3-Dichloropropane	< 200	ug/L		8/30/2021 16:45
1,4-Dichlorobenzene	< 200	ug/L		8/30/2021 16:45
1,4-Dioxane	< 2000	ug/L		8/30/2021 16:45
2,2-Dichloropropane	< 200	ug/L		8/30/2021 16:45
2-Butanone	< 1000	ug/L		8/30/2021 16:45

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier:	AQ-COGAQ-08252021				
Lab Sample ID:	213873-02			Date Sampled:	8/25/2021
Matrix:	Water			Date Received:	8/26/2021
2-Chlorotoluene	< 200	ug/L		8/30/2021	16:45
2-Hexanone	< 500	ug/L		8/30/2021	16:45
4-Chlorotoluene	< 200	ug/L		8/30/2021	16:45
4-Methyl-2-pentanone	< 500	ug/L		8/30/2021	16:45
Acetone	< 1000	ug/L		8/30/2021	16:45
Benzene	1910	ug/L		8/30/2021	16:45
Bromobenzene	< 500	ug/L		8/30/2021	16:45
Bromochloromethane	< 500	ug/L		8/30/2021	16:45
Bromodichloromethane	< 200	ug/L		8/30/2021	16:45
Bromoform	< 500	ug/L		8/30/2021	16:45
Bromomethane	< 200	ug/L		8/30/2021	16:45
Carbon disulfide	< 200	ug/L		8/30/2021	16:45
Carbon Tetrachloride	< 200	ug/L		8/30/2021	16:45
Chlorobenzene	< 200	ug/L		8/30/2021	16:45
Chloroethane	< 200	ug/L		8/30/2021	16:45
Chloroform	< 200	ug/L		8/30/2021	16:45
Chloromethane	< 200	ug/L		8/30/2021	16:45
cis-1,2-Dichloroethene	< 200	ug/L		8/30/2021	16:45
cis-1,3-Dichloropropene	< 200	ug/L		8/30/2021	16:45
Cyclohexane	< 1000	ug/L		8/30/2021	16:45
Dibromochloromethane	< 200	ug/L		8/30/2021	16:45
Dibromomethane	< 200	ug/L		8/30/2021	16:45
Dichlorodifluoromethane	< 200	ug/L		8/30/2021	16:45
Ethylbenzene	129	ug/L	J	8/30/2021	16:45
Freon 113	< 200	ug/L		8/30/2021	16:45

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier:	AQ-COGAQ-08252021		
Lab Sample ID:	213873-02	Date Sampled:	8/25/2021
Matrix:	Water	Date Received:	8/26/2021
Isopropylbenzene	< 200	ug/L	8/30/2021 16:45
m,p-Xylene	2180	ug/L	8/30/2021 16:45
Methyl acetate	< 200	ug/L	8/30/2021 16:45
Methyl tert-butyl Ether	< 200	ug/L	8/30/2021 16:45
Methylcyclohexane	< 200	ug/L	8/30/2021 16:45
Methylene chloride	< 500	ug/L	8/30/2021 16:45
Naphthalene	37400	ug/L	EC 8/30/2021 16:45
n-Butylbenzene	< 200	ug/L	8/30/2021 16:45
n-Propylbenzene	< 200	ug/L	8/30/2021 16:45
o-Xylene	731	ug/L	8/30/2021 16:45
p-Isopropyltoluene	< 200	ug/L	8/30/2021 16:45
sec-Butylbenzene	< 200	ug/L	8/30/2021 16:45
Styrene	< 500	ug/L	8/30/2021 16:45
tert-Butylbenzene	< 200	ug/L	8/30/2021 16:45
Tetrachloroethene	< 200	ug/L	8/30/2021 16:45
Toluene	2440	ug/L	8/30/2021 16:45
trans-1,2-Dichloroethene	< 200	ug/L	8/30/2021 16:45
trans-1,3-Dichloropropene	< 200	ug/L	8/30/2021 16:45
Trichloroethene	< 200	ug/L	8/30/2021 16:45
Trichlorofluoromethane	< 200	ug/L	8/30/2021 16:45
Vinyl chloride	< 200	ug/L	8/30/2021 16:45

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.



Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: AQ-COGAQ-08252021

Lab Sample ID: 213873-02

Date Sampled: 8/25/2021

Matrix: Water

Date Received: 8/26/2021

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed	
1,2-Dichloroethane-d4	121	83 - 120	*	8/30/2021	16:45
4-Bromofluorobenzene	97.5	65.5 - 118		8/30/2021	16:45
Pentafluorobenzene	105	91.2 - 109		8/30/2021	16:45
Toluene-D8	91.4	79.7 - 112		8/30/2021	16:45

C denotes a parameter for which the CCV was below acceptable limits.

Method Reference(s): EPA 8260C

EPA 5030C

Data File: z03825.D

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Lab Project ID: 213873

Client: Inventum Engineering, P.C.

Project Reference: Bench Scale Test

Sample Identifier: AQ-COGAQ-08252021

Lab Sample ID: 213873-02

Date Sampled: 8/25/2021

Matrix: Water

Date Received: 8/26/2021

Dioxane

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
1,4-Dioxane	0.583	ug/L		9/1/2021 16:48

The ions present elute within the same retention time range as 1,4-Dioxane, and due to interferences in the mass spectra 1,4-Dioxane cannot be eliminated as a constituent of the sample. There may also be additional components present.

Method Reference(s): EPA 8270D SIM
EPA 3510C

Preparation Date: 8/31/2021

Data File: B56644.D

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.



Analytical Report Appendix

The reported results relate only to the samples as they have been received by the laboratory.

Each page of this document is part of a multipage report. This document may not be reproduced except in its entirety, without the prior consent of Paradigm Environmental Services, Inc.

All soil/sludge samples have been reported on a dry weight basis, unless qualified "reported as received". Other solids are reported as received.

Low level Volatiles blank reports for soil/solid matrix are based on a nominal 5 gram weight. Sample results and reporting limits are based on actual weight, which may be more or less than 5 grams.

The Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt. Sample condition requirements are defined under the 2003 NELAC Standard, sections 5.5.8.3.1 and 5.5.8.3.2.

NYSDOH ELAP does not certify for all parameters. Paradigm Environmental Services or the indicated subcontracted laboratory does hold certification for all analytes where certification is offered by ELAP unless otherwise specified. Aliquots separated for certain tests, such as TCLP, are indicated on the Chain of Custody and final reports with an "A" suffix.

Data qualifiers are used, when necessary, to provide additional information about the data. This information may be communicated as a flag or as text at the bottom of the report. Please refer to the following list of analyte-specific, frequently used data flags and their meaning:

"<" = Analyzed for but not detected at or above the quantitation limit.

"E" = Result has been estimated, calibration limit exceeded.

"Z" = See case narrative.

"H" = Sample analyzed outside of holding time.

"D" = Sample, Laboratory Control Sample, or Matrix Spike Duplicate results above Relative Percent Difference limit.

"M" = Matrix spike recoveries outside QC limits. Matrix bias indicated.

"B" = Method blank contained trace levels of analyte. Refer to included method blank report.

"J" = Result estimated between the quantitation limit and half the quantitation limit.

"L" = Laboratory Control Sample recovery outside accepted QC limits.

"P" = Concentration differs by more than 40% between the primary and secondary analytical columns.

"NC" = Not calculable. Applicable to RPD if sample or duplicate result is non-detect or estimated (see primary report for data flags). Applicable to MS if sample is greater or equal to ten times the spike added. Applicable to sample surrogates or MS if sample dilution is 10x or higher.

"" = Indicates any recoveries outside associated acceptance windows. Surrogate outliers in samples are presumed matrix effects. LCS demonstrates method compliance unless otherwise noted.*

"(1)" = Indicates data from primary column used for QC calculation.

"A" = denotes a parameter for which ELAP does not offer approval as part of their laboratory certification program.

"F" = denotes a parameter for which Paradigm does not carry certification, the results for which should therefore only be used where ELAP certification is not required, such as personal exposure assessment.

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

GENERAL TERMS AND CONDITIONS

LABORATORY SERVICES

These Terms and Conditions embody the whole agreement of the parties in the absence of a signed and executed contract between the Laboratory (LAB) and Client. They shall supersede all previous communications, representations, or agreements, either verbal or written, between the parties. The LAB specifically rejects all additional, inconsistent, or conflicting terms, whether printed or otherwise set forth in any purchase order or other communication from the Client to the LAB. The invalidity or unenforceability in whole or in part of any provision, term or condition hereof shall not affect in any way the validity or enforceability of the remainder of the Terms and Conditions. No waiver by LAB of any provision, term, or condition hereof or of any breach by or obligation of the Client hereunder shall constitute a waiver of such provision, term, or condition on any other occasion or a waiver of any other breach by or obligation of the Client. This agreement shall be administered and interpreted under the laws of the state which services are procured.

Warranty.

Recognizing that the nature of many samples is unknown and that some may contain potentially hazardous components, LAB warrants only that it will perform testing services, obtain findings, and prepare reports in accordance with generally accepted analytical laboratory principles and practices at the time of performance of services. LAB makes no other warranty, express or implied.

Scope and Compensation.

LAB agrees to perform the services described in the chain of custody to which these terms and conditions are attached. Unless the parties agree in writing to the contrary, the duties of LAB shall not be construed to exceed the services specifically described. LAB will use LAB default method for all tests unless specified otherwise on the Work Order.

Payment terms are net 30 days from the date of invoice. All overdue payments are subject to an interest charge of one and one-half percent (1-1/2%) per month or a portion thereof. Client shall also be responsible for costs of collection, including payment of reasonable attorney fees if such expense is incurred. The prices, unless stated, do not include any sale, use or other taxes. Such taxes will be added to invoice prices when required.

Prices.

Compensation for services performed will be based on the current Lab Analytical Fee Schedule or on quotations agreed to in writing by the parties. Turnaround time based charges are determined from the time of resolution of all work order questions. Testimony, court appearances or data compilation for legal action will be charged separately. Evaluation and reporting of initial screening runs may incur additional fees.

Limitations of Liability.

In the event of any error, omission, or other professional negligence, the sole and exclusive responsibility of LAB shall be to re-perform the deficient work at its own expense and LAB shall have no other liability whatsoever. All claims shall be deemed waived unless made in writing and received by LAB within ninety (90) days following completion of services.

LAB shall have no liability, obligation, or responsibility of any kind for losses, costs, expenses, or other damages (including but not limited to any special, direct, incidental or consequential damages) with respect to LAB's services or results.

All results provided by LAB are strictly for the use of its clients and LAB is in no way responsible for the use of such results by clients or third parties. All reports should be considered in their entirety, and LAB is not responsible for the separation, detachment, or other use of any portion of these reports. Client may not assign the lab report without the written consent of the LAB.

Client covenants and agrees, at its/his/her sole expense, to indemnify, protect, defend, and save harmless the LAB from and against any and all damages, losses, liabilities, obligations, penalties, claims, litigation, demands, defenses, judgments, suits, actions, proceedings, costs, disbursements and/or expenses (including, without limitation attorneys' and experts' fees and disbursements) of any kind whatsoever which may at any time be imposed upon, incurred by or asserted or awarded against client relating to, resulting from or arising out of (a) the breach of this agreement by this client, (b) the negligence of the client in handling, delivering or disclosing any hazardous substance, (c) the violation of the Client of any applicable law, (d) non-compliance by the Client with any environmental permit or (e) a material misrepresentation in disclosing the materials to be tested.

Hazard Disclosure.

Client represents and warrants that any sample delivered to LAB will be preceded or accompanied by complete written disclosure of the presence of any hazardous substances known or suspected by Client. Client further warrants that any sample containing any hazardous substance that is to be delivered to LAB will be packaged, labeled, transported, and delivered properly and in accordance with applicable laws.

Sample Handling.

Prior to LAB's acceptance of any sample (or after any revocation of acceptance), the entire risk of loss or of damage to such sample remains with Client. Samples are accepted when receipt is acknowledged on chain of custody documentation. In no event will LAB have any responsibility for the action or inaction of any carrier shipping or delivering any sample to or from LAB premises.

Client authorizes LAB to proceed with the analysis of samples as received by the laboratory, recognizing that any samples not in compliance with all current DOH-ELAP-NELAP requirements for containers, preservation or holding time will be noted as such on the final report.

Disposal of hazardous waste samples is the responsibility of the Client. If the Client does not wish such samples returned, LAB may add storage and disposal fees to the final invoice. Maximum storage time for samples is 30 days after completion of analysis unless modified by applicable state or federal laws. Client will be required to give the LAB written instructions concerning disposal of these samples.

LAB reserves the absolute right, exercisable at any time, to refuse to receive delivery of, refuse to accept, or revoke acceptance of any sample, which, in the sole judgment of LAB (a) is of unsuitable volume, (b) may be or become unsuitable for or may pose a risk in handling, transport, or processing for any health, safety, environmental or other reason whether or not due to the presence in the sample of any hazardous substance, and whether or not such presence has been disclosed to LAB by Client or (c) if the condition or sample date make the sample unsuitable for analysis.

Legal Responsibility.

LAB is solely responsible for performance of this contract, and no affiliated company, director, officer, employee, or agent shall have any legal responsibility hereunder, whether in contract or tort including negligence.

Assignment.

LAB may assign its performance obligations under this contract to other parties, as it deems necessary. LAB shall disclose to Client any assignee (subcontractor) by ELAP ID # on the submitted final report.

Force Majeure.

LAB shall have no responsibility or liability to the Client for any failure or delay in performance by LAB, which results in whole or in part from any cause or circumstance beyond the reasonable control of LAB. Such causes and circumstances shall include, but not limited to, acts of God, acts or orders of any government authority, strikes or other labor disputes, natural disasters, accidents, wars, civil disturbances, difficulties or delays in transportation, mail or delivery services, inability to obtain sufficient services or supplies from LAB's usual suppliers, or any other cause beyond LAB's reasonable control.

Law.

This contract shall be continued under the laws of the State of New York without regard to its conflicts of laws provision.

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

CHAIN OF CUSTODY



PROJECT REFERENCE
BENCH SCALE TEST

REPORT TO:

INVOICE TO:

LAB PROJECT ID

CLIENT: **INVENTUM ENGINEERING** ADDRESS: **SAME**
 ADDRESS: **H71 CAPULSIS DR SUITE 202** ADDRESS: **SAME**
 CITY: **HERNDON VA** CITY: **VA** STATE: **VA** STATE: **VA** ZIP: **20170** ZIP: **20170**
 PHONE: **585-734-5255** PHONE: **585-734-5255**

ATTN: **JOHN BLACK** Email: **john.black@inventumeng.com**
 ATTN: **ROXANNE BIREX** Email: **roxanne.birex@inventumeng.com**
 Matrix Codes: **AQ - Aqueous Liquid** **WA - Water** **DW - Drinking Water** **SO - Soil** **SD - Solid** **PT - Paint** **WP - Wipe** **OL - Oil**
NQ - Non-Aqueous Liquid **WG - Groundwater** **WW - Wastewater** **SW - Sewer** **CR - Caulk** **AR - Air**

DATE COLLECTED	TIME COLLECTED	COMPOSITE	GRADES	SAMPLE IDENTIFIER	MCADRES	CONUNTS	PARAMETER	RESULTS	PARADIGM LAB SAMPLE NUMBER
8/25/21	1305	X	SD	BACKLOG-08252021	SD	75	VOCs 5035A/8260	✓	014
8/25/21	1325	X	AQ	COGAP-08252021	WR	911	SVOCs 8270 D	✓	014
							CYANIDE 5M45	✓	
							TAL METALS 6010	✓	
							MERCURY 7470A	✓	
							PCBS 8270 D	✓	
							PEST HECS 80813	✓	
							1,4 DIOXANE	✓	
							PFAS ASTM D796	✓	
							TCLP FULL LIST	✓	
							TCLP BORON	✓	
							CYANIDES, FLUORIDE	✓	
							NITRATES + NITRITES	✓	
							URANIUM	✓	
							PAINT FILTER	✓	
							HAZ CAT	✓	
							BTU + FLASH POINT	✓	
							TOTAL SULFUR	✓	
							CYANIDE 9012	✓	
							LOW LEVEL HQ	✓	
							PFAS 537 MOD	✓	
							PH	✓	

Included bottle order to clearly list parameters if chain is too sloppy

Turnaround Time
 Availability contingent upon lab approval; additional fees may apply.
 Standard 5 day None Required
 10 day Batch QC Basic EDD
 Rush 3 day Category A NYSDEC EDD
 Rush 2 day Category B LEVEL IV DATA
 Rush 1 day Other
 Date Needed: _____ Other EDD: _____
 please indicate date needed: _____ please indicate EDD needed: _____

Report Supplements
 None Required None Required
 Basic EDD Basic EDD
 NYSDEC EDD NYSDEC EDD
 LEVEL IV DATA
 Other Other EDD
 please indicate package needed: _____ please indicate EDD needed: _____

Sampled By: **ROXANNE BIREX** Date/Time: **8/25/21 1305**
 Relinquished By: **John Black** Date/Time: **8/25/21 1400**
 Received By: **John Black** Date/Time: **8/25/21 16:00**
 Received @ Lab By: **3000008/26/21 15:57**
 Total Cost: _____ P.I.F.: _____

2082



Chain of Custody Supplement

Client: Inventum Completed by: Molykail
 Lab Project ID: 213873 Date: 8/26/21

Sample Condition Requirements
 Per NELAC/ELAP 210/241/242/243/244

Condition	NELAC compliance with the sample condition requirements upon receipt		
	Yes	No	N/A
Container Type	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments	<u>Transferred portion of 02 to 802 glass jar with 50% for reactivity PHET ccm 8/26/21</u>		
Transferred to method-compliant container	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Headspace (<1 mL)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments	<u>Transferred portion of 02 to 802 glass jar for 1-10ash</u>		
Preservation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments	<u>VOA-02 TCN-02 LLMS-02</u>		
Chlorine Absent (<0.10 ppm per test strip)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments			
Holding Time	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments	<u>PH-02</u>		
Temperature	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments	<u>3°C cool met pol-02</u>		
Compliant Sample Quantity/Type	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments	<u>No bottle certs for 125ml poly, 250 poly not in cert bottles. No bottle cert for VOA-02, PEAS sent directly to sub lab</u>		

Adirondack Environmental Services, Inc

Date: 02-Sep-21

CLIENT: Paradigm Environmental
Work Order: 210830012
Reference: Analysis of Samples / Project# 213873
PO#:

Client Sample ID: SD-RackCDG-08252021
Collection Date: 8/25/2021 1:05:00 PM
Lab Sample ID: 210830012-001
Matrix: SOLID

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
CYANIDE, TOTAL - SW 9012B (Prep: 9010C - 8/31/2021)						Analyst: KB
Cyanide	287	50.0		µg/g	100	8/31/2021 4:32:21 PM
HEAT VALUE - ASTM D240-09						Analyst: CP
Heat Value	12000	500		btu/lb	1	9/1/2021
SW 7.3.3.2, NOT ELAP CERTIFIED (Prep: E335.4 - 9/2/2021)						Analyst: KB
Reactive Cyanide	1.4	1.0		µg/g	1	9/2/2021 12:42:55 PM
SW 7.3.4.2, NOT ELAP CERTIFIED (Prep: E335.4 - 9/2/2021)						Analyst: CS
Reactive Sulfide	20	10		µg/g	1	9/2/2021
REACTIVITY - SW 7.3.4.2, NOT ELAP CERTIFIED						Analyst: CS
Reactivity	Non Reactive	0			1	9/2/2021

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 X - Value exceeds Maximum Contaminant Level
 E - Value above quantitation range-Estimate
 S - LCS Spike below accepted limits (+ above)
 Z - RPD outside accepted recovery limits
 N - Matrix Spike below accepted limits (+ above)
 T - Tentitively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 02-Sep-21

CLIENT: Paradigm Environmental
Work Order: 210830012
Reference: Analysis of Samples / Project# 213873
PO#:

Client Sample ID: AQ-COG AQ-08252021
Collection Date: 8/25/2021 1:25:00 PM
Lab Sample ID: 210830012-002
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
CYANIDE, TOTAL - EPA 335.4 REV 1.0 (Prep: 335.4 - 8/31/2021)						Analyst: KB
Cyanide	1.2	0.10		mg/L	10	8/31/2021 4:06:26 PM
SW 7.3.3.2, NOT ELAP CERTIFIED (Prep: E335.4 - 9/1/2021)						Analyst: KB
Reactive Cyanide	ND	1.0		µg/g	1	9/2/2021 12:41:09 PM
SW 7.3.4.2, NOT ELAP CERTIFIED (Prep: E335.4 - 9/1/2021)						Analyst: CS
Reactive Sulfide	16	10		µg/g	1	9/2/2021
REACTIVITY - SW 7.3.4.2, NOT ELAP CERTIFIED						Analyst: CS
Reactivity	Non Reactive	0			1	9/2/2021

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 X - Value exceeds Maximum Contaminant Level
 E - Value above quantitation range-Estimate
 S - LCS Spike below accepted limits (+ above)
 Z - RPD outside accepted recovery limits
 N - Matrix Spike below accepted limits (+ above)
 T - Tentitively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 02-Sep-21

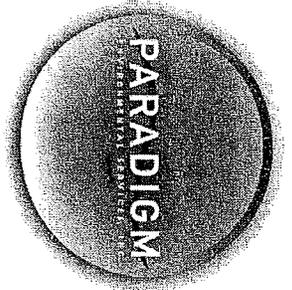
CLIENT: Paradigm Environmental
Work Order: 210830012
Reference: Analysis of Samples / Project# 213873
PO#:

Client Sample ID: SD-RackCDG-08252021
Collection Date: 8/25/2021 1:05:00 PM
Lab Sample ID: 210830012-003
Matrix: TCLP-EXTRACT

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
TCLP HERBICIDES - EPA 8321B						Analyst: KF
(Prep: SW3535A - 8/30/2021)						
2,4,5-TP (Silvex)-TCLP	ND	0.050		mg/L	1	8/30/2021 7:45:00 PM
2,4-D-TCLP	ND	0.050		mg/L	1	8/30/2021 7:45:00 PM
Surr: Acifluorfen	63.4	52.5-128		%REC	1	8/30/2021 7:45:00 PM
Surr: DCAA	91.7	56.2-139		%REC	1	8/30/2021 7:45:00 PM

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 X - Value exceeds Maximum Contaminant Level
 E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
 Z - RPD outside accepted recovery limits
 N - Matrix Spike below accepted limits (+ above)
 T - Tentitively Identified Compound-Estimated Conc.



210830012

CHAIN OF CUSTODY

ADIRONDACK: ELAP ID: 1

REPORT TO:		INVOICE TO:	
COMPANY: Paradigm Environmental	ADDRESS:	COMPANY: Same	ADDRESS:
CITY:	STATE:	CITY:	STATE:
PHONE:	ZIP:	PHONE:	ZIP:
ATTN: Reporting	FAX:	ATTN: Accounts Payable	FAX:
COMMENTS: Please email results to reporting@paradigmenv.com			

PROJECT NAME/SITE NAME: _____

REQUESTED ANALYSIS

BTU
TCN
LH My 8/24/21
Reactivity
Cyanide
TCUP Herb

LAB PROJECT #: _____

CLIENT PROJECT: _____

TURNAROUND TIME: (WORKING DAYS)

STD: 1 2 3 5

Date Due: 9/3 in lots

DATE	TIME	COMPOSITE	GRADES	SAMPLE LOCATION/FIELD ID	MATRIX	CONTAMINANTS	REMARKS	PARADIGM SAMPLE NUMBER
8/25/21	1305	X		SD-Rack C06-06252021		X	213873-01	
8/25/21	1325	X		AG-C06-AG-08252021		X	213873-02	Limited reactivity
8/25/21	1305	X		SD-Rack C06-08252021		X	213873-01A	Sample specimen 8/27/21

LAB USE ONLY BELOW THIS LINE**

Sample Condition: Per NELAC/ELAP 210/241/242/243/244

Receipt Parameter: _____

NELAC Compliance: _____

Container Type: Y N

Preservation: Y N

Holding Time: Y N

Temperature: Y N

Comments: 4°C

Client: _____

Sampled By: _____ Date/Time: 8/30 2:00 PM 8/27/21

Relinquished By: _____ Date/Time: 8/30/21 8:30

Received By: _____ Date/Time: 8/30/21 12:24

Received @ Lab By: _____ Date/Time: 8/30/21 4:24 PM

Total Cost: _____

P.I.F. _____



Experience is the solution

314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

- (a) Neither **Adirondack Environmental Services, Inc.**, nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.**'s performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.
- (b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.
- (c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.
- (d) In no event shall **Adirondack Environmental Services, Inc.**, its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.
- (e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**
- (f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.
- (g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.



ANALYTICAL REPORT

Lab Number:	L2145703
Client:	Paradigm Environmental Services 179 Lake Avenue Rochester, NY 14608
ATTN:	Jane Daloia
Phone:	(585) 647-2530
Project Name:	BENCH SCALE TEST
Project Number:	BENCH SCALE TEST
Report Date:	09/09/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2145703-01	SD-RACKCOG-08252021	SOLID	Not Specified	08/25/21 13:05	08/25/21
L2145703-02	AQ-COGAQ-08252021	WATER	Not Specified	08/25/21 13:25	08/25/21



Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Case Narrative

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

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

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

Please contact Project Management at 800-624-9220 with any questions.

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2145703-01: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

L2145703-01 and -02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2145703-02: The sample was centrifuged and decanted prior to extraction due to sample matrix.

L2145703-02: The 6:2F7S result is not reported because the quadratic fit of the curve does not allow for an estimated "E" flagged value. The sample was re-extracted on dilution and the result within the calibration curve is reported for this compound.

WG1541092-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

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

Authorized Signature:



Alycia Mogayzel

Title: Technical Director/Representative

Date: 09/09/21

ORGANICS

SEMIVOLATILES

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

SAMPLE RESULTS

Lab ID: L2145703-01
 Client ID: SD-RACKCOG-08252021
 Sample Location: Not Specified

Date Collected: 08/25/21 13:05
 Date Received: 08/25/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 09/01/21 02:26
 Analyst: SG
 Percent Solids: 34%

Extraction Method: ALPHA 23528
 Extraction Date: 08/31/21 09:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	26.8	1.22	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	26.8	2.47	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	13.4	2.09	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	26.8	2.82	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	13.4	2.42	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	13.4	3.24	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	13.4	2.25	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	26.8	9.63	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	26.8	7.32	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	13.4	4.02	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	13.4	6.97	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	13.4	3.59	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	26.8	15.4	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	26.8	10.8	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	26.8	2.51	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	26.8	8.20	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	26.8	5.26	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	26.8	4.53	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	26.8	3.75	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	26.8	11.0	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	26.8	2.90	1
PFOA/PFOS, Total	ND		ng/g	13.4	2.25	1

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

SAMPLE RESULTS

Lab ID: L2145703-01
 Client ID: SD-RACKCOG-08252021
 Sample Location: Not Specified

Date Collected: 08/25/21 13:05
 Date Received: 08/25/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		74-139
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	195	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	138		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	106		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	42		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	117		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		24-159

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

SAMPLE RESULTS

Lab ID: L2145703-02
 Client ID: AQ-COGAQ-08252021
 Sample Location: Not Specified

Date Collected: 08/25/21 13:25
 Date Received: 08/25/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 08/28/21 20:42
 Analyst: MP

Extraction Method: ALPHA 23528
 Extraction Date: 08/27/21 08:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	50.3		ng/l	1.77	0.362	1
Perfluoropentanoic Acid (PFPeA)	48.2		ng/l	1.77	0.351	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.77	0.211	1
Perfluorohexanoic Acid (PFHxA)	23.0		ng/l	1.77	0.291	1
Perfluoroheptanoic Acid (PFHpA)	6.05		ng/l	1.77	0.200	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.77	0.334	1
Perfluorooctanoic Acid (PFOA)	6.19		ng/l	1.77	0.209	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.77	0.610	1
Perfluorononanoic Acid (PFNA)	0.745	J	ng/l	1.77	0.277	1
Perfluorooctanesulfonic Acid (PFOS)	7.68	F	ng/l	1.77	0.447	1
Perfluorodecanoic Acid (PFDA)	0.497	J	ng/l	1.77	0.270	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.77	1.08	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.77	0.575	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.77	0.231	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.77	0.870	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.77	0.515	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.77	0.713	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	0.330	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.77	0.290	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.77	0.220	1
PFOA/PFOS, Total	13.9		ng/l	1.77	0.209	1

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

SAMPLE RESULTS

Lab ID: L2145703-02
 Client ID: AQ-COGAQ-08252021
 Sample Location: Not Specified

Date Collected: 08/25/21 13:25
 Date Received: 08/25/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	52	Q	58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	122		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	63		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	25		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	58		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	58		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	47		22-136

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

SAMPLE RESULTS

Lab ID: L2145703-02 RE
 Client ID: AQ-COGAQ-08252021
 Sample Location: Not Specified

Date Collected: 08/25/21 13:25
 Date Received: 08/25/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 08/30/21 18:21
 Analyst: RS

Extraction Method: ALPHA 23528
 Extraction Date: 08/30/21 07:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	563		ng/l	20.0	13.3	1
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			68		14-147	

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/28/21 17:06
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/27/21 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1539834-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/28/21 17:06
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/27/21 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1539834-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	107		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	109		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	111		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	131		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	105		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	126		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	86		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	42		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	90		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		22-136

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/01/21 18:23
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/27/21 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1539834-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	91		10-112

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/30/21 17:48
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 08/30/21 07:20

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1540526-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/30/21 17:48
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 08/30/21 07:20

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1540526-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	116		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	115		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	107		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	82		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	82		22-136

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/01/21 01:19
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/31/21 09:32

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1541092-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.500	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.250	0.039
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	0.053
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.250	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.250	0.061
Perfluorooctanoic Acid (PFOA)	0.048	J	ng/g	0.250	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.136
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.250	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.250	0.130
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.250	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.287
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.054
PFOA/PFOS, Total	0.048	J	ng/g	0.250	0.042

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/01/21 01:19
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/31/21 09:32

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1541092-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		74-139
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	65		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	74		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	79		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	106		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	66		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		24-159

Lab Control Sample Analysis

Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD	Limits
	%Recovery	Qual	%Recovery	Qual					
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1539834-2									
Perfluorobutanoic Acid (PFBA)	94		-		67-148	-		30	
Perfluoropentanoic Acid (PFPeA)	92		-		63-161	-		30	
Perfluorobutanesulfonic Acid (PFBS)	93		-		65-157	-		30	
Perfluorohexanoic Acid (PFHxA)	94		-		69-168	-		30	
Perfluorohexanoic Acid (PFHpA)	93		-		58-159	-		30	
Perfluorohexanesulfonic Acid (PFHxS)	94		-		69-177	-		30	
Perfluorooctanoic Acid (PFOA)	98		-		63-159	-		30	
1H, 1H,2H,2H-Perfluorooctanesulfonic Acid (6:2:FTS)	105		-		49-187	-		30	
Perfluorooheptanesulfonic Acid (PFHpS)	98		-		61-179	-		30	
Perfluorononanoic Acid (PFNA)	93		-		68-171	-		30	
Perfluorooctanesulfonic Acid (PFOS)	104		-		52-151	-		30	
Perfluorodecanoic Acid (PFDA)	95		-		63-171	-		30	
1H, 1H,2H,2H-Perfluorodecanesulfonic Acid (8:2:FTS)	106		-		56-173	-		30	
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	109		-		60-166	-		30	
Perfluoroundecanoic Acid (PFUnA)	92		-		60-153	-		30	
Perfluorodecanesulfonic Acid (PFDS)	94		-		38-156	-		30	
Perfluorooctanesulfonamide (FOSA)	95		-		46-170	-		30	
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	85		-		45-170	-		30	
Perfluorododecanoic Acid (PFDDoA)	94		-		67-153	-		30	
Perfluorotridecanoic Acid (PFTriDA)	114		-		48-158	-		30	
Perfluorotetradecanoic Acid (PFTA)	98		-		59-182	-		30	

Lab Control Sample Analysis

Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	LCS		LCSD		RPD	Qual	RPD	Qual	RPD
	%Recovery	Qual	%Recovery	Qual					

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: W/G1539834-2

Surrogate (Extracted Internal Standard)	LCS		LCSD		RPD	Qual	RPD	Qual	RPD
	%Recovery	Qual	%Recovery	Qual					
Perfluoro[13C4]Butanoic Acid (MPFBA)	108								58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113								62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109								70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHXA)	110								57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHPA)	110								60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHXS)	110								71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104								62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	129								14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104								59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107								69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102								62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	134								10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMieFOSAA)	84								24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	106								55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23								10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEieFOSAA)	94								27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDA)	102								48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PTEDA)	77								22-136



Lab Control Sample Analysis

Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	LCS		LCSD		%Recovery Limits	RPD		RPD Limits
	%Recovery	Qual	%Recovery	Qual		RPD	Qual	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1539834-2								
Perfluorooctanesulfonamide (FOSA)	86		-		46-170		-	30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	91				10-112



Lab Control Sample Analysis

Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual						
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1540526-2										
Perfluorobutanoic Acid (PFBA)	101		-		67-148	-		-		30
Perfluoropentanoic Acid (PFPeA)	98		-		63-161	-		-		30
Perfluorobutanesulfonic Acid (PFBS)	98		-		65-157	-		-		30
Perfluorohexanoic Acid (PFHxA)	98		-		69-168	-		-		30
Perfluorohexanoic Acid (PFHpA)	98		-		58-159	-		-		30
Perfluorohexanesulfonic Acid (PFHxS)	102		-		69-177	-		-		30
Perfluorooctanoic Acid (PFOA)	102		-		63-159	-		-		30
1H, 1H,2H,2H-Perfluorooctanesulfonic Acid (6:2:FTS)	109		-		49-187	-		-		30
Perfluorooheptanesulfonic Acid (PFHpS)	99		-		61-179	-		-		30
Perfluorononanoic Acid (PFNA)	92		-		68-171	-		-		30
Perfluorooctanesulfonic Acid (PFOS)	105		-		52-151	-		-		30
Perfluorodecanoic Acid (PFDA)	98		-		63-171	-		-		30
1H, 1H,2H,2H-Perfluorodecanesulfonic Acid (8:2:FTS)	106		-		56-173	-		-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	99		-		60-166	-		-		30
Perfluoroundecanoic Acid (PFUnA)	100		-		60-153	-		-		30
Perfluorodecanesulfonic Acid (PFDS)	103		-		38-156	-		-		30
Perfluorooctanesulfonamide (FOSA)	94		-		46-170	-		-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEHFOSAA)	100		-		45-170	-		-		30
Perfluorododecanoic Acid (PFDDA)	99		-		67-153	-		-		30
Perfluorotridecanoic Acid (PFTTDA)	121		-		48-158	-		-		30
Perfluorotetradecanoic Acid (PFTA)	104		-		59-182	-		-		30



Lab Control Sample Analysis

Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	LCS		LCSD		RPD	Qual	RPD	Qual	RPD
	%Recovery	Qual	%Recovery	Qual					

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1540526-2

Surrogate (Extracted Internal Standard)	LCS		LCSD		RPD	Qual	RPD	Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual				
Perfluoro[13C4]Butanoic Acid (MPFBA)	110							58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	123							62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116							70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHXA)	110							57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHPA)	108							60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHXS)	116							71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	107							62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	128							14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	114							59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	119							69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	110							62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	130							10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMleFOSAA)	100							24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114							55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	59							10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEIFOSAA)	92							27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDA)	110							48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PTEDA)	95							22-136

Lab Control Sample Analysis

Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD	Limits
	%Recovery	Qual	%Recovery	Qual					
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1541092-2									
Perfluorobutanoic Acid (PFBA)	94		-		71-135	-		30	
Perfluoropentanoic Acid (PFPeA)	92		-		69-132	-		30	
Perfluorobutanesulfonic Acid (PFBS)	94		-		72-128	-		30	
Perfluorohexanoic Acid (PFHxA)	96		-		70-132	-		30	
Perfluorohexanoic Acid (PFHpA)	94		-		71-131	-		30	
Perfluorohexanesulfonic Acid (PFHxS)	94		-		67-130	-		30	
Perfluorooctanoic Acid (PFOA)	97		-		69-133	-		30	
1H, 1H,2H,2H-Perfluorooctanesulfonic Acid (6:2:FTS)	96		-		64-140	-		30	
Perfluorohepanesulfonic Acid (PFHpS)	95		-		70-132	-		30	
Perfluorononanoic Acid (PFNA)	90		-		72-129	-		30	
Perfluorooctanesulfonic Acid (PFOS)	101		-		68-136	-		30	
Perfluorodecanoic Acid (PFDA)	92		-		69-133	-		30	
1H, 1H,2H,2H-Perfluorodecanesulfonic Acid (8:2:FTS)	110		-		65-137	-		30	
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	95		-		63-144	-		30	
Perfluoroundecanoic Acid (PFUnA)	95		-		64-136	-		30	
Perfluorodecanesulfonic Acid (PFDS)	96		-		59-134	-		30	
Perfluorooctanesulfonamide (FOSA)	94		-		67-137	-		30	
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEHFOSAA)	101		-		61-139	-		30	
Perfluorododecanoic Acid (PFDDA)	96		-		69-135	-		30	
Perfluorotridecanoic Acid (PFTTDA)	112		-		66-139	-		30	
Perfluorotetradecanoic Acid (PFTA)	94		-		69-133	-		30	

Lab Control Sample Analysis

Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	LCS		LCSD		RPD	Qual	RPD	Qual	RPD
	%Recovery	Qual	%Recovery	Qual					

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1541092-2

Surrogate (Extracted Internal Standard)	LCS		LCSD		RPD	Qual	RPD	Qual	RPD
	%Recovery	Qual	%Recovery	Qual					
Perfluoro[13C4]Butanoic Acid (MPFBA)	104								61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101								58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107								74-139
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHXA)	103								66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHPA)	104								71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHXS)	112								78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103								75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	85								20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	111								72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	116								79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	112								75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86								19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMIFOSAA)	80								31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109								61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	66								10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEIFOSAA)	81								34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDA)	106								54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PTEDA)	92								24-159

Matrix Spike Analysis
Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual Limits
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1539834-3 QC Sample: L2145493-01 Client ID: MS Sample

Perfluorobutanoic Acid (PFBA)	ND	38.5	36.8	96	-	-	-	-	67-148	-	30
Perfluoropentanoic Acid (PFPeA)	ND	38.5	36.2	94	-	-	-	-	63-161	-	30
Perfluorobutanesulfonic Acid (PFBS)	ND	34.2	32.9	96	-	-	-	-	65-157	-	30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2:FTS)	ND	36	35.3	98	-	-	-	-	37-219	-	30
Perfluorohexanoic Acid (PFHXA)	ND	38.5	36.8	96	-	-	-	-	69-168	-	30
Perfluoropentanesulfonic Acid (PFPeS)	ND	36.2	35.8	99	-	-	-	-	52-156	-	30
Perfluoroheptanoic Acid (PFHpA)	ND	38.5	36.1	94	-	-	-	-	58-159	-	30
Perfluorohexanesulfonic Acid (PFHxS)	ND	35.2	33.0	94	-	-	-	-	69-177	-	30
Perfluorooctanoic Acid (PFOA)	ND	38.5	37.9	98	-	-	-	-	63-159	-	30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2:FTS)	ND	36.7	39.5	108	-	-	-	-	49-187	-	30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	36.7	36.0	98	-	-	-	-	61-179	-	30
Perfluorononanoic Acid (PFNNA)	ND	38.5	36.7	95	-	-	-	-	68-171	-	30
Perfluorooctanesulfonic Acid (PFOS)	ND	35.8	37.5	105	-	-	-	-	52-151	-	30
Perfluorodecanoic Acid (PFDA)	ND	38.5	36.9	96	-	-	-	-	63-171	-	30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2:FTS)	ND	37	37.0	100	-	-	-	-	56-173	-	30
Perfluorononanesulfonic Acid (PFNS)	ND	37.1	36.1	97	-	-	-	-	48-150	-	30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOOSA)	ND	38.5	36.3	94	-	-	-	-	60-166	-	30
Perfluoroundecanoic Acid (PFUNA)	ND	38.5	35.8	93	-	-	-	-	60-153	-	30
Perfluorodecanesulfonic Acid (PFDS)	ND	37.1	37.0	100	-	-	-	-	38-156	-	30
Perfluorooctanesulfonamide (FOSA)	ND	38.5	35.1	91	-	-	-	-	46-170	-	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOOSA)	ND	38.5	35.7	93	-	-	-	-	45-170	-	30
Perfluorodecanoic Acid (PFDOA)	ND	38.5	37.3	97	-	-	-	-	67-153	-	30

Matrix Spike Analysis Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD Qual	RPD Limits	
												MS %Recovery
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1539834-3 QC Sample: L2145493-01 Client ID: MS Sample												
Perfluorodecanoic Acid (PFTDA)	ND	38.5	41.9	109		-	-		48-158	-	30	
Perfluorotetradecanoic Acid (PFTA)	ND	38.5	36.9	96		-	-		59-182	-	30	

Surrogate (Extracted Internal Standard)	% Recovery	MS Qualifier	% Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8-2FTS)	131				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4-2FTS)	139				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6-2FTS)	142				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEHFOSAA)	106				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMEFOSAA)	90				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDDA)	116				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	110				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	110				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110				70-131



Matrix Spike Analysis
Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD Qual	RPD Limits
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1540526-3 QC Sample: L2146282-02 Client ID: MS Sample

Perfluorobutanoic Acid (PFBA)	16.2	37	52.7	99	-	-	67-148	-	30
Perfluoropentanoic Acid (PFPeA)	33.5	37	68.2	94	-	-	63-161	-	30
Perfluorobutanesulfonic Acid (PFBS)	35.0	32.9	66.9	97	-	-	65-157	-	30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.6	35.6	103	-	-	37-219	-	30
Perfluorohexanoic Acid (PFHxA)	30.0	37	66.3	98	-	-	69-168	-	30
Perfluoropentanesulfonic Acid (PFPeS)	0.933J	34.8	38.1	107	-	-	52-156	-	30
Perfluoroheptanoic Acid (PFHpA)	17.3	37	53.7	98	-	-	58-159	-	30
Perfluorohexanesulfonic Acid (PFHxS)	6.13	33.8	40.2	101	-	-	69-177	-	30
Perfluorooctanoic Acid (PFOA)	77.0	37	115	103	-	-	63-159	-	30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	35.2	36.4	103	-	-	49-187	-	30
Perfluoroheptanesulfonic Acid (PFHpS)	0.804J	35.2	37.3	104	-	-	61-179	-	30
Perfluorononanoic Acid (PFNA)	5.57	37	40.7	95	-	-	68-171	-	30
Perfluorooctanesulfonic Acid (PFOS)	24.8	34.4	61.8	108	-	-	52-151	-	30
Perfluorodecanoic Acid (PFDA)	0.288JF	37	37.9	102	-	-	63-171	-	30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.5	38.5	108	-	-	56-173	-	30
Perfluorononanesulfonic Acid (PFNS)	ND	35.6	34.6	97	-	-	48-150	-	30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSA)	ND	37	37.5	101	-	-	60-166	-	30
Perfluoroundecanoic Acid (PFUnA)	ND	37	37.2	100	-	-	60-153	-	30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.7	34.4	96	-	-	38-156	-	30
Perfluorooctanesulfonamide (FOSA)	ND	37	34.3F	93	-	-	46-170	-	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSA)	ND	37	35.2	95	-	-	45-170	-	30
Perfluorodecanoic Acid (PFDOA)	ND	37	38.1	103	-	-	67-153	-	30



Matrix Spike Analysis Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1540526-3 QC Sample: L2146282-02 Client ID: MS Sample											
Perfluorodecanoic Acid (PFTDA)	ND	37	47.7	129		-	-		48-158	-	30
Perfluorotetradecanoic Acid (PFTA)	ND	37	37.6	102		-	-		59-182	-	30

Surrogate (Extracted Internal Standard)	MS % Recovery	Qual	MSD % Recovery	Qual	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8-2F7S)	105				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4-2F7S)	146	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6-2F7S)	122				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEHFOSAA)	56				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMEFOSAA)	52				24-116
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFU7DA)	81				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	111				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	73				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	72				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	75				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110				70-131



Matrix Spike Analysis
Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD Qual	RPD Limits
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1541092-3 QC Sample: L2145657-01 Client ID: MS Sample

Perfluorobutanoic Acid (PFBA)	2.83	12.1	14.2	117	-	-	-	-	71-135	-	30
Perfluoropentanoic Acid (PFPeA)	2.05	12.1	12.5	103	-	-	-	-	69-132	-	30
Perfluorobutanesulfonic Acid (PFBS)	ND	10.8	10.3	96	-	-	-	-	72-128	-	30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2:FTS)	ND	11.4	12.3	108	-	-	-	-	62-145	-	30
Perfluorohexanoic Acid (PFHxA)	0.544J	12.1	11.9	98	-	-	-	-	70-132	-	30
Perfluoropentanesulfonic Acid (PFPeS)	ND	11.4	11.3	99	-	-	-	-	73-123	-	30
Perfluoroheptanoic Acid (PFHpA)	0.338J	12.1	11.7	96	-	-	-	-	71-131	-	30
Perfluorohexanesulfonic Acid (PFHxS)	ND	11.1	10.4	94	-	-	-	-	67-130	-	30
Perfluorooctanoic Acid (PFOA)	0.604J	12.1	12.4	102	-	-	-	-	69-133	-	30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2:FTS)	ND	11.6	11.4	99	-	-	-	-	64-140	-	30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	11.6	11.1	96	-	-	-	-	70-132	-	30
Perfluorononanoic Acid (PFNNA)	0.196J	12.1	11.3	93	-	-	-	-	72-129	-	30
Perfluorooctanesulfonic Acid (PFOS)	0.787F	11.3	12.2	108	-	-	-	-	68-136	-	30
Perfluorodecanoic Acid (PFDA)	ND	12.1	11.5	95	-	-	-	-	69-133	-	30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2:FTS)	ND	11.7	12.0	103	-	-	-	-	65-137	-	30
Perfluorononanesulfonic Acid (PFNS)	ND	11.7	11.3	97	-	-	-	-	69-125	-	30
N-Methyl-Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	12.1	13.7	113	-	-	-	-	63-144	-	30
Perfluoroundecanoic Acid (PFUHA)	ND	12.1	11.8	97	-	-	-	-	64-136	-	30
Perfluorodecanesulfonic Acid (PFDS)	ND	11.7	11.0	94	-	-	-	-	59-134	-	30
Perfluorooctanesulfonamide (FOSA)	ND	12.1	11.0	91	-	-	-	-	67-137	-	30
N-Ethyl-Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	12.1	11.4	94	-	-	-	-	61-139	-	30
Perfluorodecanoic Acid (PFDOA)	ND	12.1	11.4	94	-	-	-	-	69-135	-	30

Matrix Spike Analysis
Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter **Native Sample** **MS Added** **MS Found** **MS %Recovery** **MS Qual** **MSD Found** **MSD %Recovery** **MSD Qual** **Recovery Limits** **RPD Qual** **RPD Limits**

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1541092-3 QC Sample: L2145657-01 Client ID: MS

Perfluorodecanoic Acid (PFTDA)	ND	12.1	12.2	100		-	-	-	66-139	-	30
Perfluorotetradecanoic Acid (PFTA)	ND	12.1	12.0	99		-	-	-	69-133	-	30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Hexafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	118	176F	149		-	-	-	41-165	-	30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	11.5	9.83	86		-	-	-	68-143	-	30
Perfluorohexadecanoic Acid (PFHXA)	ND	12.1	16.4	135		-	-	-	18-191	-	30
Perfluorooctadecanoic Acid (PFODA)	ND	12.1	11.5	95		-	-	-	10-123	-	30

Surrogate (Extracted Internal Standard)

MS %Recovery **MS Qualifier** **MSD %Recovery** **MSD Qualifier** **Acceptance Criteria**

1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	366	Q			19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	267	Q			14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	371	Q			20-154
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Hepafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	182				10-203
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEFOSAA)	188	Q			34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	128				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDDA)	109				61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	111				75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112				78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (M2PFDOA)	109				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PTEDA)	113				24-159
Perfluoro[13C2]Hexadecanoic Acid (M2PFHXA)	90				10-145



Matrix Spike Analysis
Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD Qual	RPD Limits
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1541092-3 QC Sample: L2145657-01 Client ID: MS Sample

Surrogate (Extracted Internal Standard)	MS			Qual	MSD			Acceptance Criteria
	% Recovery	Qualifier	% Recovery		Qualifier	% Recovery	Qualifier	
Perfluorol[13C4]Butanoic Acid (MPFBA)	103		61-135					
Perfluorol[13C5]Pentanoic Acid (M5PFPEA)	97		58-150					
Perfluorol[13C8]Octanesulfonamide (M8FOSA)	65		10-117					
Perfluorol[13C8]Octanesulfonic Acid (M8PFOS)	118		79-136					
Perfluorol[13C8]Octanoic Acid (M8PFOA)	107		75-130					
Perfluorol[13C9]Nonanoic Acid (M9PFNA)	121		72-140					
Perfluorol[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		74-139					



Lab Duplicate Analysis

Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1539834-4 QC Sample: L2145698-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	4.75	4.44	ng/l	7		30
Perfluoropentanoic Acid (PFPeA)	4.33	4.14	ng/l	4		30
Perfluorobutanesulfonic Acid (PFBS)	5.06	4.77	ng/l	6		30
1H, 1H, 2H, 2H-Perfluorohexanesulfonic Acid (4:2:FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	4.78	4.71	ng/l	1		30
Perfluoropentanesulfonic Acid (PFPeS)	0.238J	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHpA)	5.15	4.90	ng/l	5		30
Perfluorohexanesulfonic Acid (PFHxS)	1.74J	1.83J	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	28.1	27.1	ng/l	4		30
1H, 1H, 2H, 2H-Perfluorooctanesulfonic Acid (6:2:FTS)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	1.32J	1.30J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	17.0	17.6	ng/l	3		30
Perfluorodecanoic Acid (PFDA)	1.66J	1.54J	ng/l	NC		30
1H, 1H, 2H, 2H-Perfluorodecanesulfonic Acid (8:2:FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEFOSAA)	ND	ND	ng/l	NC		30



Lab Duplicate Analysis

Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter Native Sample Duplicate Sample Units RPD Qual RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1539834-4 QC Sample: L2145698-01 Client ID: DUP Sample

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTriDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		67		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	67		64		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		99		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	155	Q	143	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		64		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		66		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		65		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	133		126		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72		63		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		100		69-131
Perfluoro[1,2,3,4,5-6-13C6]Decanoic Acid (M6PFDA)	77		64		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	132		114		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamideacetic Acid (d3-NMeFOSAA)	51		50		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUdA)	82		72		55-137
N-Deuterioethylperfluoro-1-octanesulfonamideacetic Acid (d5-NEtFOSAA)	56		46		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (M2PFDOA)	79		69		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		57		22-136

Lab Duplicate Analysis

Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1539834-4 QC Sample: L2145698-01 Client ID: DUP Sample						
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluorod[13C8]Octanesulfonamide (M8FOSA)	95		87		10-112



Lab Duplicate Analysis

Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1540526-4 QC Sample: L2146282-03 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	8.37	8.16	ng/l	3		30
Perfluoropentanoic Acid (PFPeA)	10.6	10.5	ng/l	1		30
Perfluorobutanesulfonic Acid (PFBS)	7.41	7.28	ng/l	2		30
1H, 1H, 2H, 2H-Perfluorohexanesulfonic Acid (4:2:FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	12.3	12.4	ng/l	1		30
Perfluoropentanesulfonic Acid (PFPeS)	0.450J	0.314J	ng/l	NC		30
Perfluorohexanoic Acid (PFHpA)	8.71	8.62	ng/l	1		30
Perfluorohexanesulfonic Acid (PFHxS)	2.75	2.73	ng/l	1		30
Perfluorooctanoic Acid (PFOA)	58.5	57.2	ng/l	2		30
1H, 1H, 2H, 2H-Perfluorooctanesulfonic Acid (6:2:FTS)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	2.01	2.07	ng/l	3		30
Perfluorooctanesulfonic Acid (PFOS)	20.5	20.9	ng/l	2		30
Perfluorodecanoic Acid (PFDA)	0.539J	0.512J	ng/l	NC		30
1H, 1H, 2H, 2H-Perfluorodecanesulfonic Acid (8:2:FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30



Lab Duplicate Analysis

Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter Native Sample Duplicate Sample Units RPD Qual RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1540526-4 QC Sample: L2146282-03 Client ID: DUP Sample

N-Ethyl Perfluorooctanesulfonamidacetic Acid (NEFOSAA)	ND	ND	ng/l	NC	30
Perfluorododecanoic Acid (PFDDoA)	ND	ND	ng/l	NC	30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/l	NC	30
Perfluorotetradecanoic Acid (PFTTA)	ND	ND	ng/l	NC	30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluorol[13C4]Butanoic Acid (MPFBA)	73		78		58-132
Perfluorol[13C5]Pentanoic Acid (M5PFPEA)	75		81		62-163
Perfluorol[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		113		70-131
1H,1H,2H,2H-Perfluorol[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	83		87		12-142
Perfluorol[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHXA)	72		80		57-129
Perfluorol[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	70		80		60-129
Perfluorol[1,2,3-13C3]Hexanesulfonic Acid (M3PFHS)	112		115		71-134
Perfluorol[13C8]Octanoic Acid (M8PFOA)	68		78		62-129
1H,1H,2H,2H-Perfluorol[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	85		85		14-147
Perfluorol[13C9]Nonanoic Acid (M9PFNA)	76		85		59-139
Perfluorol[13C8]Octanesulfonic Acid (M8PFOS)	106		112		69-131
Perfluorol[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		84		62-124
1H,1H,2H,2H-Perfluorol[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93		93		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidacetic Acid (d3-NMeFOSAA)	55		61		24-116
Perfluorol[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		89		55-137
Perfluorol[13C8]Octanesulfonamide (M8FOSA)	15		11		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidacetic Acid (d5-NEFOSAA)	52		60		27-126
Perfluorol[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		88		48-131

Lab Duplicate Analysis

Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1540526-4 QC Sample: L2146282-03 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		73		22-136



Lab Duplicate Analysis

Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter Native Sample Duplicate Sample Units RPD Qual RPD Limits

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHpA)	ND	ND	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/g	NC		30
1H, 1H, 2H, 2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHps)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/g	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/g	NC		30
1H, 1H, 2H, 2H-Perfluorodecane sulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/g	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/g	NC		30
Perfluorodecane sulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/g	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEFOSAA)	ND	ND	ng/g	NC		30
Perfluorodecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTriDA)	ND	ND	ng/g	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1541092-4 QC Sample: L2145703-01 Client ID: SD-RACKCOG-08252021

Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30
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Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluorol[13C4]Butanoic Acid (MPFBA)	97		101		61-135
Perfluorol[13C5]Pentanoic Acid (M5PFPEA)	98		104		58-150
Perfluorol[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		107		74-139
Perfluorol[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHXA)	83		87		66-128
Perfluorol[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		104		71-129
Perfluorol[1,2,3-13C3]Hexanesulfonic Acid (M3PFHXS)	103		112		78-139
Perfluorol[13C8]Octanoic Acid (M8PFOA)	96		101		75-130
1H,1H,2H,2H-Perfluorol[1,2-13C2]Octanesulfonic Acid (M2-6:2F7S)	195	Q	193	Q	20-154
Perfluorol[13C9]Nonanoic Acid (M9PFNA)	96		99		72-140
Perfluorol[13C8]Octanesulfonic Acid (M8PFOS)	107		110		79-136
Perfluorol[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		108		75-130
1H,1H,2H,2H-Perfluorol[1,2-13C2]Decanesulfonic Acid (M2-8:2F7S)	138		144		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMwFOSAA)	106		116		31-134
Perfluorol[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		115		61-155
Perfluorol[13C8]Octanesulfonamide (M8FOSA)	42		45		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEwFOSAA)	117		125		34-137
Perfluorol[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		105		54-150
Perfluorol[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		95		24-159

INORGANICS & MISCELLANEOUS

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

SAMPLE RESULTS

Lab ID: L2145703-01
 Client ID: SD-RACKCOG-08252021
 Sample Location: Not Specified

Date Collected: 08/25/21 13:05
 Date Received: 08/25/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Solid

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	33.9		%	0.100	0.100	1	-	09/01/21 11:51	121,2540G	NB



Lab Duplicate Analysis

Batch Quality Control

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s) : 01 QC Batch ID: WG1541732-1 QC Sample: L2145043-03 Client ID: DUP Sample						
Solids, Total	69.1	67.3	%	3		10



Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Serial_No:09092110:05
Lab Number: L2145703
Report Date: 09/09/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information
Cooler A
Custody Seal Absent

Container Information		Initial	Final	Temp	Pres	Seal	Frozen	Analysis(*)
Container ID	Container Type	pH	pH	deg C	Pres	Seal	Date/Time	
L2145703-01A	Plastic 8oz unpreserved	A	NA	4.9	Y	Absent		A2-NY-537-ISOTOPE(14)
L2145703-01B	Plastic 2oz unpreserved for TS	A	NA	4.9	Y	Absent		A2-TS(7)
L2145703-02A	Plastic 250ml unpreserved	A	NA	4.9	Y	Absent		A2-NY-537-ISOTOPE(14)
L2145703-02B	Plastic 250ml unpreserved	A	NA	4.9	Y	Absent		A2-NY-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days



Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Serial_No:09092110:05
Lab Number: L2145703
Report Date: 09/09/21

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
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Footnotes

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

Terms

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

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

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

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

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

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

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

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

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

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
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Data Qualifiers

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



Project Name: BENCH SCALE TEST
Project Number: BENCH SCALE TEST

Lab Number: L2145703
Report Date: 09/09/21

REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

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

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



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpineol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



September 15, 2021

Service Request No:R2108819

Paradigm Environmental Services, Inc.
179 Lake Avenue
Rochester, NY 14608

Laboratory Results for: 213873

Dear Reporting,

Enclosed are the results of the sample(s) submitted to our laboratory August 30, 2021
For your reference, these analyses have been assigned our service request number **R2108819**.

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7471. You may also contact me via email at Brady.Kalkman@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Brady Kalkman
Project Manager

ADDRESS 1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
PHONE +1 585 288 5380 | FAX +1 585 288 8475
ALS Group USA, Corp.
dba ALS Environmental



Narrative Documents

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com



Client: Paradigm Environmental Services, Inc.
Project: 213873
Sample Matrix: Water

Service Request: R2108819
Date Received: 08/30/2021

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Two water samples were received for analysis at ALS Environmental on 08/30/2021. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

Method 300.0, R2108819-001: The sample was diluted to elevate the reporting limit above the presence of non-target background components indicated on the chromatogram. Sample contains a high concentration of acetate. The matrix interference prevented adequate resolution of one or more target compound(s) at the reporting limit.

Samples were spun for TCLP by Paradigm and then delivered to ALS Environmental for analysis.

Approved by 

Date 09/15/2021



SAMPLE DETECTION SUMMARY

CLIENT ID: 213873-01A SD-RACKCOG-08252021 **Lab ID: R2108819-001**

Analyte	Results	Flag	MDL	MRL	Units	Method
Cyanide, Total	7.39			0.25	mg/L	Kelada-01

CLIENT ID: 213873-01B AQ-COGAQ-0825221 **Lab ID: R2108819-002**

Analyte	Results	Flag	MDL	MRL	Units	Method
Mercury, Total	2660			50	ng/L	1631E



Sample Receipt Information

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client: Paradigm Environmental Services, Inc.
Project: 213873

Service Request:R2108819

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
R2108819-001	213873-01A SD-RACKCOG-08252021	8/25/2021	1305
R2108819-002	213873-01B AQ-COGAQ-0825221	8/25/2021	1325



CHAIN OF CUSTODY

NEC-TCN

ALS: ELAP ID: 10145

1 of 1

REPORT TO:

INVOICE TO:

COMPANY: Paradigm Environmental	COMPANY: Same	LAB PROJECT #:	CLIENT PROJECT #:
ADDRESS:	ADDRESS:	TURNAROUND TIME: (WORKING DAYS)	
CITY:	CITY:	1	2
STATE:	STATE:	3	5
ZIP:	ZIP:	STD	OTHER
PHONE:	PHONE:	Date Due: 9/3/21 For data	
FAX:	FAX:		
ATTN: Reporting	ATTN: Accounts Payable		
COMMENTS: Please email results to reporting@paradigmenv.com			

REQUESTED ANALYSIS

DATE	TIME	COMPOSITE	GARB	SAMPLE LOCATION/FIELD ID	MATRIX	CONCENTRATIONS	REMARKS	PARADIGM LAB SAMPLE NUMBER
8/25/21	13:05	X	X	SD-RACKCOG-08252021	TEL P ESTD	4	Report J Flags. ASP Cat B Package Due 9/17/21	213873-01A
8/25/21	13:25	X	X	AQ-COGAQ-08252021	Water	1		217873-02

LAB USE ONLY BELOW THIS LINE

Sample Condition: Per NELAC/ELAP 2101241/242/243/244

Receipt Parameter: **NELAC Compliance**

Container Type: Y N

Comments: _____

Preservation: Y N

Comments: _____

Holding Time: Y N

Comments: _____

Temperature: Y N

Comments: _____

Client

Sampled By: *Donald Stahl* Date/Time: 8:30-21 1643

Relinquished By: _____ Date/Time: _____

Received By

[Signature] Date/Time: 8/30/21 1643

Received By: _____ Date/Time: _____

Total Cost:

R2108819 **5**

Paradigm Environmental Services, Inc.
215873



Cooler Receipt and Preservation C

R2108819
Paradigm Environmental Services, Inc.
213873

5

Project/Client Paradigm Folder Number _____

Cooler received on 8/30/21 by: @

COURIER: ALS UPS FEDEX VELOCITY CLIENT

1	Were Custody seals on outside of cooler?	Y <u>(N)</u>
2	Custody papers properly completed (ink, signed)?	<u>(Y)</u> N
3	Did all bottles arrive in good condition (unbroken)?	<u>(Y)</u> N
4	Circle: Wet Ice Dry Ice Gel packs present?	<u>(Y)</u> N

5a	Perchlorate samples have required headspace?	Y N <u>(NA)</u>
5b	Did VOA vials, Alk, or Sulfide have sig* bubbles?	Y N <u>(NA)</u>
6	Where did the bottles originate?	ALS/ROC <u>CLIENT</u>
7	Soil VOA received as: Bulk Encore 5035set	<u>(NA)</u>

8. Temperature Readings Date: 8/30/21 Time: 1645 ID: IR#7 (R#11) From: Temp Blank Sample Bottle

Observed Temp (°C)	<u>7.5</u>						
Within 0-6°C?	Y <u>(N)</u>	Y N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed (described below) Same Day Rule
& Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: Rur by e on 8/30/21 at 1645
5035 samples placed in storage location: _____ by _____ on _____ at _____ within 48 hours of sampling? Y N

Cooler Breakdown/Preservation Check**: Date: 8-31-21 Time: 07110 by: JE

- 9. Were all bottle labels complete (i.e. analysis, preservation, etc.)? YES (NO)
- 10. Did all bottle labels and tags agree with custody papers? YES (NO)
- 11. Were correct containers used for the tests indicated? (YES) NO
- 12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO
- 13. Air Samples: Cassettes / Tubes Intact Y/N with MS Y/N Canisters Pressurized Tedlar® Bags Inflated (N/A)

pH	Lot of test paper	Reagent	Preserved?		Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
			Yes	No						
≥12	<u>023419</u>	NaOH	<u>(X)</u>		<u>Client Bottles</u>					
≤2	<u>(down arrow)</u>	HNO ₃	<u>(X)</u>		<u>(down arrow)</u>					
≤2		H ₂ SO ₄	<u>(X)</u>							
<4		NaHSO ₄								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522	<u>(X)</u>		If +, contact PM to add Na ₂ S ₂ O ₃ (625, 608, CN), ascorbic (phenol).					
		Na ₂ S ₂ O ₃								
		ZnAcetate	-	-						
		HCl	**	**						

**VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).

Bottle lot numbers: Client Bottles
Explain all Discrepancies/ Other Comments: _____

HPROD	BULK
HTR	FLDT
SUB	HGFB
ALS	LL3541

Labels secondary reviewed by: JE
PC Secondary Review: _____

*significant air bubbles: VOA > 5-6 mm : WC > 1 in. diameter



Miscellaneous Forms

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
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www.alsglobal.com

REPORT QUALIFIERS AND DEFINITIONS

<p>U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.</p> <p>J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Aroclors).</p> <p>B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.</p> <p>E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.</p> <p>E Organics- Concentration has exceeded the calibration range for that specific analysis.</p> <p>D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.</p> <p>* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.</p> <p>H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.</p> <p># Spike was diluted out.</p>	<p>+ Correlation coefficient for MSA is <0.995.</p> <p>N Inorganics- Matrix spike recovery was outside laboratory limits.</p> <p>N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.</p> <p>S Concentration has been determined using Method of Standard Additions (MSA).</p> <p>W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.</p> <p>P Concentration >40% difference between the two GC columns.</p> <p>C Confirmed by GC/MS</p> <p>Q DoD reports: indicates a pesticide/Aroclor is not confirmed ($\times 100\%$ Difference between two GC columns).</p> <p>X See Case Narrative for discussion.</p> <p>MRL Method Reporting Limit. Also known as:</p> <p>LOQ Limit of Quantitation (LOQ) The lowest concentration at which the method analyte may be reliably quantified under the method conditions.</p> <p>MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).</p> <p>LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.</p> <p>ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.</p>
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Rochester Lab ID # for State Certifications¹

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

¹ Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to <https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental>

ALS Laboratory Group

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client: Paradigm Environmental Services, Inc.
Project: 213873

Service Request: R2108819

Non-Certified Analytes

Certifying Agency: New York Department of Health

Method	Matrix	Analyte
200.8	Water	Uranium, Total

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Paradigm Environmental Services, Inc.
Project: 213873/

Service Request: R2108819

Sample Name: 213873-01A SD-RACKCOG-08252021
Lab Code: R2108819-001
Sample Matrix: Water

Date Collected: 08/25/21
Date Received: 08/30/21

Analysis Method
200.8
300.0
353.2
Kelada-01

Extracted/Digested By
CKUTZER

Analyzed By
KMCLAEN
CWOODS
GNITAJOUPPI
CWOODS

Sample Name: 213873-01B AQ-COGAQ-0825221
Lab Code: R2108819-002
Sample Matrix: Water

Date Collected: 08/25/21
Date Received: 08/30/21

Analysis Method
1631E

Extracted/Digested By

Analyzed By
KMCLAEN



INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	



Sample Results

ALS Environmental—Rochester Laboratory
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www.alsglobal.com



Metals

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Paradigm Environmental Services, Inc.
Project: 213873
Sample Matrix: Water
Sample Name: 213873-01A SD-RACKCOG-08252021
Lab Code: R2108819-001

Service Request: R2108819
Date Collected: 08/25/21 13:05
Date Received: 08/30/21 16:43
Basis: NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Uranium, Total	200.8	ND U	ug/L	5.0	5	09/03/21 12:34	09/02/21	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Paradigm Environmental Services, Inc.
Project: 213873
Sample Matrix: Water
Sample Name: 213873-01B AQ-COGAQ-0825221
Lab Code: R2108819-002

Service Request: R2108819
Date Collected: 08/25/21 13:25
Date Received: 08/30/21 16:43
Basis: NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Mercury, Total	1631E	2660	ng/L	50	50	09/02/21 15:46	



General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Paradigm Environmental Services, Inc.
Project: 213873
Sample Matrix: Water
Sample Name: 213873-01A SD-RACKCOG-08252021
Lab Code: R2108819-001

Service Request: R2108819
Date Collected: 08/25/21 13:05
Date Received: 08/30/21 16:43
Basis: NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Cyanide, Total	Kelada-01	7.39	mg/L	0.25	50	09/03/21 17:39	
Fluoride, undistilled	300.0	ND U	mg/L	40	400	09/10/21 11:20	
Nitrate+Nitrite as Nitrogen	353.2	ND U	mg/L	5.0	100	09/09/21 17:53	



QC Summary Forms

ALS Environmental—Rochester Laboratory
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www.alsglobal.com



Metals

ALS Environmental—Rochester Laboratory
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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Paradigm Environmental Services, Inc.
Project: 213873
Sample Matrix: Water
Sample Name: Method Blank
Lab Code: R2108819-MB

Service Request: R2108819
Date Collected: NA
Date Received: NA
Basis: NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Mercury, Total	1631E	ND U	ng/L	1.0	1	09/02/21 12:26	NA	
Uranium, Total	200.8	ND U	ug/L	1.0	1	09/03/21 11:54	09/02/21	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Paradigm Environmental Services, Inc.
Project: 213873
Sample Matrix: Water

Service Request: R2108819
Date Analyzed: 09/02/21

Lab Control Sample Summary
Inorganic Parameters

Units:ng/L
Basis:NA

Lab Control Sample
R2108819-LCS

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Mercury, Total	1631E	4.88	5.0	98	77-128

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Paradigm Environmental Services, Inc.
Project: 213873
Sample Matrix: Water

Service Request: R2108819
Date Analyzed: 09/03/21

Lab Control Sample Summary
Inorganic Parameters

Units:ug/L
Basis:NA

Lab Control Sample
R2108819-LCS

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Uranium, Total	200.8	22.0	20.0	110	80-120



General Chemistry

ALS Environmental—Rochester Laboratory
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www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Paradigm Environmental Services, Inc.
Project: 213873
Sample Matrix: Water
Sample Name: Method Blank
Lab Code: R2108819-MB

Service Request: R2108819
Date Collected: NA
Date Received: NA
Basis: NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Cyanide, Total	Kelada-01	ND U	mg/L	0.0050	1	09/03/21 15:03	
Fluoride, undistilled	300.0	ND U	mg/L	0.10	1	09/10/21 09:09	
Nitrate+Nitrite as Nitrogen	353.2	ND U	mg/L	0.050	1	09/09/21 17:13	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Paradigm Environmental Services, Inc.
Project: 213873
Sample Matrix: Water

Service Request: R2108819
Date Analyzed: 09/03/21 - 09/10/21

Lab Control Sample Summary
General Chemistry Parameters

Units:mg/L
Basis:NA

Lab Control Sample
R2108819-LCS

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Cyanide, Total	Kelada-01	0.0942	0.100	94	90-110
Fluoride, undistilled	300.0	0.94	1.00	94	90-110
Nitrate+Nitrite as Nitrogen	353.2	0.499	0.500	100	90-110



PARADIGM
ENVIRONMENTAL SERVICES, INC.

Analytical Report For
Inventum Engineering, P.C.

For Lab Project ID

215123

Referencing

Quench Pit Solids

Prepared

Monday, November 22, 2021

Any noncompliant QC parameters or other notes impacting data interpretation are flagged or documented on the final report or are noted below:

Portions of the enclosed report reflects analysis that has been subcontracted and are presented in their original form.

Enclosed is a summary report; the complete ASP package will follow.

A handwritten signature in blue ink, reading "K. R. Hansen", is positioned above a horizontal line. The signature is written in a cursive style.

Certifies that this report has been approved by the Technical Director or Designee

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.



Lab Project ID: 215123

Client: Inventum Engineering, P.C.

Project Reference: Quench Pit Solids

Sample Identifier: SD-QUENCH-11102021

Lab Sample ID: 215123-01

Date Sampled: 11/10/2021

Matrix: Solid

Date Received: 11/10/2021

Corrosivity as pH

Analyte	Result	Units	Qualifier	Date Analyzed
Corrosivity (as pH)	7.83 @ 20.7 C	S.U.		11/17/2021 12:57

Method Reference(s): EPA 9045D

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Client: **Inventum Engineering, P.C.**

Project Reference: Quench Pit Solids

Sample Identifier: SD-QUENCH-11102021

Lab Sample ID: 215123-01

Date Sampled: 11/10/2021

Matrix: Solid

Date Received: 11/10/2021

Ignitability

Analyte	Result	Units	Qualifier	Date Analyzed
Ignitability	No Burn	mm / sec		11/17/2021

Method Reference(s): EPA 1030

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Lab Project ID: 215123

Client: Inventum Engineering, P.C.

Project Reference: Quench Pit Solids

Sample Identifier: SD-QUENCH-11102021

Lab Sample ID: 215123-01

Date Sampled: 11/10/2021

Matrix: Solid

Date Received: 11/10/2021

Mercury

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Mercury	1.21	mg/Kg		11/15/2021 13:58

Method Reference(s): EPA 7471B

Preparation Date: 11/15/2021

Data File: Hg211115A

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Lab Project ID: 215123

Client: **Inventum Engineering, P.C.**

Project Reference: Quench Pit Solids

Sample Identifier: SD-QUENCH-11102021

Lab Sample ID: 215123-01

Date Sampled: 11/10/2021

Matrix: Solid

Date Received: 11/10/2021

TAL Metals (ICP)

Analyte	Result	Units	Qualifier	Date Analyzed
Aluminum	1570	mg/Kg		11/16/2021 16:28
Antimony	< 2.88	mg/Kg		11/16/2021 16:28
Arsenic	2.71	mg/Kg		11/16/2021 16:28
Barium	23.9	mg/Kg		11/16/2021 16:28
Beryllium	0.168	mg/Kg	J	11/16/2021 16:28
Cadmium	< 0.240	mg/Kg		11/16/2021 16:28
Calcium	1250	mg/Kg		11/16/2021 16:28
Chromium	3.41	mg/Kg		11/16/2021 16:28
Cobalt	1.87	mg/Kg	J	11/16/2021 16:28
Copper	9.46	mg/Kg		11/16/2021 16:28
Iron	4540	mg/Kg		11/16/2021 16:28
Lead	3.04	mg/Kg		11/16/2021 16:28
Magnesium	198	mg/Kg		11/16/2021 16:28
Manganese	46.1	mg/Kg		11/16/2021 16:28
Nickel	2.56	mg/Kg		11/16/2021 16:28
Potassium	245	mg/Kg		11/16/2021 16:28
Selenium	0.760	mg/Kg	J	11/16/2021 16:28
Silver	< 0.481	mg/Kg		11/16/2021 16:28
Sodium	92.4	mg/Kg	J	11/16/2021 16:28
Thallium	< 1.20	mg/Kg		11/16/2021 16:28
Vanadium	3.68	mg/Kg		11/16/2021 16:28
Zinc	8.33	mg/Kg		11/16/2021 16:28

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Lab Project ID: 215123

Client: Inventum Engineering, P.C.

Project Reference: Quench Pit Solids

Sample Identifier: SD-QUENCH-11102021

Lab Sample ID: 215123-01

Date Sampled: 11/10/2021

Matrix: Solid

Date Received: 11/10/2021

Method Reference(s): EPA 6010C

EPA 3050B

Preparation Date: 11/12/2021

Data File: 211116B

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

Report Prepared Monday, November 22, 2021



Lab Project ID: 215123

Client: Inventum Engineering, P.C.

Project Reference: Quench Pit Solids

Sample Identifier: SD-QUENCH-11102021

Lab Sample ID: 215123-01

Date Sampled: 11/10/2021

Matrix: Solid

Date Received: 11/10/2021

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed
PCB-1016	< 0.0273	mg/Kg		11/18/2021 17:55
PCB-1221	< 0.0273	mg/Kg		11/18/2021 17:55
PCB-1232	< 0.0273	mg/Kg		11/18/2021 17:55
PCB-1242	< 0.0273	mg/Kg		11/18/2021 17:55
PCB-1248	< 0.0273	mg/Kg		11/18/2021 17:55
PCB-1254	< 0.0273	mg/Kg		11/18/2021 17:55
PCB-1260	< 0.0273	mg/Kg		11/18/2021 17:55
PCB-1262	< 0.0273	mg/Kg		11/18/2021 17:55
PCB-1268	< 0.0273	mg/Kg		11/18/2021 17:55

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	28.6	12.2 - 91.2		11/18/2021 17:55

Method Reference(s): EPA 8082A
EPA 3546
Preparation Date: 11/17/2021

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Client: **Inventum Engineering, P.C.**

Project Reference: Quench Pit Solids

Sample Identifier: SD-QUENCH-11102021

Lab Sample ID: 215123-01

Date Sampled: 11/10/2021

Matrix: Solid

Date Received: 11/10/2021

Paint Filter Test

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Paint Filter Test	Pass	N/A		11/17/2021

Method Reference(s): EPA 9095B

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Client: Inventum Engineering, P.C.

Project Reference: Quench Pit Solids

Sample Identifier: SD-QUENCH-11102021

Lab Sample ID: 215123-01

Date Sampled: 11/10/2021

Matrix: Solid

Date Received: 11/10/2021

Dioxane

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
1,4-Dioxane	< 27.3	ug/Kg	L	11/19/2021 15:41

Method Reference(s): EPA 8270D SIM

EPA 3546

Preparation Date: 11/18/2021

Data File: B58125.D

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Lab Project ID: 215123

Client: Inventum Engineering, P.C.

Project Reference: Quench Pit Solids

Sample Identifier: SD-QUENCH-11102021

Lab Sample ID: 215123-01A

Date Sampled: 11/10/2021

Matrix: TCLP Extract

Date Received: 11/10/2021

TCLP Semi-Volatile Organics

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
1,4-Dichlorobenzene	< 40.0	ug/L	7500		11/17/2021 23:25
2,4,5-Trichlorophenol	< 40.0	ug/L	400000		11/17/2021 23:25
2,4,6-Trichlorophenol	< 40.0	ug/L	2000		11/17/2021 23:25
2,4-Dinitrotoluene	< 40.0	ug/L	130		11/17/2021 23:25
Cresols (as m,p,o-Cresol)	< 80.0	ug/L	200000		11/17/2021 23:25
Hexachlorobenzene	< 40.0	ug/L	130		11/17/2021 23:25
Hexachlorobutadiene	< 40.0	ug/L	500		11/17/2021 23:25
Hexachloroethane	< 40.0	ug/L	3000		11/17/2021 23:25
Nitrobenzene	< 40.0	ug/L	2000		11/17/2021 23:25
Pentachlorophenol	< 80.0	ug/L	100000		11/17/2021 23:25
Pyridine	< 40.0	ug/L	5000		11/17/2021 23:25

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
2,4,6-Tribromophenol	80.3	49.6 - 116		11/17/2021 23:25
2-Fluorobiphenyl	79.4	18.6 - 104		11/17/2021 23:25
2-Fluorophenol	66.9	10 - 105		11/17/2021 23:25
Nitrobenzene-d5	78.0	51.2 - 99.6		11/17/2021 23:25
Phenol-d5	63.0	10 - 104		11/17/2021 23:25
Terphenyl-d14	85.3	55.6 - 122		11/17/2021 23:25

Method Reference(s): EPA 8270D
 EPA 1311 / 3510C
 Preparation Date: 11/17/2021
 Data File: B58048.D

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Client: Inventum Engineering, P.C.

Project Reference: Quench Pit Solids

Sample Identifier: SD-QUENCH-11102021

Lab Sample ID: 215123-01A

Date Sampled: 11/10/2021

Matrix: TCLP Extract

Date Received: 11/10/2021

TCLP Mercury

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Regulatory Limit</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Mercury	< 0.00200	mg/L	0.2		11/16/2021 13:41

Method Reference(s): EPA 7470A

EPA 1311

Preparation Date: 11/16/2021

Data File: Hg211116A

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Lab Project ID: 215123

Client: Inventum Engineering, P.C.

Project Reference: Quench Pit Solids

Sample Identifier: SD-QUENCH-11102021

Lab Sample ID: 215123-01A

Date Sampled: 11/10/2021

Matrix: TCLP Extract

Date Received: 11/10/2021

TCLP Pesticides

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
Chlordane	< 2.00	ug/L	30		11/18/2021 14:39
Endrin	< 1.00	ug/L	20		11/18/2021 14:39
gamma-BHC (Lindane)	< 1.00	ug/L	400		11/18/2021 14:39
Heptachlor	< 1.00	ug/L	8		11/18/2021 14:39
Heptachlor Epoxide	< 1.00	ug/L	8		11/18/2021 14:39
Methoxychlor	< 1.00	ug/L	10000		11/18/2021 14:39
Toxaphene	< 20.0	ug/L	500		11/18/2021 14:39

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Decachlorobiphenyl (1)	110	17 - 148		11/18/2021 14:39
Tetrachloro-m-xylene (1)	68.2	18 - 112		11/18/2021 14:39

Method Reference(s): EPA 8081B
EPA 1311 / 3510C
Preparation Date: 11/19/2021

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Lab Project ID: 215123

Client: **Inventum Engineering, P.C.**

Project Reference: Quench Pit Solids

Sample Identifier: SD-QUENCH-11102021

Lab Sample ID: 215123-01A

Date Sampled: 11/10/2021

Matrix: TCLP Extract

Date Received: 11/10/2021

TCLP RCRA Metals (ICP)

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
Arsenic	< 0.500	mg/L	5		11/12/2021 20:54
Barium	0.366	mg/L	100	J	11/12/2021 20:54
Cadmium	< 0.0250	mg/L	1		11/12/2021 20:54
Chromium	< 0.500	mg/L	5		11/12/2021 20:54
Lead	< 0.500	mg/L	5		11/12/2021 20:54
Selenium	< 0.200	mg/L	1		11/12/2021 20:54
Silver	< 0.500	mg/L	5		11/12/2021 20:54

Method Reference(s): EPA 6010C
 EPA 1311 / 3005A
 Preparation Date: 11/12/2021
 Data File: 211112C

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Lab Project ID: 215123

Client: **Inventum Engineering, P.C.**

Project Reference: Quench Pit Solids

Sample Identifier: SD-QUENCH-11102021

Lab Sample ID: 215123-01A

Date Sampled: 11/10/2021

Matrix: TCLP Extract

Date Received: 11/10/2021

TCLP Volatile Organics

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
1,1-Dichloroethene	< 20.0	ug/L	700		11/16/2021 12:42
1,2-Dichloroethane	< 20.0	ug/L	500		11/16/2021 12:42
2-Butanone	< 100	ug/L	200000		11/16/2021 12:42
Benzene	< 20.0	ug/L	500		11/16/2021 12:42
Carbon Tetrachloride	< 20.0	ug/L	500		11/16/2021 12:42
Chlorobenzene	< 20.0	ug/L	100000		11/16/2021 12:42
Chloroform	< 20.0	ug/L	6000		11/16/2021 12:42
Tetrachloroethene	< 20.0	ug/L	700		11/16/2021 12:42
Trichloroethene	< 20.0	ug/L	500		11/16/2021 12:42
Vinyl chloride	< 20.0	ug/L	200		11/16/2021 12:42

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
1,2-Dichloroethane-d4	116	77.9 - 132		11/16/2021 12:42
4-Bromofluorobenzene	84.9	62.6 - 133		11/16/2021 12:42
Pentafluorobenzene	121	88.9 - 114	*	11/16/2021 12:42
Toluene-D8	101	75.6 - 117		11/16/2021 12:42

Method Reference(s): EPA 8260C
EPA 1311 / 5030C
Data File: z05472.D

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Analytical Report Appendix

The reported results relate only to the samples as they have been received by the laboratory.

Each page of this document is part of a multipage report. This document may not be reproduced except in its entirety, without the prior consent of Paradigm Environmental Services, Inc.

All soil/sludge samples have been reported on a dry weight basis, unless qualified "reported as received". Other solids are reported as received.

Low level Volatiles blank reports for soil/solid matrix are based on a nominal 5 gram weight. Sample results and reporting limits are based on actual weight, which may be more or less than 5 grams.

The Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt. Sample condition requirements are defined under the 2003 NELAC Standard, sections 5.5.8.3.1 and 5.5.8.3.2.

NYSDOH ELAP does not certify for all parameters. Paradigm Environmental Services or the indicated subcontracted laboratory does hold certification for all analytes where certification is offered by ELAP unless otherwise specified. Aliquots separated for certain tests, such as TCLP, are indicated on the Chain of Custody and final reports with an "A" suffix.

Data qualifiers are used, when necessary, to provide additional information about the data. This information may be communicated as a flag or as text at the bottom of the report. Please refer to the following list of analyte-specific, frequently used data flags and their meaning:

"<" = Analyzed for but not detected at or above the quantitation limit.

"E" = Result has been estimated, calibration limit exceeded.

"Z" = See case narrative.

"D" = Sample, Laboratory Control Sample, or Matrix Spike Duplicate results above Relative Percent Difference limit.

"M" = Matrix spike recoveries outside QC limits. Matrix bias indicated.

"B" = Method blank contained trace levels of analyte. Refer to included method blank report.

"J" = Result estimated between the quantitation limit and half the quantitation limit.

"L" = Laboratory Control Sample recovery outside accepted QC limits.

"P" = Concentration differs by more than 40% between the primary and secondary analytical columns.

"NC" = Not calculable. Applicable to RPD if sample or duplicate result is non-detect or estimated (see primary report for data flags). Applicable to MS if sample is greater or equal to ten times the spike added. Applicable to sample surrogates or MS if sample dilution is 10x or higher.

"" = Indicates any recoveries outside associated acceptance windows. Surrogate outliers in samples are presumed matrix effects. LCS demonstrates method compliance unless otherwise noted.*

"(1)" = Indicates data from primary column used for QC calculation.

"A" = denotes a parameter for which ELAP does not offer approval as part of their laboratory certification program.

"F" = denotes a parameter for which Paradigm does not carry certification, the results for which should therefore only be used where ELAP certification is not required, such as personal exposure assessment.

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GENERAL TERMS AND CONDITIONS

LABORATORY SERVICES

These Terms and Conditions embody the whole agreement of the parties in the absence of a signed and executed contract between the Laboratory (LAB) and Client. They shall supersede all previous communications, representations, or agreements, either verbal or written, between the parties. The LAB specifically rejects all additional, inconsistent, or conflicting terms, whether printed or otherwise set forth in any purchase order or other communication from the Client to the LAB. The invalidity or unenforceability in whole or in part of any provision, term or condition hereof shall not affect in any way the validity or enforceability of the remainder of the Terms and Conditions. No waiver by LAB of any provision, term, or condition hereof or of any breach by or obligation of the Client hereunder shall constitute a waiver of such provision, term, or condition on any other occasion or a waiver of any other breach by or obligation of the Client. This agreement shall be administered and interpreted under the laws of the state which services are procured.

Warranty.

Recognizing that the nature of many samples is unknown and that some may contain potentially hazardous components, LAB warrants only that it will perform testing services, obtain findings, and prepare reports in accordance with generally accepted analytical laboratory principles and practices at the time of performance of services. LAB makes no other warranty, express or implied.

Scope and Compensation.

LAB agrees to perform the services described in the chain of custody to which these terms and conditions are attached. Unless the parties agree in writing to the contrary, the duties of LAB shall not be construed to exceed the services specifically described. LAB will use LAB default method for all tests unless specified otherwise on the Work Order.

Payment terms are net 30 days from the date of invoice. All overdue payments are subject to an interest charge of one and one-half percent (1-1/2%) per month or a portion thereof. Client shall also be responsible for costs of collection, including payment of reasonable attorney fees if such expense is incurred. The prices, unless stated, do not include any sale, use or other taxes. Such taxes will be added to invoice prices when required.

Prices.

Compensation for services performed will be based on the current Lab Analytical Fee Schedule or on quotations agreed to in writing by the parties. Turnaround time based charges are determined from the time of resolution of all work order questions. Testimony, court appearances or data compilation for legal action will be charged separately. Evaluation and reporting of initial screening runs may incur additional fees.

Limitations of Liability.

In the event of any error, omission, or other professional negligence, the sole and exclusive responsibility of LAB shall be to re-perform the deficient work at its own expense and LAB shall have no other liability whatsoever. All claims shall be deemed waived unless made in writing and received by LAB within ninety (90) days following completion of services.

LAB shall have no liability, obligation, or responsibility of any kind for losses, costs, expenses, or other damages (including but not limited to any special, direct, incidental or consequential damages) with respect to LAB's services or results.

All results provided by LAB are strictly for the use of its clients and LAB is in no way responsible for the use of such results by clients or third parties. All reports should be considered in their entirety, and LAB is not responsible for the separation, detachment, or other use of any portion of these reports. Client may not assign the lab report without the written consent of the LAB.

Client covenants and agrees, at its/his/her sole expense, to indemnify, protect, defend, and save harmless the LAB from and against any and all damages, losses, liabilities, obligations, penalties, claims, litigation, demands, defenses, judgments, suits, actions, proceedings, costs, disbursements and/or expenses (including, without limitation attorneys' and experts' fees and disbursements) of any kind whatsoever which may at any time be imposed upon, incurred by or asserted or awarded against client relating to, resulting from or arising out of (a) the breach of this agreement by this client, (b) the negligence of the client in handling, delivering or disclosing any hazardous substance, (c) the violation of the Client of any applicable law, (d) non-compliance by the Client with any environmental permit or (e) a material misrepresentation in disclosing the materials to be tested.

Hazard Disclosure.

Client represents and warrants that any sample delivered to LAB will be preceded or accompanied by complete written disclosure of the presence of any hazardous substances known or suspected by Client. Client further warrants that any sample containing any hazardous substance that is to be delivered to LAB will be packaged, labeled, transported, and delivered properly and in accordance with applicable laws.

Sample Handling.

Prior to LAB's acceptance of any sample (or after any revocation of acceptance), the entire risk of loss or of damage to such sample remains with Client. Samples are accepted when receipt is acknowledged on chain of custody documentation. In no event will LAB have any responsibility for the action or inaction of any carrier shipping or delivering any sample to or from LAB premises.

Client authorizes LAB to proceed with the analysis of samples as received by the laboratory, recognizing that any samples not in compliance with all current DOH-ELAP-NELAP requirements for containers, preservation or holding time will be noted as such on the final report.

Disposal of hazardous waste samples is the responsibility of the Client. If the Client does not wish such samples returned, LAB may add storage and disposal fees to the final invoice. Maximum storage time for samples is 30 days after completion of analysis unless modified by applicable state or federal laws. Client will be required to give the LAB written instructions concerning disposal of these samples.

LAB reserves the absolute right, exercisable at any time, to refuse to receive delivery of, refuse to accept, or revoke acceptance of any sample, which, in the sole judgment of LAB (a) is of unsuitable volume, (b) may be or become unsuitable for or may pose a risk in handling, transport, or processing for any health, safety, environmental or other reason whether or not due to the presence in the sample of any hazardous substance, and whether or not such presence has been disclosed to LAB by Client or (c) if the condition or sample date make the sample unsuitable for analysis.

Legal Responsibility.

LAB is solely responsible for performance of this contract, and no affiliated company, director, officer, employee, or agent shall have any legal responsibility hereunder, whether in contract or tort including negligence.

Assignment.

LAB may assign its performance obligations under this contract to other parties, as it deems necessary. LAB shall disclose to Client any assignee (subcontractor) by ELAP ID # on the submitted final report.

Force Majeure.

LAB shall have no responsibility or liability to the Client for any failure or delay in performance by LAB, which results in whole or in part from any cause or circumstance beyond the reasonable control of LAB. Such causes and circumstances shall include, but not limited to, acts of God, acts or orders of any government authority, strikes or other labor disputes, natural disasters, accidents, wars, civil disturbances, difficulties or delays in transportation, mail or delivery services, inability to obtain sufficient services or supplies from LAB's usual suppliers, or any other cause beyond LAB's reasonable control.

Law.

This contract shall be continued under the laws of the State of New York without regard to its conflicts of laws provision.

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CHAIN OF CUSTODY

REPORT TO: INVOICE TO:

1062

PROJECT REFERENCE
QUENCH Pit Solids

CLIENT: **INVENTUM ENGINEERING**
 ADDRESS: **ZIRI ARLENE DR. SUITE 202**
 CITY: **HENDON VA** STATE: **20170**
 PHONE: **585-734-5255**
 ATTN: **ROXANNE BLEX**

CLIENT: **JANE**
 ADDRESS: _____
 CITY: _____ STATE: _____ ZIP: _____
 PHONE: _____
 ATTN: **JOHN BLAKE**

LAB PROJECT ID: **215123**
 Quotation #: _____
 Email: **John.Blake@inventumeng.com**
roxanne.blex@ " " "

Requested Analyses:
 WA - Water
 WG - Groundwater
 DW - Drinking Water
 WW - Wastewater
 SD - Soil
 SL - Sludge
 SD - Soil
 PT - Paint
 WP - Wipe
 CK - Caulk
 OL - Oil
 AR - Air

DATE COLLECTED	TIME COLLECTED	COMPOSITE	GARAB	SAMPLE IDENTIFIER	MATRIX CODES	REQUESTED ANALYSES	REMARKS	PARADIGM LAB SAMPLE NUMBER
11/02/21	9:55	X		SD-QUENCH-1102021		<input checked="" type="checkbox"/> TELP METALS <input checked="" type="checkbox"/> TELP VOCs/SVOCs <input checked="" type="checkbox"/> TELP PEST/HERB <input checked="" type="checkbox"/> PCBs <input checked="" type="checkbox"/> BTU <input checked="" type="checkbox"/> CORROSION <input checked="" type="checkbox"/> IGNITEABILITY <input checked="" type="checkbox"/> FLAMMABILITY <input checked="" type="checkbox"/> PAINT FILTER <input checked="" type="checkbox"/> TAL METALS <input checked="" type="checkbox"/> 1-4 DIOXANE	Please send separate report as ready - we have been informed of FEAS wait time. Thanks	014

Turnaround Time

Availability contingent upon lab approval; additional fees may apply.

Standard 5 day

10 day

Rush 3 day

Rush 2 day

Rush 1 day

Date Needed _____

None Required

Batch QC

Category A

Category B

Other

None Required

Basic EDD

NYSDEC EDD

ES/VELIV

DATA

Other EDD

Other EDD needed: _____

Report Supplements

Sampled By: **ROXANNE BLEX** Date/Time: **11/02/21 9:55**

Refrindished By: **John Blake** Date/Time: **11/02/21 10:05**

Received By: **John Blake** Date/Time: **11/02/21 11:45**

Received @ Lab By: **John Blake** Date/Time: **11/02/21 17:27**

10°C Ice stored in field 11/10/21 16:57

Total Cost: _____

P.I.F.

2012



Chain of Custody Supplement

Client: Inventum Completed by: Moly Paul
 Lab Project ID: 215123 Date: 11/10/12

Sample Condition Requirements
 Per NELAC/ELAP 210/241/242/243/244

Condition	NELAC compliance with the sample condition requirements upon receipt		
	Yes	No	N/A
Container Type	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments	_____		
Transferred to method-compliant container	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Headspace (<1 mL)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments	_____		
Preservation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments	_____		
Chlorine Absent (<0.10 ppm per test strip)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments	_____		
Holding Time	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments	_____		
Temperature	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments	<u>10°C: cal started in field</u>		
Compliant Sample Quantity/Type	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments	_____		

Adirondack Environmental Services, Inc

Date: 15-Nov-21

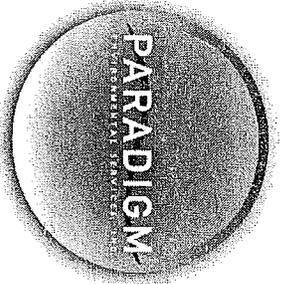
CLIENT: Paradigm Environmental
Work Order: 21112004
Reference: Sample Analysis / Project# 215123
PO#:

Client Sample ID: SD-Quench-11102021
Collection Date: 11/10/2021 9:55:00 AM
Lab Sample ID: 21112004-001
Matrix: TCLP-EXTRACT

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
TCLP HERBICIDES - EPA 8321B						Analyst: KF
(Prep: SW3535A - 11/12/2021)						
2,4,5-TP (Silvex)-TCLP	ND	0.050		mg/L	1	11/15/2021 9:47:37 AM
2,4-D-TCLP	ND	0.050		mg/L	1	11/15/2021 9:47:37 AM
Surr: Acifluorfen	126	52.5-128		%REC	1	11/15/2021 9:47:37 AM
Surr: DCAA	112	56.2-139		%REC	1	11/15/2021 9:47:37 AM

Qualifiers:

ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
X - Value exceeds Maximum Contaminant Level	T - Tentitively Identified Compound-Estimated Conc.
E - Value above quantitation range-Estimate	



179 Lake Avenue, Rochester, NY 14608 Office (585) 647-2530 Fax (585) 647-3311

CHAIN OF CUSTODY

ADIRONDACK: ELAP ID: 21112004

REPORT TO: **Paradigm Environmental** INVOICE TO: **Same**

COMPANY: **Paradigm Environmental** ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

PHONE: _____ FAX: _____

ATTN: **Reporting** ATTN: **Accounts Payable**

COMMENTS: **Please email results to reporting@paradigmenv.com**

LAB PROJECT #: _____ CLIENT PROJECT: _____

TURNAROUND TIME: (WORKING DAYS) 1 2 3 5 **STD**

Date Due: **11/18/21 for 20**

REQUESTED ANALYSIS

DATE	TIME	COMPOSITE	G R A B	SAMPLE LOCATION/FIELD ID	M A T R I X	C O N T A I N E R	REMARKS	PARADIGM LAB SAMPLE NUMBER
11/16/21	0955	<input checked="" type="checkbox"/>		50-Quench-11102021	Tea	X	TCUP Herb	215123-014
							Sample Spun out	
							Paradigm on 11/15/21	

****LAB USE ONLY BELOW THIS LINE****

Sample Condition: Per NELAC/ELAP 210/241/242/243/244

Receipt Parameter: **NELAC Compliance**

Container Type: **Non AES** Y N

Preservation: Y N

Holding Time: Y N

Temperature: **40s** Y N

Client

Sampled By: **Michelle** Date/Time: **11/18/21 0830**

Relinquished By: **Debra Gardner** Date/Time: **11/21/21 12:23**

Received By: **[Signature]** Date/Time: **11/21/21 4:06**

Received @ Lab By: _____ Date/Time: _____

Total Cost:

P.I.F.



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TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

- (a) Neither **Adirondack Environmental Services, Inc.**, nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.**'s performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.
- (b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.
- (c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.
- (d) In no event shall **Adirondack Environmental Services, Inc.**, its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.
- (e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**
- (f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.
- (g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.

Adirondack Environmental Services, Inc

Date: 14-Nov-21

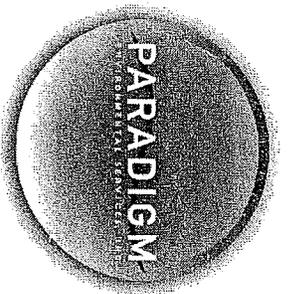
CLIENT: Paradigm Environmental
Work Order: 211111006
Reference: Sample Analysis / Project#: 215123
PO#:

Client Sample ID: SD-Quench-11102021
Collection Date: 11/10/2021 9:55:00 AM
Lab Sample ID: 211111006-001
Matrix: SOLID

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEAT VALUE - ASTM D240-09						Analyst: CP
Heat Value	8750	500		btu/lb	1	11/12/2021
SW 7.3.3.2, NOT ELAP CERTIFIED						Analyst: KB
(Prep: E335.4 - 11/12/2021)						
Reactive Cyanide	ND	1.0		µg/g	1	11/12/2021 3:35:14 PM
SW 7.3.4.2, NOT ELAP CERTIFIED						Analyst: CS
(Prep: E335.4 - 11/12/2021)						
Reactive Sulfide	11	10		µg/g	1	11/12/2021
REACTIVITY - SW 7.3.4.2, NOT ELAP CERTIFIED						Analyst: CS
Reactivity	Non Reactive	0			1	11/12/2021

Qualifiers:

ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
X - Value exceeds Maximum Contaminant Level	T - Tentitively Identified Compound-Estimated Conc.
E - Value above quantitation range-Estimate	



211111006 179 Lake Avenue, Rochester, NY 14608 Office (585) 647-2530 Fax (585) 647-3311

CHAIN OF CUSTODY

ADIRONDACK: ELAP ID: 1

REPORT TO:		INVOICE TO:	
COMPANY: Paradigm Environmental	ADDRESS:	COMPANY: Same	ADDRESS:
CITY:	STATE:	CITY:	STATE:
ZIP:	ZIP:	ZIP:	ZIP:
PHONE:	FAX:	PHONE:	FAX:
ATTN: Reporting	ATTN: Accounts Payable	LAB PROJECT #: CLIENT PROJECT #	
COMMENTS: Please email results to reporting@paradigmenv.com		TURNAROUND TIME: (WORKING DAYS)	
		<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5	
		Date Due: 10/18/21 for date	

REQUESTED ANALYSIS

report of ELAP ASP cat B package due 12/3 Sw 546 HTS

DATE	TIME	COMPOSITE	GRADES	SAMPLE LOCATION/FIELD ID	MATRIX	CONTAMINANTS	REMARKS	PARADIGM L-1 SAMPLE NUMBER
11/10/21	0955	<input checked="" type="checkbox"/>		SD-Quench-1102021		BTU reactivity		

****LAB USE ONLY BELOW THIS LINE****

Sample Condition: Per NELAC/ELAP 21024/1242/243/244

Receipt Parameter: NELAC Compliance

Container Type: Y N

Comments: _____

Preservation: Y N

Comments: _____

Holding Time: Y N

Comments: _____

Temperature: Y N

Comments: var

Client

Sampled By: Molly Vail Date/Time: 11/10/21 0830

Relinquished By: _____ Date/Time: _____

Received By: _____ Date/Time: 11/10/21 3:57

Received @ Lab By: _____ Date/Time: _____

Total Cost:

P.I.F.



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- (c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.
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- (f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.
- (g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.



Analytical Report For
Inventum Engineering, P.C.

For Lab Project ID

225097

Referencing

COG Residuals

Prepared

Monday, September 22, 2025

This project has been re-issued to include additional compounds, per client request.

Any noncompliant QC parameters or other notes impacting data interpretation are flagged or documented on the final report or are noted below.

Emily Farmer

Certifies that this report has been approved by the Technical Director or Designee

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Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Sample Identifier: COG-RESIDUALS-10252022, Coke Oven Gas Residuals

Lab Sample ID: 225097-01

Date Sampled: 10/25/2022 8:45

Matrix: Solid

Date Received 10/25/2022

Ammonia-N

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Ammonia	<2000	mg/L		11/3/2022
Method Reference(s):		SM 4500 NH3 H - 2011		
Subcontractor ELAP ID:		10709		

Heat Value

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
BTU	2700	btu/lb		10/31/2022
Method Reference(s):		ASTM D240-09		
Subcontractor ELAP ID:		10709		
<i>ELAP does not offer this test for approval as part of their laboratory certification program.</i>				

Corrosivity as pH

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Corrosivity (as pH)	7.47 @ 22.5 C	S.U.		11/2/2022 17:17
Method Reference(s):		EPA 9045D		

Total Cyanide

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Cyanide, Total	320	mg/Kg		11/1/2022
Method Reference(s):		EPA 9012B		
Subcontractor ELAP ID:		10709		

Ignitability

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Ignitability	No Burn	mm / sec		11/2/2022
Method Reference(s):		EPA 1030		

Mercury

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Mercury	139	mg/Kg		11/3/2022 16:32

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.



Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Sample Identifier: COG-RESIDUALS-10252022, Coke Oven Gas Residuals

Lab Sample ID: 225097-01

Date Sampled: 10/25/2022 8:45

Matrix: Solid

Date Received 10/25/2022

Method Reference(s): EPA 7471B
Preparation Date: 11/3/2022
Data File: Hg221103D

Metals

Analyte	Result	Units	Qualifier	Date Analyzed
Arsenic	11.8	mg/Kg		11/3/2022 10:01
Barium	22.1	mg/Kg		11/3/2022 10:01
Cadmium	0.996	mg/Kg		11/3/2022 10:01
Chromium	16.9	mg/Kg		11/3/2022 10:01
Cobalt	< 2.45	mg/Kg		11/3/2022 10:01
Copper	25.1	mg/Kg		11/3/2022 10:01
Lead	59.1	mg/Kg		11/3/2022 10:01
Manganese	371	mg/Kg		11/3/2022 10:01
Molybdenum	1.95	mg/Kg		11/3/2022 10:01
Nickel	8.02	mg/Kg		11/3/2022 10:01
Selenium	4.88	mg/Kg		11/3/2022 10:01
Silver	1.02	mg/Kg		11/3/2022 10:01
Sulfur	38500	mg/Kg	A	10/31/2022 08:18
Tin	2.88	mg/Kg	F	10/31/2022
Zinc	62.7	mg/Kg		11/7/2022 10:23

*Sulfur result taken from 10/27/22 digestion
Tin analyzed by 10709 on 10/31/2022.*

Method Reference(s): EPA 6010C
EPA 3050B
Preparation Date: 11/2/2022
Data File: 221103A

Paint Filter Test

Analyte	Result	Units	Qualifier	Date Analyzed
Paint Filter Test	Pass	N/A		11/2/2022

Method Reference(s): EPA 9095B



Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Sample Identifier: COG-RESIDUALS-10252022, Coke Oven Gas Residuals

Lab Sample ID: 225097-01

Date Sampled: 10/25/2022 8:45

Matrix: Solid

Date Received 10/25/2022

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed
PCB-1016	< 4.06	mg/Kg		11/3/2022 14:58
PCB-1221	< 4.06	mg/Kg		11/3/2022 14:58
PCB-1232	< 4.06	mg/Kg		11/3/2022 14:58
PCB-1242	< 4.06	mg/Kg		11/3/2022 14:58
PCB-1248	< 4.06	mg/Kg		11/3/2022 14:58
PCB-1254	< 4.06	mg/Kg		11/3/2022 14:58
PCB-1260	< 4.06	mg/Kg		11/3/2022 14:58
PCB-1262	< 4.06	mg/Kg		11/3/2022 14:58
PCB-1268	< 4.06	mg/Kg		11/3/2022 14:58

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	NC	12.7 - 101		11/3/2022 14:58

Reporting limit elevated due to sample matrix

Method Reference(s): EPA 8082A
EPA 3546

Preparation Date: 10/28/2022

Percent Moisture

Analyte	Result	Units	Qualifier	Date Analyzed
Percent Moisture	33.0	%		10/27/2022

Method Reference(s): SM 2540 B

ELAP does not offer this test for approval as part of their laboratory certification program.

Reactive Cyanide

Analyte	Result	Units	Qualifier	Date Analyzed
Reactivity, Cyanide	<1.0	mg/Kg		11/1/2022

Method Reference(s): EPA 7.3.3.2

Subcontractor ELAP ID: 10709

ELAP does not offer this test for approval as part of their laboratory certification program.

This sample has been reported as received.



Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Sample Identifier: COG-RESIDUALS-10252022, Coke Oven Gas Residuals

Lab Sample ID: 225097-01

Date Sampled: 10/25/2022 8:45

Matrix: Solid

Date Received 10/25/2022

Reactive Sulfide

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Reactivity, Sulfide	<10	mg/Kg		11/1/2022

Method Reference(s): EPA 7.3.4.2

Subcontractor ELAP ID: 10709

ELAP does not offer this test for approval as part of their laboratory certification program.

This sample has been reported as received.

Semi-Volatile Organics (Acid/Base Neutrals)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
1,1-Biphenyl	< 1400000	ug/Kg		11/2/2022 21:08
1,2,4,5-Tetrachlorobenzene	< 1400000	ug/Kg		11/2/2022 21:08
1,2,4-Trichlorobenzene	< 1400000	ug/Kg		11/2/2022 21:08
1,2-Dichlorobenzene	< 1400000	ug/Kg		11/2/2022 21:08
1,3-Dichlorobenzene	< 1400000	ug/Kg		11/2/2022 21:08
1,4-Dichlorobenzene	< 1400000	ug/Kg		11/2/2022 21:08
2,2-Oxybis (1-chloropropane)	< 1400000	ug/Kg		11/2/2022 21:08
2,3,4,6-Tetrachlorophenol	< 1400000	ug/Kg		11/2/2022 21:08
2,4,5-Trichlorophenol	< 1400000	ug/Kg		11/2/2022 21:08
2,4,6-Trichlorophenol	< 1400000	ug/Kg		11/2/2022 21:08
2,4-Dichlorophenol	< 1400000	ug/Kg		11/2/2022 21:08
2,4-Dimethylphenol	< 1400000	ug/Kg		11/2/2022 21:08
2,4-Dinitrophenol	< 5620000	ug/Kg		11/2/2022 21:08
2,4-Dinitrotoluene	< 1400000	ug/Kg		11/2/2022 21:08
2,6-Dinitrotoluene	< 1400000	ug/Kg		11/2/2022 21:08
2-Chloronaphthalene	< 1400000	ug/Kg		11/2/2022 21:08
2-Chlorophenol	< 1400000	ug/Kg		11/2/2022 21:08
2-Methylnaphthalene	< 1400000	ug/Kg		11/2/2022 21:08
2-Methylphenol	< 1400000	ug/Kg		11/2/2022 21:08
2-Nitroaniline	< 1400000	ug/Kg		11/2/2022 21:08
2-Nitrophenol	< 1400000	ug/Kg		11/2/2022 21:08

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.



Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Sample Identifier: COG-RESIDUALS-10252022, Coke Oven Gas Residuals

Lab Sample ID: 225097-01

Date Sampled: 10/25/2022 8:45

Matrix: Solid

Date Received 10/25/2022

3&4-Methylphenol	< 1400000	ug/Kg	11/2/2022	21:08
3,3'-Dichlorobenzidine	< 1400000	ug/Kg	11/2/2022	21:08
3-Nitroaniline	< 1400000	ug/Kg	11/2/2022	21:08
4,6-Dinitro-2-methylphenol	< 1880000	ug/Kg	11/2/2022	21:08
4-Bromophenyl phenyl ether	< 1400000	ug/Kg	11/2/2022	21:08
4-Chloro-3-methylphenol	< 1400000	ug/Kg	11/2/2022	21:08
4-Chloroaniline	< 1400000	ug/Kg	11/2/2022	21:08
4-Chlorophenyl phenyl ether	< 1400000	ug/Kg	11/2/2022	21:08
4-Nitroaniline	< 1400000	ug/Kg	11/2/2022	21:08
4-Nitrophenol	< 1400000	ug/Kg	11/2/2022	21:08
Acenaphthene	< 1400000	ug/Kg	11/2/2022	21:08
Acenaphthylene	< 1400000	ug/Kg	11/2/2022	21:08
Acetophenone	< 1400000	ug/Kg	11/2/2022	21:08
Anthracene	< 1400000	ug/Kg	11/2/2022	21:08
Atrazine	< 1400000	ug/Kg	11/2/2022	21:08
Benzaldehyde	< 1400000	ug/Kg	11/2/2022	21:08
Benzo (a) anthracene	< 1400000	ug/Kg	11/2/2022	21:08
Benzo (a) pyrene	< 1400000	ug/Kg	11/2/2022	21:08
Benzo (b) fluoranthene	< 1400000	ug/Kg	11/2/2022	21:08
Benzo (g,h,i) perylene	< 1400000	ug/Kg	11/2/2022	21:08
Benzo (k) fluoranthene	< 1400000	ug/Kg	11/2/2022	21:08
Bis (2-chloroethoxy) methane	< 1400000	ug/Kg	11/2/2022	21:08
Bis (2-chloroethyl) ether	< 1400000	ug/Kg	11/2/2022	21:08
Bis (2-ethylhexyl) phthalate	< 1400000	ug/Kg	11/2/2022	21:08
Butylbenzylphthalate	< 1400000	ug/Kg	11/2/2022	21:08
Caprolactam	< 1400000	ug/Kg	11/2/2022	21:08
Carbazole	< 1400000	ug/Kg	11/2/2022	21:08
Chrysene	< 1400000	ug/Kg	11/2/2022	21:08
Dibenz (a,h) anthracene	< 1400000	ug/Kg	11/2/2022	21:08
Dibenzofuran	< 1400000	ug/Kg	11/2/2022	21:08

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Lab Project ID: 225097

Client: **Inventum Engineering, P.C.**

Project Reference: COG Residuals

Sample Identifier: COG-RESIDUALS-10252022, Coke Oven Gas Residuals

Lab Sample ID: 225097-01

Date Sampled: 10/25/2022 8:45

Matrix: Solid

Date Received 10/25/2022

Diethyl phthalate	< 1400000	ug/Kg	11/2/2022	21:08
Dimethyl phthalate	< 1400000	ug/Kg	11/2/2022	21:08
Di-n-butyl phthalate	< 1400000	ug/Kg	11/2/2022	21:08
Di-n-octylphthalate	< 1400000	ug/Kg	11/2/2022	21:08
Fluoranthene	< 1400000	ug/Kg	11/2/2022	21:08
Fluorene	< 1400000	ug/Kg	11/2/2022	21:08
Hexachlorobenzene	< 1400000	ug/Kg	11/2/2022	21:08
Hexachlorobutadiene	< 1400000	ug/Kg	11/2/2022	21:08
Hexachlorocyclopentadiene	< 5620000	ug/Kg	11/2/2022	21:08
Hexachloroethane	< 1400000	ug/Kg	11/2/2022	21:08
Indeno (1,2,3-cd) pyrene	< 1400000	ug/Kg	11/2/2022	21:08
Isophorone	< 1400000	ug/Kg	11/2/2022	21:08
Naphthalene	52000000	ug/Kg	11/2/2022	21:08
Nitrobenzene	< 1400000	ug/Kg	11/2/2022	21:08
N-Nitroso-di-n-propylamine	< 1400000	ug/Kg	11/2/2022	21:08
N-Nitrosodiphenylamine	< 1400000	ug/Kg	11/2/2022	21:08
Pentachlorophenol	< 2810000	ug/Kg	11/2/2022	21:08
Phenanthrene	< 1400000	ug/Kg	11/2/2022	21:08
Phenol	< 1400000	ug/Kg	11/2/2022	21:08
Pyrene	< 1400000	ug/Kg	11/2/2022	21:08

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
2,4,6-Tribromophenol	NC	35.4 - 92.4		11/2/2022 21:08
2-Fluorobiphenyl	NC	39.6 - 84.4		11/2/2022 21:08
2-Fluorophenol	NC	35.5 - 78.9		11/2/2022 21:08
Nitrobenzene-d5	NC	36.5 - 78.2		11/2/2022 21:08
Phenol-d5	NC	37.1 - 78.3		11/2/2022 21:08
Terphenyl-d14	NC	42.3 - 103		11/2/2022 21:08

Method Reference(s): EPA 8270D
EPA 3546

Preparation Date: 10/31/2022

Data File: B64678.D

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals

Sample Identifier: COG-RESIDUALS-10252022, Coke Oven Gas Residuals

Lab Sample ID: 225097-01

Date Sampled: 10/25/2022 8:45

Matrix: Solid

Date Received 10/25/2022

Volatile Organics

Analyte	Result	Units	Qualifier	Date Analyzed
1,1,1,2-Tetrachloroethane	< 89300	ug/Kg		10/28/2022 18:00
1,1,1-Trichloroethane	< 89300	ug/Kg		10/28/2022 18:00
1,1,2,2-Tetrachloroethane	< 89300	ug/Kg		10/28/2022 18:00
1,1,2-Trichloroethane	< 89300	ug/Kg		10/28/2022 18:00
1,1-Dichloroethane	< 89300	ug/Kg		10/28/2022 18:00
1,1-Dichloroethene	< 89300	ug/Kg		10/28/2022 18:00
1,1-Dichloropropene	< 89300	ug/Kg		10/28/2022 18:00
1,2,3-Trichlorobenzene	< 223000	ug/Kg		10/28/2022 18:00
1,2,3-Trichloropropane	< 89300	ug/Kg		10/28/2022 18:00
1,2,4-Trichlorobenzene	< 223000	ug/Kg		10/28/2022 18:00
1,2,4-Trimethylbenzene	< 89300	ug/Kg		10/28/2022 18:00
1,2-Dibromo-3-Chloropropane	< 446000	ug/Kg		10/28/2022 18:00
1,2-Dibromoethane	< 89300	ug/Kg		10/28/2022 18:00
1,2-Dichlorobenzene	< 89300	ug/Kg		10/28/2022 18:00
1,2-Dichloroethane	< 89300	ug/Kg		10/28/2022 18:00
1,2-Dichloropropane	< 89300	ug/Kg		10/28/2022 18:00
1,3,5-Trimethylbenzene	< 89300	ug/Kg		10/28/2022 18:00
1,3-Dichlorobenzene	< 89300	ug/Kg		10/28/2022 18:00
1,3-Dichloropropane	< 89300	ug/Kg		10/28/2022 18:00
1,4-Dichlorobenzene	< 89300	ug/Kg		10/28/2022 18:00
1,4-Dioxane	< 446000	ug/Kg		10/28/2022 18:00
2,2-Dichloropropane	< 89300	ug/Kg		10/28/2022 18:00
2-Butanone	< 446000	ug/Kg		10/28/2022 18:00
2-Chlorotoluene	< 89300	ug/Kg		10/28/2022 18:00
2-Hexanone	< 223000	ug/Kg		10/28/2022 18:00
4-Chlorotoluene	< 89300	ug/Kg		10/28/2022 18:00
4-Methyl-2-pentanone	< 223000	ug/Kg		10/28/2022 18:00
Acetone	< 446000	ug/Kg		10/28/2022 18:00

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Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Sample Identifier: COG-RESIDUALS-10252022, Coke Oven Gas Residuals

Lab Sample ID: 225097-01

Date Sampled: 10/25/2022 8:45

Matrix: Solid

Date Received 10/25/2022

Benzene	< 89300	ug/Kg		10/28/2022 18:00
Bromobenzene	< 223000	ug/Kg		10/28/2022 18:00
Bromochloromethane	< 223000	ug/Kg		10/28/2022 18:00
Bromodichloromethane	< 89300	ug/Kg		10/28/2022 18:00
Bromoform	< 223000	ug/Kg		10/28/2022 18:00
Bromomethane	< 89300	ug/Kg		10/28/2022 18:00
Carbon disulfide	< 89300	ug/Kg		10/28/2022 18:00
Carbon Tetrachloride	< 89300	ug/Kg		10/28/2022 18:00
Chlorobenzene	< 89300	ug/Kg		10/28/2022 18:00
Chloroethane	< 89300	ug/Kg		10/28/2022 18:00
Chloroform	< 89300	ug/Kg		10/28/2022 18:00
Chloromethane	< 89300	ug/Kg		10/28/2022 18:00
cis-1,2-Dichloroethene	< 89300	ug/Kg		10/28/2022 18:00
cis-1,3-Dichloropropene	< 89300	ug/Kg		10/28/2022 18:00
Cyclohexane	< 446000	ug/Kg		10/28/2022 18:00
Dibromochloromethane	< 89300	ug/Kg		10/28/2022 18:00
Dibromomethane	< 89300	ug/Kg		10/28/2022 18:00
Dichlorodifluoromethane	< 89300	ug/Kg		10/28/2022 18:00
Ethylbenzene	< 89300	ug/Kg		10/28/2022 18:00
Freon 113	< 89300	ug/Kg		10/28/2022 18:00
Isopropylbenzene	< 89300	ug/Kg		10/28/2022 18:00
m,p-Xylene	< 89300	ug/Kg		10/28/2022 18:00
Methyl acetate	< 89300	ug/Kg		10/28/2022 18:00
Methyl tert-butyl Ether	< 89300	ug/Kg		10/28/2022 18:00
Methylcyclohexane	< 89300	ug/Kg		10/28/2022 18:00
Methylene chloride	< 223000	ug/Kg		10/28/2022 18:00
Naphthalene	82600000	ug/Kg	E	10/28/2022 18:00
n-Butylbenzene	< 89300	ug/Kg		10/28/2022 18:00
n-Propylbenzene	< 89300	ug/Kg		10/28/2022 18:00
o-Xylene	< 89300	ug/Kg		10/28/2022 18:00

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Lab Project ID: 225097

Client: **Inventum Engineering, P.C.**

Project Reference: COG Residuals

Sample Identifier: COG-RESIDUALS-10252022, Coke Oven Gas Residuals

Lab Sample ID: 225097-01

Date Sampled: 10/25/2022 8:45

Matrix: Solid

Date Received 10/25/2022

p-Isopropyltoluene	< 89300	ug/Kg	10/28/2022	18:00
sec-Butylbenzene	< 89300	ug/Kg	10/28/2022	18:00
Styrene	< 223000	ug/Kg	10/28/2022	18:00
tert-Butylbenzene	< 89300	ug/Kg	10/28/2022	18:00
Tetrachloroethene	< 89300	ug/Kg	10/28/2022	18:00
Toluene	< 89300	ug/Kg	10/28/2022	18:00
trans-1,2-Dichloroethene	< 89300	ug/Kg	10/28/2022	18:00
trans-1,3-Dichloropropene	< 89300	ug/Kg	10/28/2022	18:00
Trichloroethene	< 89300	ug/Kg	10/28/2022	18:00
Trichlorofluoromethane	< 89300	ug/Kg	10/28/2022	18:00
Vinyl chloride	< 89300	ug/Kg	10/28/2022	18:00

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
1,2-Dichloroethane-d4	103	74.7 - 140		10/28/2022 18:00
4-Bromofluorobenzene	99.7	68 - 130		10/28/2022 18:00
Pentafluorobenzene	103	70.3 - 140		10/28/2022 18:00
Toluene-D8	103	69 - 138		10/28/2022 18:00

Method Reference(s): EPA 8260C
EPA 5035A -- H

Data File: z13058.D

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Lab Project ID: 225097

Client: **Inventum Engineering, P.C.**

Project Reference: COG Residuals

Sample Identifier: COG-RESIDUALS-10252022, Coke Oven Gas Residuals

Lab Sample ID: 225097-01A

Date Sampled: 10/25/2022 8:45

Matrix: TCLP Extract

Date Received 10/25/2022

TCLP Pesticides

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
Chlordane	<10	ug/L	30		10/31/2022
Endrin	<2.0	ug/L	20		10/31/2022
gamma-BHC (Lindane)	<2.0	ug/L	400		10/31/2022
Heptachlor	<2.0	ug/L	8		10/31/2022
Heptachlor Epoxide	<2.0	ug/L	8		10/31/2022
Methoxychlor	<10	ug/L	10000		10/31/2022
Toxaphene	<20	ug/L	500		10/31/2022

Method Reference(s): EPA 8081B

Subcontractor ELAP ID: 10709

TCLP Semi-Volatile Organics

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
1,4-Dichlorobenzene	< 40.0	ug/L	7500		10/28/2022 17:13
2,4,5-Trichlorophenol	< 40.0	ug/L	400000		10/28/2022 17:13
2,4,6-Trichlorophenol	< 40.0	ug/L	2000		10/28/2022 17:13
2,4-Dinitrotoluene	< 40.0	ug/L	130		10/28/2022 17:13
Cresols (as m,p,o-Cresol)	102	ug/L	200000		10/28/2022 17:13
Hexachlorobenzene	< 40.0	ug/L	130		10/28/2022 17:13
Hexachlorobutadiene	< 40.0	ug/L	500		10/28/2022 17:13
Hexachloroethane	< 40.0	ug/L	3000		10/28/2022 17:13
Nitrobenzene	< 40.0	ug/L	2000		10/28/2022 17:13
Pentachlorophenol	< 80.0	ug/L	100000		10/28/2022 17:13
Pyridine	< 40.0	ug/L	5000		10/28/2022 17:13

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Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Sample Identifier: COG-RESIDUALS-10252022, Coke Oven Gas Residuals

Lab Sample ID: 225097-01A

Date Sampled: 10/25/2022 8:45

Matrix: TCLP Extract

Date Received 10/25/2022

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
2,4,6-Tribromophenol	81.7	29.6 - 139		10/28/2022 17:13
2-Fluorobiphenyl	69.8	10 - 124		10/28/2022 17:13
2-Fluorophenol	73.0	10 - 122		10/28/2022 17:13
Nitrobenzene-d5	111	28.7 - 119		10/28/2022 17:13
Phenol-d5	72.2	10 - 115		10/28/2022 17:13
Terphenyl-d14	82.8	32.2 - 142		10/28/2022 17:13

Method Reference(s): EPA 8270D
EPA 1311 / 3510C
Preparation Date: 10/27/2022
Data File: B64582.D

TCLP Herbicides

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
2,4,5-TP (Silvex)	<0.050	mg/L	1		10/31/2022
2,4-D	0.53	mg/L	10		10/31/2022

Surrogate outliers indicate probable matrix interference

Method Reference(s): EPA 8321B
EPA 1311
Subcontractor ELAP ID: 10709

TCLP Mercury

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
Mercury	< 0.00200	mg/L	0.2		10/31/2022 16:01

Method Reference(s): EPA 7470A
EPA 1311
Preparation Date: 10/28/2022
Data File: Hg221031A

TCLP RCRA Metals (ICP)

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
Arsenic	< 0.500	mg/L	5		11/1/2022 15:08
Barium	< 0.500	mg/L	100		11/1/2022 15:08
Cadmium	< 0.0250	mg/L	1		11/1/2022 15:08

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Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Sample Identifier: COG-RESIDUALS-10252022, Coke Oven Gas Residuals

Lab Sample ID: 225097-01A

Date Sampled: 10/25/2022 8:45

Matrix: TCLP Extract

Date Received 10/25/2022

Chromium	< 0.500	mg/L	5	11/1/2022 15:08
Lead	< 0.500	mg/L	5	11/1/2022 15:08
Selenium	< 0.200	mg/L	1	11/1/2022 15:08
Silver	< 0.500	mg/L	5	11/1/2022 15:08

Method Reference(s): EPA 6010C
EPA 1311 / 3005A
Preparation Date: 10/27/2022
Data File: 221101B

TCLP Volatile Organics

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
1,1-Dichloroethene	< 200	ug/L	700		10/27/2022 15:42
1,2-Dichloroethane	< 200	ug/L	500		10/27/2022 15:42
2-Butanone	< 1000	ug/L	200000		10/27/2022 15:42
Benzene	< 200	ug/L	500		10/27/2022 15:42
Carbon Tetrachloride	< 200	ug/L	500		10/27/2022 15:42
Chlorobenzene	< 200	ug/L	100000		10/27/2022 15:42
Chloroform	< 200	ug/L	6000		10/27/2022 15:42
Tetrachloroethene	< 200	ug/L	700		10/27/2022 15:42
Trichloroethene	< 200	ug/L	500		10/27/2022 15:42
Vinyl chloride	< 200	ug/L	200		10/27/2022 15:42

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
1,2-Dichloroethane-d4	102	81.1 - 136		10/27/2022 15:42
4-Bromofluorobenzene	100	75.8 - 132		10/27/2022 15:42
Pentafluorobenzene	104	82 - 132		10/27/2022 15:42
Toluene-D8	104	64.6 - 137		10/27/2022 15:42

Reporting limit elevated due to non-target compounds

Method Reference(s): EPA 8260C
EPA 1311 / 5030C
Data File: z13018.D



Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals
Lab Project ID: 225097
Matrix: Solid

Mercury

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Mercury	<0.00762	mg/Kg		11/3/2022 13:55

Method Reference(s): EPA 7471B
Preparation Date: 11/3/2022
Data File: Hg221103D
QC Batch ID: QC221103HgSoil
QC Number: Blk 1



QC Report for Laboratory Control Sample and Control Sample Duplicate

Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Lab Project ID: 225097

Matrix: Solid

Mercury

Analyte	LCS	LCSD	Spike	LCS	LCSD	LCS %	LCSD %	% Rec	LCS	LCSD	Relative %	RPD	RPD	Date
	Added	Added	Units	Result	Result	Recovery	Recovery	Limits	Outliers	Outliers	Difference	Limit	Outliers	Analyzed
Mercury	0.0725	0.0778	mg/Kg	0.0717	0.0800	98.9	103	80 - 120			3.82	20		11/3/2022

Method Reference(s): EPA 7471B
 Preparation Date: 11/3/2022
 Data File: Hg221103D
 QC Number: 1
 QC Batch ID: QC221103HgSoil

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals
Lab Project ID: 225097
Matrix: TCLP Fluid

TCLP Mercury

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Mercury	<0.00200	mg/L		10/31/2022 15:24

Method Reference(s): EPA 7470A
Preparation Date: 10/28/2022
Data File: Hg221031A
QC Batch ID: QC221028HgTCLP
QC Number: Blk 1



QC Report for Laboratory Control Sample and Control Sample Duplicate

Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Lab Project ID: 225097

Matrix: TCLP Fluid

TCLP Mercury

Analyte	Added	Added	Units	Result	Result	Recovery	Recovery	Limits	Outliers	Outliers	Difference	Limit	Outliers	Date
	LCS	LCSD	Spike	LCS	LCSD	LCS %	LCSD %	% Rec	LCS	LCSD	Relative %	RPD	RPD	Analyzed
Mercury	0.0200	0.0200	mg/L	0.0210	0.0210	105	105	80 - 120			0.105	20		10/31/2022

Method Reference(s): EPA 7470A
 Preparation Date: 10/28/2022
 Data File: Hg221031A
 QC Number: 1
 QC Batch ID: QC221028HgTCLP

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals
Lab Project ID: 225097
Matrix: Solid

Metals

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Arsenic	<0.467	mg/Kg		11/3/2022 08:04
Barium	<4.67	mg/Kg		11/3/2022 08:04
Cadmium	<0.234	mg/Kg		11/3/2022 08:04
Chromium	<0.467	mg/Kg		11/3/2022 08:04
Cobalt	<2.34	mg/Kg		11/3/2022 08:04
Copper	<0.935	mg/Kg		11/3/2022 08:04
Lead	<0.467	mg/Kg		11/3/2022 08:04
Manganese	<0.701	mg/Kg		11/3/2022 08:04
Molybdenum	<1.17	mg/Kg		11/3/2022 08:04
Nickel	<1.87	mg/Kg		11/3/2022 08:04
Selenium	<0.935	mg/Kg		11/3/2022 08:04
Silver	<0.467	mg/Kg		11/3/2022 08:04
Sulfur	<23.4	mg/Kg		10/31/2022 07:45
Zinc	<2.80	mg/Kg		11/7/2022 09:56

Sulfur result taken from 10/27/22 digestion

Method Reference(s): EPA 6010C
EPA 3050B
Preparation Date: 11/2/2022
Data File: 221103A
QC Batch ID: QC221102Soil
QC Number: Blk 1



QC Report for Laboratory Control Sample and Control Sample Duplicate

Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Lab Project ID: 225097

Matrix: Solid

RCRA Metals (ICP)

Analyte	LCS Added	LCSD Added	Spike Units	LCS Result	LCSD Result	LCS % Recovery	LCSD % Recovery	%Rec Limits	LCS Outliers	LCSD Outliers	Relative % Difference	RPD Limit	RPD Outliers	Date Analyzed
Arsenic	118	123	mg/Kg	111	113	94.5	92.2	80 - 120			2.37	20		11/3/2022
Barium	118	123	mg/Kg	125	127	106	104	80 - 120			2.29	20		11/3/2022
Cadmium	47.2	49.0	mg/Kg	47.9	48.5	101	98.9	80 - 120			2.63	20		11/3/2022
Chromium	118	123	mg/Kg	118	120	99.9	97.6	80 - 120			2.33	20		11/3/2022
Cobalt	47.2	49.0	mg/Kg	47.6	48.3	101	98.6	80 - 120			2.43	20		11/3/2022
Copper	118	123	mg/Kg	117	122	99.5	99.5	80 - 120			0.0577	20		11/3/2022
Lead	118	123	mg/Kg	114	117	96.8	95.6	80 - 120			1.21	20		11/3/2022
Manganese	47.2	49.0	mg/Kg	48.9	50.6	104	103	80 - 120			0.520	20		11/3/2022
Molybdenum	118	123	mg/Kg	115	118	97.4	96.5	80 - 120			0.990	20		11/3/2022
Nickel	236	245	mg/Kg	228	233	96.5	95.1	80 - 120			1.50	20		11/3/2022
Selenium	118	123	mg/Kg	106	109	90.2	89.0	80 - 120			1.43	20		11/3/2022
Silver	11.8	12.3	mg/Kg	11.0	11.2	93.1	91.5	80 - 120			1.77	20		11/3/2022
Zinc	118	123	mg/Kg	114	114	96.4	92.7	80 - 120			3.89	20		11/7/2022

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QC Report for Laboratory Control Sample and Control Sample Duplicate

Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Lab Project ID: 225097

Matrix: Solid

RCRA Metals (ICP)

Analyte	LCS	LCSD	Spike	LCS	LCSD	LCS %	LCSD %	% Rec	LCS	LCSD	Relative %	RPD	RPD	Date
Added	Added	Units	Result	Result	Recovery	Recovery	Limits	Outliers	Outliers	Difference	Limit	Outliers	Analyzed	

Method Reference(s): EPA 6010C
EPA 3050B

Preparation Date: 11/2/2022

Data File: 221103A

QC Number: 1

QC Batch ID: QC221102Soil

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals
Lab Project ID: 225097
Matrix: TCLP Fluid

TCLP RCRA Metals (ICP)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Arsenic	<0.500	mg/L		10/31/2022 18:33
Barium	<0.500	mg/L		10/31/2022 18:33
Cadmium	<0.0250	mg/L		10/31/2022 18:33
Chromium	<0.500	mg/L		10/31/2022 18:33
Lead	<0.500	mg/L		10/31/2022 18:33
Selenium	<0.200	mg/L		10/31/2022 18:33
Silver	<0.500	mg/L		10/31/2022 18:33

Method Reference(s): EPA 6010C
EPA 3005
Preparation Date: 10/27/2022
Data File: 221031C
QC Batch ID: QC221027TCLP
QC Number: Blk 1



QC Report for Laboratory Control Sample and Control Sample Duplicate

Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Lab Project ID: 225097

Matrix: TCLP Fluid

TCLP RCRA Metals (ICP)

Analyte	Added	Added	Units	Result	Result	Recovery	Recovery	Limits	Outliers	Outliers	Difference	Limit	Outliers	Date
	LCs	LCSD	Spike	LCs	LCSD	LCs %	LCSD %	%Rec	LCs	LCSD	Relative %	RPD	RPD	Analyzed
Arsenic	12.5	12.5	mg/L	13.7	13.8	110	110	80 - 120			0.724	20		10/31/2022
Barium	12.5	12.5	mg/L	13.4	13.3	107	107	80 - 120			0.371	20		10/31/2022
Cadmium	5.00	5.00	mg/L	5.38	5.36	108	107	80 - 120			0.280	20		10/31/2022
Chromium	12.5	12.5	mg/L	12.8	12.7	102	102	80 - 120			0.678	20		10/31/2022
Lead	12.5	12.5	mg/L	13.1	13.1	105	105	80 - 120			0.0720	20		10/31/2022
Selenium	12.5	12.5	mg/L	13.2	13.4	106	107	80 - 120			1.13	20		10/31/2022
Silver	1.25	1.25	mg/L	1.28	1.27	103	102	80 - 120			0.682	20		10/31/2022

Method Reference(s): EPA 6010C
EPA 3005

Preparation Date: 10/27/2022

Data File: 221031C

QC Number: 1

QC Batch ID: QC221027TCLP

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals
Lab Project ID: 225097
Matrix: Solid

PCBs

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
PCB-1016	<0.0255	mg/Kg		11/1/2022 20:54
PCB-1221	<0.0255	mg/Kg		11/1/2022 20:54
PCB-1232	<0.0255	mg/Kg		11/1/2022 20:54
PCB-1242	<0.0255	mg/Kg		11/1/2022 20:54
PCB-1248	<0.0255	mg/Kg		11/1/2022 20:54
PCB-1254	<0.0255	mg/Kg		11/1/2022 20:54
PCB-1260	<0.0255	mg/Kg		11/1/2022 20:54
PCB-1262	<0.0255	mg/Kg		11/1/2022 20:54
PCB-1268	<0.0255	mg/Kg		11/1/2022 20:54

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
Tetrachloro-m-xylene	69.6	12.7 - 101		11/1/2022 20:54
Method Reference(s):	EPA 8082A			
	EPA 3546			
Preparation Date:	10/28/2022			
QC Batch ID:	QC221028PCBS			
QC Number:	BlkC 2			

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QC Report for Laboratory Control Sample

Client: **Inventum Engineering, P.C.**

Project Reference: **COG Residuals**

Lab Project ID: **225097**

Matrix: **Solid**

PCBs

Analyte	Spike Added	Spike Units	LCS Result	LCS % Recovery	% Rec Limits	LCS Outliers	Date Analyzed
PCB-1016/1260	0.142	mg/Kg	0.0834	58.7	10 - 102		11/1/2022

Method Reference(s): EPA 8082A
EPA 3546
Preparation Date: 10/28/2022
QC Number: LCSC 2
QC Batch ID: QC221028PCBS

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals
Lab Project ID: 225097
Matrix: Solid

Semi-Volatile Organics (Acid/Base Neutrals)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
1,1-Biphenyl	<278	ug/Kg		11/1/2022 13:00
1,2,4,5-Tetrachlorobenzene	<278	ug/Kg		11/1/2022 13:00
1,2,4-Trichlorobenzene	<278	ug/Kg		11/1/2022 13:00
1,2-Dichlorobenzene	<278	ug/Kg		11/1/2022 13:00
1,3-Dichlorobenzene	<278	ug/Kg		11/1/2022 13:00
1,4-Dichlorobenzene	<278	ug/Kg		11/1/2022 13:00
2,2-Oxybis (1-chloropropane)	<278	ug/Kg		11/1/2022 13:00
2,3,4,6-Tetrachlorophenol	<278	ug/Kg		11/1/2022 13:00
2,4,5-Trichlorophenol	<278	ug/Kg		11/1/2022 13:00
2,4,6-Trichlorophenol	<278	ug/Kg		11/1/2022 13:00
2,4-Dichlorophenol	<278	ug/Kg		11/1/2022 13:00
2,4-Dimethylphenol	<278	ug/Kg		11/1/2022 13:00
2,4-Dinitrophenol	<1110	ug/Kg		11/1/2022 13:00
2,4-Dinitrotoluene	<278	ug/Kg		11/1/2022 13:00
2,6-Dinitrotoluene	<278	ug/Kg		11/1/2022 13:00
2-Chloronaphthalene	<278	ug/Kg		11/1/2022 13:00
2-Chlorophenol	<278	ug/Kg		11/1/2022 13:00
2-Methylnapthalene	<278	ug/Kg		11/1/2022 13:00
2-Methylphenol	<278	ug/Kg		11/1/2022 13:00
2-Nitroaniline	<278	ug/Kg		11/1/2022 13:00
2-Nitrophenol	<278	ug/Kg		11/1/2022 13:00
3&4-Methylphenol	<278	ug/Kg		11/1/2022 13:00
3,3'-Dichlorobenzidine	<278	ug/Kg		11/1/2022 13:00
3-Nitroaniline	<278	ug/Kg		11/1/2022 13:00
4,6-Dinitro-2-methylphenol	<556	ug/Kg		11/1/2022 13:00
4-Bromophenyl phenyl ether	<278	ug/Kg		11/1/2022 13:00
4-Chloro-3-methylphenol	<278	ug/Kg		11/1/2022 13:00

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals
Lab Project ID: 225097
Matrix: Solid

Semi-Volatile Organics (Acid/Base Neutrals)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
4-Chloroaniline	<278	ug/Kg		11/1/2022 13:00
4-Chlorophenyl phenyl ether	<278	ug/Kg		11/1/2022 13:00
4-Nitroaniline	<278	ug/Kg		11/1/2022 13:00
4-Nitrophenol	<278	ug/Kg		11/1/2022 13:00
Acenaphthene	<278	ug/Kg		11/1/2022 13:00
Acenaphthylene	<278	ug/Kg		11/1/2022 13:00
Acetophenone	<278	ug/Kg		11/1/2022 13:00
Anthracene	<278	ug/Kg		11/1/2022 13:00
Atrazine	<278	ug/Kg		11/1/2022 13:00
Benzaldehyde	<278	ug/Kg		11/1/2022 13:00
Benzo (a) anthracene	<278	ug/Kg		11/1/2022 13:00
Benzo (a) pyrene	<278	ug/Kg		11/1/2022 13:00
Benzo (b) fluoranthene	<278	ug/Kg		11/1/2022 13:00
Benzo (g,h,i) perylene	<278	ug/Kg		11/1/2022 13:00
Benzo (k) fluoranthene	<278	ug/Kg		11/1/2022 13:00
Bis (2-chloroethoxy) methane	<278	ug/Kg		11/1/2022 13:00
Bis (2-chloroethyl) ether	<278	ug/Kg		11/1/2022 13:00
Bis (2-ethylhexyl) phthalate	<278	ug/Kg		11/1/2022 13:00
Butylbenzylphthalate	<278	ug/Kg		11/1/2022 13:00
Caprolactam	<278	ug/Kg		11/1/2022 13:00
Carbazole	<278	ug/Kg		11/1/2022 13:00
Chrysene	<278	ug/Kg		11/1/2022 13:00
Dibenz (a,h) anthracene	<278	ug/Kg		11/1/2022 13:00
Dibenzofuran	<278	ug/Kg		11/1/2022 13:00
Diethyl phthalate	<278	ug/Kg		11/1/2022 13:00
Dimethyl phthalate	<278	ug/Kg		11/1/2022 13:00
Di-n-butyl phthalate	<278	ug/Kg		11/1/2022 13:00
Di-n-octylphthalate	<278	ug/Kg		11/1/2022 13:00

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals
Lab Project ID: 225097
Matrix: Solid

Semi-Volatile Organics (Acid/Base Neutrals)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Fluoranthene	<278	ug/Kg		11/1/2022 13:00
Fluorene	<278	ug/Kg		11/1/2022 13:00
Hexachlorobenzene	<278	ug/Kg		11/1/2022 13:00
Hexachlorobutadiene	<278	ug/Kg		11/1/2022 13:00
Hexachlorocyclopentadiene	<1110	ug/Kg		11/1/2022 13:00
Hexachloroethane	<278	ug/Kg		11/1/2022 13:00
Indeno (1,2,3-cd) pyrene	<278	ug/Kg		11/1/2022 13:00
Isophorone	<278	ug/Kg		11/1/2022 13:00
Naphthalene	<278	ug/Kg		11/1/2022 13:00
Nitrobenzene	<278	ug/Kg		11/1/2022 13:00
N-Nitroso-di-n-propylamine	<278	ug/Kg		11/1/2022 13:00
N-Nitrosodiphenylamine	<278	ug/Kg		11/1/2022 13:00
Pentachlorophenol	<556	ug/Kg		11/1/2022 13:00
Phenanthrene	<278	ug/Kg		11/1/2022 13:00
Phenol	<278	ug/Kg		11/1/2022 13:00
Pyrene	<278	ug/Kg		11/1/2022 13:00

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
2,4,6-Tribromophenol	63.8	35.4 - 92.4		11/1/2022 13:00
2-Fluorobiphenyl	64.3	39.6 - 84.4		11/1/2022 13:00
2-Fluorophenol	59.7	35.5 - 78.9		11/1/2022 13:00
Nitrobenzene-d5	63.7	36.5 - 78.2		11/1/2022 13:00
Phenol-d5	65.1	37.1 - 78.3		11/1/2022 13:00
Terphenyl-d14	70.1	42.3 - 103		11/1/2022 13:00

Method Reference(s): EPA 8270D
EPA 3546
Preparation Date: 10/31/2022
Data File: B64626.D
QC Batch ID: QC221031ABNS
QC Number: Blk 1

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QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Lab Project ID: 225097

Matrix: Solid

Semi-Volatile Organics (Acid/Base Neutrals)

Analyte	Spike Added	Spike Units	LCS Result	LCS % Recovery	%Rec Limits	LCS Outliers	Date Analyzed
1,2,4-Trichlorobenzene	2700	ug/Kg	1800	66.5	36.4 - 88		11/1/2022
1,4-Dichlorobenzene	2700	ug/Kg	1640	60.6	34.3 - 78.9		11/1/2022
2,3,4,6-Tetrachlorophenol	4050	ug/Kg	3000	73.9	46.4 - 92.2		11/1/2022
2,4,6-Trichlorophenol	4050	ug/Kg	3070	75.8	52.9 - 95.9		11/1/2022
2,4-Dichlorophenol	4050	ug/Kg	3020	74.5	51.6 - 88.4		11/1/2022
2,4-Dimethylphenol	4050	ug/Kg	3300	81.3	31.6 - 87.8		11/1/2022
2,4-Dinitrophenol	4050	ug/Kg	1620	40.0	8.16 - 97		11/1/2022
2,4-Dinitrotoluene	2700	ug/Kg	1910	70.6	40.2 - 99.7		11/1/2022
2-Chlorophenol	4050	ug/Kg	2820	69.6	49.5 - 80.8		11/1/2022
2-Nitrophenol	4050	ug/Kg	2870	70.8	48.3 - 82.6		11/1/2022
4,6-Dinitro-2-methylphenol	4050	ug/Kg	2680	66.2	27.6 - 96.5		11/1/2022
4-Chloro-3-methylphenol	4050	ug/Kg	3060	75.6	52.2 - 87.8		11/1/2022
4-Nitrophenol	4050	ug/Kg	3120	77.0	23.3 - 102		11/1/2022
Acenaphthene	2700	ug/Kg	1840	68.0	43.5 - 87.2		11/1/2022
N-Nitroso-di-n-propylamine	2700	ug/Kg	1930	71.2	32.6 - 89.2		11/1/2022
Pentachlorophenol	4050	ug/Kg	3230	79.7	41.8 - 107		11/1/2022

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QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Lab Project ID: 225097

Matrix: Solid

Semi-Volatile Organics (Acid/Base Neutrals)

Analyte	Spike Added	Spike Units	LCS Result	LCS % Recovery	% Rec Limits	LCS Outliers	Date Analyzed
Phenol	4050	ug/Kg	2910	71.9	48.8 - 79.3		11/1/2022
Pyrene	2700	ug/Kg	1980	73.2	47.1 - 104		11/1/2022

Method Reference(s): EPA 8270D
EPA 3546
Preparation Date: 10/31/2022
Data File: B64627.D
QC Number: LCS 1
QC Batch ID: QC221031ABNS

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals
Lab Project ID: 225097
Matrix: TCLP Fluid

TCLP Semi-Volatile Organics

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
1,4-Dichlorobenzene	<40.0	ug/L		10/28/2022 13:51
2,4,5-Trichlorophenol	<40.0	ug/L		10/28/2022 13:51
2,4,6-Trichlorophenol	<40.0	ug/L		10/28/2022 13:51
2,4-Dinitrotoluene	<40.0	ug/L		10/28/2022 13:51
Cresols (as m,p,o-Cresol)	<80.0	ug/L		10/28/2022 13:51
Hexachlorobenzene	<40.0	ug/L		10/28/2022 13:51
Hexachlorobutadiene	<40.0	ug/L		10/28/2022 13:51
Hexachloroethane	<40.0	ug/L		10/28/2022 13:51
Nitrobenzene	<40.0	ug/L		10/28/2022 13:51
Pentachlorophenol	<80.0	ug/L		10/28/2022 13:51
Pyridine	<40.0	ug/L		10/28/2022 13:51

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
2,4,6-Tribromophenol	87.7	29.6 - 139		10/28/2022 13:51
2-Fluorobiphenyl	51.5	10 - 124		10/28/2022 13:51
2-Fluorophenol	71.1	10 - 122		10/28/2022 13:51
Nitrobenzene-d5	82.3	28.7 - 119		10/28/2022 13:51
Phenol-d5	72.6	10 - 115		10/28/2022 13:51
Terphenyl-d14	91.8	32.2 - 142		10/28/2022 13:51

Method Reference(s): EPA 8270D
EPA 3510C
Preparation Date: 10/27/2022
Data File: B64575.D
QC Batch ID: QC221027ABNT
QC Number: Blk 1



QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Lab Project ID: 225097

Matrix: TCLP Fluid

TCLP Semi-Volatile Organics

Analyte	Spike Added	Spike Units	LCS Result	LCS % Recovery	% Rec Limits	LCS Outliers	Date Analyzed
1,4-Dichlorobenzene	200	ug/L	145	72.4	27.5 - 93.4		10/28/2022
2,4,6-Trichlorophenol	300	ug/L	300	100	50.5 - 126		10/28/2022
2,4-Dinitrotoluene	200	ug/L	184	91.8	55.2 - 112		10/28/2022
Pentachlorophenol	300	ug/L	333	111	26.5 - 160		10/28/2022

Method Reference(s): EPA 8270D
EPA 3510C

Preparation Date: 10/27/2022

Data File: B64576.D

QC Number: LCS 1

QC Batch ID: QC221027ABNT

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals
Lab Project ID: 225097
SDG #: 5097-01
Matrix: Solid

Volatile Organics

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	<2.00	ug/Kg		10/28/2022 18:58
1,1,1-Trichloroethane	<2.00	ug/Kg		10/28/2022 18:58
1,1,2,2-Tetrachloroethane	<2.00	ug/Kg		10/28/2022 18:58
1,1,2-Trichloroethane	<2.00	ug/Kg		10/28/2022 18:58
1,1-Dichloroethane	<2.00	ug/Kg		10/28/2022 18:58
1,1-Dichloroethene	<2.00	ug/Kg		10/28/2022 18:58
1,1-Dichloropropene	<2.00	ug/Kg		10/28/2022 18:58
1,2,3-Trichlorobenzene	<5.00	ug/Kg		10/28/2022 18:58
1,2,3-Trichloropropane	<2.00	ug/Kg		10/28/2022 18:58
1,2,4-Trichlorobenzene	<5.00	ug/Kg		10/28/2022 18:58
1,2,4-Trimethylbenzene	<2.00	ug/Kg		10/28/2022 18:58
1,2-Dibromo-3-Chloropropane	<10.0	ug/Kg		10/28/2022 18:58
1,2-Dibromoethane	<2.00	ug/Kg		10/28/2022 18:58
1,2-Dichlorobenzene	<2.00	ug/Kg		10/28/2022 18:58
1,2-Dichloroethane	<2.00	ug/Kg		10/28/2022 18:58
1,2-Dichloropropane	<2.00	ug/Kg		10/28/2022 18:58
1,3,5-Trimethylbenzene	<2.00	ug/Kg		10/28/2022 18:58
1,3-Dichlorobenzene	<2.00	ug/Kg		10/28/2022 18:58
1,3-Dichloropropane	<2.00	ug/Kg		10/28/2022 18:58
1,4-Dichlorobenzene	<2.00	ug/Kg		10/28/2022 18:58
1,4-Dioxane	<10.0	ug/Kg		10/28/2022 18:58
2,2-Dichloropropane	<2.00	ug/Kg		10/28/2022 18:58
2-Butanone	<10.0	ug/Kg		10/28/2022 18:58
2-Chlorotoluene	<2.00	ug/Kg		10/28/2022 18:58
2-Hexanone	<5.00	ug/Kg		10/28/2022 18:58
4-Chlorotoluene	<2.00	ug/Kg		10/28/2022 18:58
4-Methyl-2-pentanone	<5.00	ug/Kg		10/28/2022 18:58

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals
Lab Project ID: 225097
SDG #: 5097-01
Matrix: Solid

Volatile Organics

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Acetone	<10.0	ug/Kg		10/28/2022 18:58
Benzene	<2.00	ug/Kg		10/28/2022 18:58
Bromobenzene	<5.00	ug/Kg		10/28/2022 18:58
Bromochloromethane	<5.00	ug/Kg		10/28/2022 18:58
Bromodichloromethane	<2.00	ug/Kg		10/28/2022 18:58
Bromoform	<5.00	ug/Kg		10/28/2022 18:58
Bromomethane	<2.00	ug/Kg		10/28/2022 18:58
Carbon disulfide	<2.00	ug/Kg		10/28/2022 18:58
Carbon Tetrachloride	<2.00	ug/Kg		10/28/2022 18:58
Chlorobenzene	<2.00	ug/Kg		10/28/2022 18:58
Chloroethane	<2.00	ug/Kg		10/28/2022 18:58
Chloroform	<2.00	ug/Kg		10/28/2022 18:58
Chloromethane	<2.00	ug/Kg		10/28/2022 18:58
cis-1,2-Dichloroethene	<2.00	ug/Kg		10/28/2022 18:58
cis-1,3-Dichloropropene	<2.00	ug/Kg		10/28/2022 18:58
Cyclohexane	<10.0	ug/Kg		10/28/2022 18:58
Dibromochloromethane	<2.00	ug/Kg		10/28/2022 18:58
Dibromomethane	<2.00	ug/Kg		10/28/2022 18:58
Dichlorodifluoromethane	<2.00	ug/Kg		10/28/2022 18:58
Ethylbenzene	<2.00	ug/Kg		10/28/2022 18:58
Freon 113	<2.00	ug/Kg		10/28/2022 18:58
Isopropylbenzene	<2.00	ug/Kg		10/28/2022 18:58
m,p-Xylene	<2.00	ug/Kg		10/28/2022 18:58
Methyl acetate	<2.00	ug/Kg		10/28/2022 18:58
Methyl tert-butyl Ether	<2.00	ug/Kg		10/28/2022 18:58
Methylcyclohexane	<2.00	ug/Kg		10/28/2022 18:58
Methylene chloride	<5.00	ug/Kg		10/28/2022 18:58
Naphthalene	<5.00	ug/Kg		10/28/2022 18:58

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals
Lab Project ID: 225097
SDG #: 5097-01
Matrix: Solid

Volatile Organics

Analyte	Result	Units	Qualifier	Date Analyzed
n-Butylbenzene	<2.00	ug/Kg		10/28/2022 18:58
n-Propylbenzene	<2.00	ug/Kg		10/28/2022 18:58
o-Xylene	<2.00	ug/Kg		10/28/2022 18:58
p-Isopropyltoluene	<2.00	ug/Kg		10/28/2022 18:58
sec-Butylbenzene	<2.00	ug/Kg		10/28/2022 18:58
Styrene	<5.00	ug/Kg		10/28/2022 18:58
tert-Butylbenzene	<2.00	ug/Kg		10/28/2022 18:58
Tetrachloroethene	<2.00	ug/Kg		10/28/2022 18:58
Toluene	<2.00	ug/Kg		10/28/2022 18:58
trans-1,2-Dichloroethene	<2.00	ug/Kg		10/28/2022 18:58
trans-1,3-Dichloropropene	<2.00	ug/Kg		10/28/2022 18:58
Trichloroethene	<2.00	ug/Kg		10/28/2022 18:58
Trichlorofluoromethane	<2.00	ug/Kg		10/28/2022 18:58
Vinyl chloride	<2.00	ug/Kg		10/28/2022 18:58

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
1,2-Dichloroethane-d4	96.2	74.7 - 140		10/28/2022 18:58
4-Bromofluorobenzene	98.6	68 - 130		10/28/2022 18:58
Pentafluorobenzene	101	70.3 - 140		10/28/2022 18:58
Toluene-D8	104	69 - 138		10/28/2022 18:58

Method Reference(s): EPA 8260C
 EPA 5035A -- H
Data File: z13061.D
QC Batch ID: voainv221028
QC Number: Blk 1

Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals
Lab Project ID: 225097
SDG #: 5097-01
Matrix: Solid

Volatile Organics

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	<1000	ug/Kg		10/28/2022 19:18
1,1,1-Trichloroethane	<1000	ug/Kg		10/28/2022 19:18
1,1,2,2-Tetrachloroethane	<1000	ug/Kg		10/28/2022 19:18
1,1,2-Trichloroethane	<1000	ug/Kg		10/28/2022 19:18
1,1-Dichloroethane	<1000	ug/Kg		10/28/2022 19:18
1,1-Dichloroethene	<1000	ug/Kg		10/28/2022 19:18
1,1-Dichloropropene	<1000	ug/Kg		10/28/2022 19:18
1,2,3-Trichlorobenzene	<2500	ug/Kg		10/28/2022 19:18
1,2,3-Trichloropropane	<1000	ug/Kg		10/28/2022 19:18
1,2,4-Trichlorobenzene	<2500	ug/Kg		10/28/2022 19:18
1,2,4-Trimethylbenzene	<1000	ug/Kg		10/28/2022 19:18
1,2-Dibromo-3-Chloropropane	<5000	ug/Kg		10/28/2022 19:18
1,2-Dibromoethane	<1000	ug/Kg		10/28/2022 19:18
1,2-Dichlorobenzene	<1000	ug/Kg		10/28/2022 19:18
1,2-Dichloroethane	<1000	ug/Kg		10/28/2022 19:18
1,2-Dichloropropane	<1000	ug/Kg		10/28/2022 19:18
1,3,5-Trimethylbenzene	<1000	ug/Kg		10/28/2022 19:18
1,3-Dichlorobenzene	<1000	ug/Kg		10/28/2022 19:18
1,3-Dichloropropane	<1000	ug/Kg		10/28/2022 19:18
1,4-Dichlorobenzene	<1000	ug/Kg		10/28/2022 19:18
1,4-Dioxane	<5000	ug/Kg		10/28/2022 19:18
2,2-Dichloropropane	<1000	ug/Kg		10/28/2022 19:18
2-Butanone	<5000	ug/Kg		10/28/2022 19:18
2-Chlorotoluene	<1000	ug/Kg		10/28/2022 19:18
2-Hexanone	<2500	ug/Kg		10/28/2022 19:18
4-Chlorotoluene	<1000	ug/Kg		10/28/2022 19:18
4-Methyl-2-pentanone	<2500	ug/Kg		10/28/2022 19:18
Acetone	<5000	ug/Kg		10/28/2022 19:18

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals
Lab Project ID: 225097
SDG #: 5097-01
Matrix: Solid

Volatile Organics

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Benzene	<1000	ug/Kg		10/28/2022 19:18
Bromobenzene	<2500	ug/Kg		10/28/2022 19:18
Bromochloromethane	<2500	ug/Kg		10/28/2022 19:18
Bromodichloromethane	<1000	ug/Kg		10/28/2022 19:18
Bromoform	<2500	ug/Kg		10/28/2022 19:18
Bromomethane	<1000	ug/Kg		10/28/2022 19:18
Carbon disulfide	<1000	ug/Kg		10/28/2022 19:18
Carbon Tetrachloride	<1000	ug/Kg		10/28/2022 19:18
Chlorobenzene	<1000	ug/Kg		10/28/2022 19:18
Chloroethane	<1000	ug/Kg		10/28/2022 19:18
Chloroform	<1000	ug/Kg		10/28/2022 19:18
Chloromethane	<1000	ug/Kg		10/28/2022 19:18
cis-1,2-Dichloroethene	<1000	ug/Kg		10/28/2022 19:18
cis-1,3-Dichloropropene	<1000	ug/Kg		10/28/2022 19:18
Cyclohexane	<5000	ug/Kg		10/28/2022 19:18
Dibromochloromethane	<1000	ug/Kg		10/28/2022 19:18
Dibromomethane	<1000	ug/Kg		10/28/2022 19:18
Dichlorodifluoromethane	<1000	ug/Kg		10/28/2022 19:18
Ethylbenzene	<1000	ug/Kg		10/28/2022 19:18
Freon 113	<1000	ug/Kg		10/28/2022 19:18
Isopropylbenzene	<1000	ug/Kg		10/28/2022 19:18
m,p-Xylene	<1000	ug/Kg		10/28/2022 19:18
Methyl acetate	<1000	ug/Kg		10/28/2022 19:18
Methyl tert-butyl Ether	<1000	ug/Kg		10/28/2022 19:18
Methylcyclohexane	<1000	ug/Kg		10/28/2022 19:18
Methylene chloride	<2500	ug/Kg		10/28/2022 19:18
Naphthalene	<2500	ug/Kg		10/28/2022 19:18
n-Butylbenzene	<1000	ug/Kg		10/28/2022 19:18

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals
Lab Project ID: 225097
SDG #: 5097-01
Matrix: Solid

Volatile Organics

Analyte	Result	Units	Qualifier	Date Analyzed	
n-Propylbenzene	<1000	ug/Kg		10/28/2022	19:18
o-Xylene	<1000	ug/Kg		10/28/2022	19:18
p-Isopropyltoluene	<1000	ug/Kg		10/28/2022	19:18
sec-Butylbenzene	<1000	ug/Kg		10/28/2022	19:18
Styrene	<2500	ug/Kg		10/28/2022	19:18
tert-Butylbenzene	<1000	ug/Kg		10/28/2022	19:18
Tetrachloroethene	<1000	ug/Kg		10/28/2022	19:18
Toluene	<1000	ug/Kg		10/28/2022	19:18
trans-1,2-Dichloroethene	<1000	ug/Kg		10/28/2022	19:18
trans-1,3-Dichloropropene	<1000	ug/Kg		10/28/2022	19:18
Trichloroethene	<1000	ug/Kg		10/28/2022	19:18
Trichlorofluoromethane	<1000	ug/Kg		10/28/2022	19:18
Vinyl chloride	<1000	ug/Kg		10/28/2022	19:18

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed	
1,2-Dichloroethane-d4	98.9	74.7 - 140		10/28/2022	19:18
4-Bromofluorobenzene	95.2	68 - 130		10/28/2022	19:18
Pentafluorobenzene	98.8	70.3 - 140		10/28/2022	19:18
Toluene-D8	100	69 - 138		10/28/2022	19:18

Method Reference(s): EPA 8260C
 EPA 5035A -- H
Data File: z13062.D
QC Batch ID: voainv221028
QC Number: Blk 2



QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Lab Project ID: 225097

Matrix: Solid

Volatile Organics

Analyte	Spike Added	Spike Units	LCS Result	LCS % Recovery	%Rec Limits	LCS Outliers	Date Analyzed
1,1,1-Trichloroethane	20.0	ug/Kg	17.8	88.8	70.9 - 135		10/28/2022
1,1,2,2-Tetrachloroethane	20.0	ug/Kg	20.2	101	31.6 - 154		10/28/2022
1,1,2-Trichloroethane	20.0	ug/Kg	17.9	89.3	62 - 132		10/28/2022
1,1-Dichloroethane	20.0	ug/Kg	18.4	92.2	73 - 128		10/28/2022
1,1-Dichloroethene	20.0	ug/Kg	17.6	88.0	61.7 - 119		10/28/2022
1,2-Dichlorobenzene	20.0	ug/Kg	19.9	99.7	61 - 118		10/28/2022
1,2-Dichloroethane	20.0	ug/Kg	18.7	93.4	73.4 - 123		10/28/2022
1,2-Dichloropropane	20.0	ug/Kg	18.4	91.9	71.3 - 123		10/28/2022
1,3-Dichlorobenzene	20.0	ug/Kg	19.4	96.8	68.7 - 112		10/28/2022
1,4-Dichlorobenzene	20.0	ug/Kg	19.5	97.5	66.9 - 113		10/28/2022
Benzene	20.0	ug/Kg	19.1	95.4	77.8 - 119		10/28/2022
Bromodichloromethane	20.0	ug/Kg	18.8	94.0	65.7 - 125		10/28/2022
Bromoform	20.0	ug/Kg	17.8	88.8	54.7 - 130		10/28/2022
Bromomethane	20.0	ug/Kg	18.9	94.5	44.6 - 167		10/28/2022
Carbon Tetrachloride	20.0	ug/Kg	18.4	91.8	61.8 - 138		10/28/2022
Chlorobenzene	20.0	ug/Kg	20.1	101	77.2 - 108		10/28/2022

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QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Lab Project ID: 225097

Matrix: Solid

Volatile Organics

Analyte	Spike Added	Spike Units	LCS Result	LCS % Recovery	% Rec Limits	LCS Outliers	Date Analyzed
Chloroethane	20.0	ug/Kg	18.5	92.6	55.5 - 151		10/28/2022
Chloroform	20.0	ug/Kg	18.6	93.0	70.1 - 134		10/28/2022
Chloromethane	20.0	ug/Kg	16.3	81.3	42.4 - 168		10/28/2022
cis-1,3-Dichloropropene	20.0	ug/Kg	17.8	88.9	66.7 - 122		10/28/2022
Dibromochloromethane	20.0	ug/Kg	17.9	89.5	61.2 - 130		10/28/2022
Ethylbenzene	20.0	ug/Kg	19.0	95.1	71.6 - 112		10/28/2022
Methylene chloride	20.0	ug/Kg	19.2	96.0	38.2 - 155		10/28/2022
Tetrachloroethene	20.0	ug/Kg	17.7	88.7	61.4 - 137		10/28/2022
Toluene	20.0	ug/Kg	18.5	92.3	71.1 - 124		10/28/2022
trans-1,2-Dichloroethene	20.0	ug/Kg	18.6	92.9	67.3 - 127		10/28/2022
trans-1,3-Dichloropropene	20.0	ug/Kg	17.8	89.1	55 - 126		10/28/2022
Trichloroethene	20.0	ug/Kg	18.9	94.5	69.3 - 128		10/28/2022
Trichlorofluoromethane	20.0	ug/Kg	17.3	86.3	64 - 140		10/28/2022
Vinyl chloride	20.0	ug/Kg	18.1	90.5	51.2 - 160		10/28/2022

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QC Report for Laboratory Control Sample

Client: **Inventum Engineering, P.C.**

Project Reference: **COG Residuals**

Lab Project ID: **225097**

Matrix: **Solid**

Volatile Organics

Analyte	Spike Added	Spike Units	LCS Result	LCS % Recovery	% Rec Limits	LCS Outliers	Date Analyzed
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Method Reference(s): EPA 8260C
 EPA 5035A -- H
 Data File: z13041.D
 QC Number: LCS 1
 QC Batch ID: voainv221028

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.



Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Residuals
Lab Project ID: 225097
Matrix: TCLP Fluid

TCLP Volatile Organics

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
1,1-Dichloroethene	<20.0	ug/L		10/27/2022 13:46
1,2-Dichloroethane	<20.0	ug/L		10/27/2022 13:46
2-Butanone	<100	ug/L		10/27/2022 13:46
Benzene	<20.0	ug/L		10/27/2022 13:46
Carbon Tetrachloride	<20.0	ug/L		10/27/2022 13:46
Chlorobenzene	<20.0	ug/L		10/27/2022 13:46
Chloroform	<20.0	ug/L		10/27/2022 13:46
Tetrachloroethene	<20.0	ug/L		10/27/2022 13:46
Trichloroethene	<20.0	ug/L		10/27/2022 13:46
Vinyl chloride	<20.0	ug/L		10/27/2022 13:46

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
1,2-Dichloroethane-d4	98.5	81.1 - 136		10/27/2022 13:46
4-Bromofluorobenzene	98.0	75.8 - 132		10/27/2022 13:46
Pentafluorobenzene	102	82 - 132		10/27/2022 13:46
Toluene-D8	99.7	64.6 - 137		10/27/2022 13:46

Method Reference(s): EPA 8260C
EPA 5030
Data File: z13012.D
QC Batch ID: voax221027
QC Number: Blk 1



QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: COG Residuals

Lab Project ID: 225097

Matrix: TCLP Fluid

TCLP Volatile Organics

Analyte	Spike Added	Spike Units	LCS Result	LCS % Recovery	% Rec Limits	LCS Outliers	Date Analyzed
1,1-Dichloroethene	20.0	ug/L	18.7	93.7	65.5 - 116		10/27/2022
1,2-Dichloroethane	20.0	ug/L	19.2	96.0	78.3 - 122		10/27/2022
Benzene	20.0	ug/L	19.9	99.3	81.6 - 114		10/27/2022
Carbon Tetrachloride	20.0	ug/L	19.8	98.9	76.4 - 129		10/27/2022
Chlorobenzene	20.0	ug/L	20.6	103	77.2 - 106		10/27/2022
Chloroform	20.0	ug/L	19.3	96.7	84.5 - 122		10/27/2022
Tetrachloroethene	20.0	ug/L	18.6	92.8	64.4 - 130		10/27/2022
Trichloroethene	20.0	ug/L	20.6	103	73.4 - 122		10/27/2022
Vinyl chloride	20.0	ug/L	19.5	97.5	50.9 - 164		10/27/2022

Method Reference(s): EPA 8260C

EPA 5030

Data File: 213011.D

QC Number: LCS 1

QC Batch ID: voax221027

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.



Analytical Report Appendix

The reported results relate only to the samples as they have been received by the laboratory.

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All soil/sludge samples have been reported on a dry weight basis, unless qualified "reported as received". Other solids are reported as received.

Low level Volatiles blank reports for soil/solid matrix are based on a nominal 5 gram weight. Sample results and reporting limits are based on actual weight, which may be more or less than 5 grams.

The Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt. Sample condition requirements are defined under the 2003 NELAC Standard, sections 5.5.8.3.1 and 5.5.8.3.2.

NYSDOH ELAP does not certify for all parameters. Paradigm Environmental Services or the indicated subcontracted laboratory does hold certification for all analytes where certification is offered by ELAP unless otherwise specified. Aliquots separated for certain tests, such as TCLP, are indicated on the Chain of Custody and final reports with an "A" suffix.

Data qualifiers are used, when necessary, to provide additional information about the data. This information may be communicated as a flag or as text at the bottom of the report. Please refer to the following list of analyte-specific, frequently used data flags and their meaning:

"<" = Analyzed for but not detected at or above the quantitation limit.

"E" = Result has been estimated, calibration limit exceeded.

"H" = Denotes a parameter analyzed outside of holding time.

"Z" = See case narrative.

"D" = Sample, Laboratory Control Sample, or Matrix Spike Duplicate results above Relative Percent Difference limit.

"M" = Matrix spike recoveries outside QC limits. Matrix bias indicated.

"B" = Method blank contained trace levels of analyte. Refer to included method blank report.

"J" = Result estimated between the quantitation limit and half the quantitation limit.

"L" = Laboratory Control Sample recovery outside accepted QC limits.

"P" = Concentration differs by more than 40% between the primary and secondary analytical columns.

"NC" = Not calculable. Applicable to RPD if sample or duplicate result is non-detect or estimated (see primary report for data flags). Applicable to MS if sample is greater or equal to ten times the spike added. Applicable to sample surrogates or MS if sample dilution is 10x or higher.

"" = Indicates any recoveries outside associated acceptance windows. Surrogate outliers in samples are presumed matrix effects. LCS demonstrates method compliance unless otherwise noted.*

"(1)" = Indicates data from primary column used for QC calculation.

"A" = denotes a parameter for which ELAP does not offer approval as part of their laboratory certification program.

"F" = denotes a parameter for which Paradigm does not carry certification, the results for which should therefore only be used where ELAP certification is not required, such as personal exposure assessment.

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GENERAL TERMS AND CONDITIONS

LABORATORY SERVICES

These Terms and Conditions embody the whole agreement of the parties in the absence of a signed and executed contract between the Laboratory (LAB) and Client. They shall supersede all previous communications, representations, or agreements, either verbal or written, between the parties. The LAB specifically rejects all additional, inconsistent, or conflicting terms, whether printed or otherwise set forth in any purchase order or other communication from the Client to the LAB. The invalidity or unenforceability in whole or in part of any provision, term or condition hereof shall not affect in any way the validity or enforceability of the remainder of the Terms and Conditions. No waiver by LAB of any provision, term, or condition hereof or of any breach by or obligation of the Client hereunder shall constitute a waiver of such provision, term, or condition on any other occasion or a waiver of any other breach by or obligation of the Client. This agreement shall be administered and interpreted under the laws of the state which services are procured.

Warranty.

Recognizing that the nature of many samples is unknown and that some may contain potentially hazardous components, LAB warrants only that it will perform testing services, obtain findings, and prepare reports in accordance with generally accepted analytical laboratory principles and practices at the time of performance of services. LAB makes no other warranty, express or implied.

Scope and Compensation.

LAB agrees to perform the services described in the chain of custody to which these terms and conditions are attached. Unless the parties agree in writing to the contrary, the duties of LAB shall not be construed to exceed the services specifically described. LAB will use LAB default method for all tests unless specified otherwise on the Work Order.

Payment terms are net 30 days from the date of invoice. All overdue payments are subject to an interest charge of one and one-half percent (1-1/2%) per month or a portion thereof. Client shall also be responsible for costs of collection, including payment of reasonable attorney fees if such expense is incurred. The prices, unless stated, do not include any sale, use or other taxes. Such taxes will be added to invoice prices when required.

Prices.

Compensation for services performed will be based on the current Lab Analytical Fee Schedule or on quotations agreed to in writing by the parties. Turnaround time based charges are determined from the time of resolution of all work order questions. Testimony, court appearances or data compilation for legal action will be charged separately. Evaluation and reporting of initial screening runs may incur additional fees.

Limitations of Liability.

In the event of any error, omission, or other professional negligence, the sole and exclusive responsibility of LAB shall be to re-perform the deficient work at its own expense and LAB shall have no other liability whatsoever. All claims shall be deemed waived unless made in writing and received by LAB within ninety (90) days following completion of services.

LAB shall have no liability, obligation, or responsibility of any kind for losses, costs, expenses, or other damages (including but not limited to any special, direct, incidental or consequential damages) with respect to LAB's services or results.

All results provided by LAB are strictly for the use of its clients and LAB is in no way responsible for the use of such results by clients or third parties. All reports should be considered in their entirety, and LAB is not responsible for the separation, detachment, or other use of any portion of these reports. Client may not assign the lab report without the written consent of the LAB.

Client covenants and agrees, at its/his/her sole expense, to indemnify, protect, defend, and save harmless the LAB from and against any and all damages, losses, liabilities, obligations, penalties, claims, litigation, demands, defenses, judgments, suits, actions, proceedings, costs, disbursements and/or expenses (including, without limitation attorneys' and experts' fees and disbursements) of any kind whatsoever which may at any time be imposed upon, incurred by or asserted or awarded against client relating to, resulting from or arising out of (a) the breach of this agreement by this client, (b) the negligence of the client in handling, delivering or disclosing any hazardous substance, (c) the violation of the Client of any applicable law, (d) non-compliance by the Client with any environmental permit or (e) a material misrepresentation in disclosing the materials to be tested.

Hazard Disclosure.

Client represents and warrants that any sample delivered to LAB will be preceded or accompanied by complete written disclosure of the presence of any hazardous substances known or suspected by Client. Client further warrants that any sample containing any hazardous substance that is to be delivered to LAB will be packaged, labeled, transported, and delivered properly and in accordance with applicable laws.

Sample Handling.

Prior to LAB's acceptance of any sample (or after any revocation of acceptance), the entire risk of loss or of damage to such sample remains with Client. Samples are accepted when receipt is acknowledged on chain of custody documentation. In no event will LAB have any responsibility for the action or inaction of any carrier shipping or delivering any sample to or from LAB premises.

Client authorizes LAB to proceed with the analysis of samples as received by the laboratory, recognizing that any samples not in compliance with all current DOH-ELAP-NELAP requirements for containers, preservation or holding time will be noted as such on the final report.

Disposal of hazardous waste samples is the responsibility of the Client. If the Client does not wish such samples returned, LAB may add storage and disposal fees to the final invoice. Maximum storage time for samples is 30 days after completion of analysis unless modified by applicable state or federal laws. Client will be required to give the LAB written instructions concerning disposal of these samples.

LAB reserves the absolute right, exercisable at any time, to refuse to receive delivery of, refuse to accept, or revoke acceptance of any sample, which, in the sole judgment of LAB (a) is of unsuitable volume, (b) may be or become unsuitable for or may pose a risk in handling, transport, or processing for any health, safety, environmental or other reason whether or not due to the presence in the sample of any hazardous substance, and whether or not such presence has been disclosed to LAB by Client or (c) if the condition or sample date make the sample unsuitable for analysis.

Legal Responsibility.

LAB is solely responsible for performance of this contract, and no affiliated company, director, officer, employee, or agent shall have any legal responsibility hereunder, whether in contract or tort including negligence.

Assignment.

LAB may assign its performance obligations under this contract to other parties, as it deems necessary. LAB shall disclose to Client any assignee (subcontractor) by ELAP ID # on the submitted final report.

Force Majeure.

LAB shall have no responsibility or liability to the Client for any failure or delay in performance by LAB, which results in whole or in part from any cause or circumstance beyond the reasonable control of LAB. Such causes and circumstances shall include, but not limited to, acts of God, acts or orders of any government authority, strikes or other labor disputes, natural disasters, accidents, wars, civil disturbances, difficulties or delays in transportation, mail or delivery services, inability to obtain sufficient services or supplies from LAB's usual suppliers, or any other cause beyond LAB's reasonable control.

Law.

This contract shall be continued under the laws of the State of New York without regard to its conflicts of laws provision.

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

CHAIN OF CUSTODY



PARADIGM

REPORT TO:

INVOICE TO:

LAB PROJECT ID

225097

Quotation #:

Email: john.black@inventumeng.com

PROJECT REFERENCE
009 RESIDUALS

CLIENT: INVENTUM ENGINEERING
ADDRESS: 241 MARSHLE DR SUITE C
CITY: HERRON VA STATE: 20110 ZIP
PHONE: 585-734-5255
ATTN: ROYANNE BIRX
Matrix Codes: AQ - Aqueous Liquid
NQ - Non-Aqueous Liquid

CLIENT: SHME
ADDRESS:
CITY: STATE: ZIP:
ATTN: JOHN BLACK

WA - Water
WG - Groundwater
DW - Drinking Water
WW - Wastewater
SD - Soil
SL - Sludge
SD - Solid
PT - Paint
WP - Wipe
CK - Caulk
OL - Oil
AR - Air

REQUESTED ANALYSIS

DATE COLLECTED	TIME COLLECTED	COMPOSITION	GRADES	SAMPLE IDENTIFIER	MATERIALS	CONTAMINANTS	REMARKS	PARADIGM LAB SAMPLE NUMBER
10/25/22	845	X		009-RESIDUALS-10252022	SD	✓ TEL VOCs ✓ TEL SVOCs ✓ TOTAL SULFUR ✓ % MOISTURE ✓ BTU ✓ HAZCAT* ✓ FULL TCLP* ✓ METALS* ✓ PCBs ✓ PAINT FILTER ✓ TOTAL CN ✓ AMMONIA	*HAZCAT - ADVERSITY, OIA *HAZCAT - ADVERSITY, REACTIVITY *FULL TCLP, VOCs, SVOCs *METALS, PEST, HEAVY *METALS: (15) Ag, As, Ba, Cd, Cr, Co, Cu, Mn, Hg, Mo, Ni, Pb, Se, Sn, Zn *SAMPLE IS COKE OVEN GAS RESIDUALS	

Turnaround Time

Report Supplements

Availability contingent upon lab approval; additional fees may apply.

Standard 5 day None Required
 10 day Batch QC Basic EDD
 Rush 3 day Category A NYSDEC EDD
 Rush 2 day Category B
 Rush 1 day
 Date Needed _____ Other Other EDD
 please indicate date needed: please indicate package needed: please indicate EDD needed:

Sampled By: ROYANNE BIRX Date/Time: 10/25/22 845

Total Cost:

Reinforced By: Royanne Birx Date/Time: 10/25/22 1020

Received By: Royanne Birx Date/Time: 10/25/22 1:45

P.I.F.

Received @ Lab By: Royanne Birx Date/Time: 10/25/22 1030

By signing this form, client agrees to Paradigm Terms and Conditions (reverse).

See additional page for sample conditions.

10/25/22

2072



Chain of Custody Supplement

Client: Invernum Completed by: EH
 Lab Project ID: 225097 Date: 10/26/22

Sample Condition Requirements
 Per NELAC/ELAP 210/241/242/243/244

Condition	NELAC compliance with the sample condition requirements upon receipt		
	Yes	No	N/A
Container Type	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments	<hr/>		
Transferred to method-compliant container	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Headspace (<1 mL)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments	<hr/>		
Preservation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments	<hr/>		
Chlorine Absent (<0.10 ppm per test strip)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments	<hr/>		
Holding Time	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments	<hr/>		
Temperature	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> Met
Comments	<u>5°C iced</u>		
Compliant Sample Quantity/Type	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments	<hr/>		



1791 Lake Avenue, Rochester, NY 14608 Office (585) 647-2530 Fax (585) 647-3311

CHAIN OF CUSTODY

ELAP ID: _____

REPORT TO:

INVOICE TO:

COMPANY: Paradigm Environmental	COMPANY: Same	LAB PROJECT #:	CLIENT PROJEC:
ADDRESS:	ADDRESS:	TURNAROUND TIME: (WORKING DAYS)	
CITY: STATE: ZIP:	CITY: STATE: ZIP:		
PHONE: FAX:	PHONE: FAX:	STD	
ATTN: Reporting	ATTN: Accounts Payable	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 5	
COMMENTS: Please email results to reporting@paradigmenv.com		Date Due: 11/3/22	

REQUESTED ANALYSIS

DATE	TIME	COMPOSITE	GRA B	SAMPLE LOCATION/FIELD ID	MATRIX	CONUTS BENSER	REMARKS	PARADIGM SAMPLE NUMBER
10/23/22	0845	<input checked="" type="checkbox"/>		COG-RESIDUALS-1025202 225097-01A	TCLP EXTRACT	1 XX	SPUN @ PARADIGM DN: 10/26/22	
2								
3								
4								
5								
6								
7								
8								
9								
10								

LAB USE ONLY BELOW THIS LINE

Sample Condition: Per NELAC/ELAP 210/241/242/243/244

Receipt Parameter **NELAC Compliance**

Comments: Container Type: Y N

Comments: Preservation: Y N

Comments: Holding Time: Y N

Comments: Temperature: Y N

Client

Sampled By: <i>Smilbert</i>	Date/Time: 10/28/22 0830	Total Cost:
Relinquished By: <i>Melroy</i>	Date/Time: 10/28/22 12:00	
Received By: <i>MC</i>	Date/Time: 10/28/22 15:46	P.I.F.:
Received @ Lab By:	Date/Time:	



PARADIGM
ENVIRONMENTAL SERVICES, INC.

Analytical Report For
Inventum Engineering, P.C.

For Lab Project ID

221148

Referencing

COG Tar - Battery

Prepared

Monday, September 22, 2025

This project has been re-issued to include additional compounds, per client request.

Any noncompliant QC parameters or other notes impacting data interpretation are flagged or documented on the final report or are noted below.

Emily Farmer

Certifies that this report has been approved by the Technical Director or Designee

179 Lake Avenue • Rochester, NY 14608 • (585) 647-2530 • Fax (585) 647-3311 • ELAP ID# 10958

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.



Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Sample Identifier: COG TAR-03172022

Lab Sample ID: 221148-01

Date Sampled: 3/17/2022 14:45

Matrix: Sludge

Date Received 3/18/2022

Ammonia-N

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Ammonia	530	mg/Kg		3/25/2022
Method Reference(s):		SM 4500 NH3 G - 2011		
Subcontractor ELAP ID:		10709		

Heat Value

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
BTU	10000	btu/lb		3/22/2022
Method Reference(s):		ASTM D240-09		
Subcontractor ELAP ID:		10709		
<i>ELAP does not offer this test for approval as part of their laboratory certification program.</i>				

Corrosivity as pH

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Corrosivity (as pH)	7.07 @ 20.7 C	S.U.		3/24/2022 12:01
Method Reference(s):		EPA 9045D		

Flash Point

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Flash Point, Celsius	>70.0	C		3/24/2022
Method Reference(s):		EPA 1010A		

Mercury

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Mercury	8.87	mg/Kg		3/23/2022 10:37
Method Reference(s):		EPA 7471B		
Preparation Date:		3/22/2022		
Data File:		Hg220323C		



Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Sample Identifier: COG TAR-03172022

Lab Sample ID: 221148-01

Date Sampled: 3/17/2022 14:45

Matrix: Sludge

Date Received 3/18/2022

TAL Metals (ICP)

Analyte	Result	Units	Qualifier	Date Analyzed
Aluminum	63.6	mg/Kg		3/23/2022 17:42
Antimony	< 3.12	mg/Kg		3/23/2022 17:42
Arsenic	16.1	mg/Kg		3/23/2022 17:42
Barium	< 5.20	mg/Kg		3/23/2022 17:42
Beryllium	< 0.260	mg/Kg		3/23/2022 17:42
Cadmium	0.263	mg/Kg		3/23/2022 17:42
Calcium	163	mg/Kg		3/23/2022 17:42
Chromium	11.2	mg/Kg		3/23/2022 17:42
Cobalt	< 2.60	mg/Kg		3/23/2022 17:42
Copper	12.7	mg/Kg		3/23/2022 17:42
Iron	39300	mg/Kg		3/25/2022 08:52
Lead	4.67	mg/Kg		3/24/2022 14:41
Magnesium	< 130	mg/Kg		3/23/2022 17:42
Manganese	477	mg/Kg		3/23/2022 17:42
Molybdenum	10.3	mg/Kg		3/23/2022 17:42
Nickel	35.7	mg/Kg		3/23/2022 17:42
Potassium	< 130	mg/Kg		3/23/2022 17:42
Selenium	< 1.04	mg/Kg		3/24/2022 14:41
Silver	< 0.520	mg/Kg		3/23/2022 17:42
Sodium	< 130	mg/Kg		3/23/2022 17:42
Thallium	< 1.30	mg/Kg		3/23/2022 17:42
Vanadium	2.11	mg/Kg		3/23/2022 17:42
Zinc	12.4	mg/Kg		3/23/2022 17:42

Method Reference(s): EPA 6010C
EPA 3050B
Preparation Date: 3/22/2022
Data File: 220323C

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Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Sample Identifier: COG TAR-03172022

Lab Sample ID: 221148-01

Date Sampled: 3/17/2022 14:45

Matrix: Sludge

Date Received: 3/18/2022

Paint Filter Test

Analyte	Result	Units	Qualifier	Date Analyzed
Paint Filter Test	Pass	N/A		3/23/2022

Method Reference(s): EPA 9095B

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed
PCB-1016	< 1.83	mg/Kg		3/23/2022 13:39
PCB-1221	< 1.83	mg/Kg		3/23/2022 13:39
PCB-1232	< 1.83	mg/Kg		3/23/2022 13:39
PCB-1242	< 1.83	mg/Kg		3/23/2022 13:39
PCB-1248	< 1.83	mg/Kg		3/23/2022 13:39
PCB-1254	< 1.83	mg/Kg		3/23/2022 13:39
PCB-1260	< 1.83	mg/Kg		3/23/2022 13:39
PCB-1262	< 1.83	mg/Kg		3/23/2022 13:39
PCB-1268	< 1.83	mg/Kg		3/23/2022 13:39

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	NC	12.7 - 101		3/23/2022 13:39

Reporting limit elevated due to sample matrix

Method Reference(s): EPA 8082A
EPA 3546
Preparation Date: 3/21/2022

Percent Moisture

Analyte	Result	Units	Qualifier	Date Analyzed
Percent Moisture	11.8	%		3/21/2022

Method Reference(s): SM 2540 B

ELAP does not offer this test for approval as part of their laboratory certification program.

Reactive Cyanide

Analyte	Result	Units	Qualifier	Date Analyzed
Reactivity, Cyanide	<1.0	mg/Kg		3/22/2022

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Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Sample Identifier: COG TAR-03172022

Lab Sample ID: 221148-01

Date Sampled: 3/17/2022 14:45

Matrix: Sludge

Date Received 3/18/2022

Method Reference(s): EPA 7.3.3.2

Subcontractor ELAP ID: 10709

ELAP does not offer this test for approval as part of their laboratory certification program.

This sample has been reported as received.

Reactive Sulfide

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Reactivity, Sulfide	<10	mg/Kg		3/22/2022

Method Reference(s): EPA 7.3.4.2

Subcontractor ELAP ID: 10709

ELAP does not offer this test for approval as part of their laboratory certification program.

This sample has been reported as received.

Semi-Volatile Organics (Acid/Base Neutrals)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
1,1-Biphenyl	< 1200000	ug/Kg		3/25/2022 14:10
1,2,4,5-Tetrachlorobenzene	< 1200000	ug/Kg		3/25/2022 14:10
1,2,4-Trichlorobenzene	< 1200000	ug/Kg		3/25/2022 14:10
1,2-Dichlorobenzene	< 1200000	ug/Kg		3/25/2022 14:10
1,3-Dichlorobenzene	< 1200000	ug/Kg		3/25/2022 14:10
1,4-Dichlorobenzene	< 1200000	ug/Kg		3/25/2022 14:10
2,2-Oxybis (1-chloropropane)	< 1200000	ug/Kg		3/25/2022 14:10
2,3,4,6-Tetrachlorophenol	< 1200000	ug/Kg		3/25/2022 14:10
2,4,5-Trichlorophenol	< 1200000	ug/Kg		3/25/2022 14:10
2,4,6-Trichlorophenol	< 1200000	ug/Kg		3/25/2022 14:10
2,4-Dichlorophenol	< 1200000	ug/Kg		3/25/2022 14:10
2,4-Dimethylphenol	< 1200000	ug/Kg		3/25/2022 14:10
2,4-Dinitrophenol	< 4800000	ug/Kg		3/25/2022 14:10
2,4-Dinitrotoluene	< 1200000	ug/Kg		3/25/2022 14:10
2,6-Dinitrotoluene	< 1200000	ug/Kg		3/25/2022 14:10
2-Chloronaphthalene	< 1200000	ug/Kg		3/25/2022 14:10
2-Chlorophenol	< 1200000	ug/Kg		3/25/2022 14:10

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Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Sample Identifier: COG TAR-03172022

Lab Sample ID: 221148-01

Date Sampled: 3/17/2022 14:45

Matrix: Sludge

Date Received 3/18/2022

2-Methylnaphthalene	3920000	ug/Kg	3/25/2022 14:10
2-Methylphenol	< 1200000	ug/Kg	3/25/2022 14:10
2-Nitroaniline	< 1200000	ug/Kg	3/25/2022 14:10
2-Nitrophenol	< 1200000	ug/Kg	3/25/2022 14:10
3&4-Methylphenol	< 1200000	ug/Kg	3/25/2022 14:10
3,3'-Dichlorobenzidine	< 1200000	ug/Kg	3/25/2022 14:10
3-Nitroaniline	< 1200000	ug/Kg	3/25/2022 14:10
4,6-Dinitro-2-methylphenol	< 1610000	ug/Kg	3/25/2022 14:10
4-Bromophenyl phenyl ether	< 1200000	ug/Kg	3/25/2022 14:10
4-Chloro-3-methylphenol	< 1200000	ug/Kg	3/25/2022 14:10
4-Chloroaniline	< 1200000	ug/Kg	3/25/2022 14:10
4-Chlorophenyl phenyl ether	< 1200000	ug/Kg	3/25/2022 14:10
4-Nitroaniline	< 1200000	ug/Kg	3/25/2022 14:10
4-Nitrophenol	< 1200000	ug/Kg	3/25/2022 14:10
Acenaphthene	< 1200000	ug/Kg	3/25/2022 14:10
Acenaphthylene	1550000	ug/Kg	3/25/2022 14:10
Acetophenone	< 1200000	ug/Kg	3/25/2022 14:10
Anthracene	< 1200000	ug/Kg	3/25/2022 14:10
Atrazine	< 1200000	ug/Kg	3/25/2022 14:10
Benzaldehyde	< 1200000	ug/Kg	3/25/2022 14:10
Benzo (a) anthracene	< 1200000	ug/Kg	3/25/2022 14:10
Benzo (a) pyrene	< 1200000	ug/Kg	3/25/2022 14:10
Benzo (b) fluoranthene	< 1200000	ug/Kg	3/25/2022 14:10
Benzo (g,h,i) perylene	< 1200000	ug/Kg	3/25/2022 14:10
Benzo (k) fluoranthene	< 1200000	ug/Kg	3/25/2022 14:10
Bis (2-chloroethoxy) methane	< 1200000	ug/Kg	3/25/2022 14:10
Bis (2-chloroethyl) ether	< 1200000	ug/Kg	3/25/2022 14:10
Bis (2-ethylhexyl) phthalate	< 1200000	ug/Kg	3/25/2022 14:10
Butylbenzylphthalate	< 1200000	ug/Kg	3/25/2022 14:10
Caprolactam	< 1200000	ug/Kg	3/25/2022 14:10

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Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery

Sample Identifier: COG TAR-03172022

Lab Sample ID: 221148-01

Date Sampled: 3/17/2022 14:45

Matrix: Sludge

Date Received 3/18/2022

Carbazole	< 1200000	ug/Kg	3/25/2022 14:10
Chrysene	< 1200000	ug/Kg	3/25/2022 14:10
Dibenz (a,h) anthracene	< 1200000	ug/Kg	3/25/2022 14:10
Dibenzofuran	< 1200000	ug/Kg	3/25/2022 14:10
Diethyl phthalate	< 1200000	ug/Kg	3/25/2022 14:10
Dimethyl phthalate	< 1200000	ug/Kg	3/25/2022 14:10
Di-n-butyl phthalate	< 1200000	ug/Kg	3/25/2022 14:10
Di-n-octylphthalate	< 1200000	ug/Kg	3/25/2022 14:10
Fluoranthene	1900000	ug/Kg	3/25/2022 14:10
Fluorene	1510000	ug/Kg	3/25/2022 14:10
Hexachlorobenzene	< 1200000	ug/Kg	3/25/2022 14:10
Hexachlorobutadiene	< 1200000	ug/Kg	3/25/2022 14:10
Hexachlorocyclopentadiene	< 4800000	ug/Kg	3/25/2022 14:10
Hexachloroethane	< 1200000	ug/Kg	3/25/2022 14:10
Indeno (1,2,3-cd) pyrene	< 1200000	ug/Kg	3/25/2022 14:10
Isophorone	< 1200000	ug/Kg	3/25/2022 14:10
Naphthalene	24300000	ug/Kg	3/25/2022 14:10
Nitrobenzene	< 1200000	ug/Kg	3/25/2022 14:10
N-Nitroso-di-n-propylamine	< 1200000	ug/Kg	3/25/2022 14:10
N-Nitrosodiphenylamine	< 1200000	ug/Kg	3/25/2022 14:10
Pentachlorophenol	< 2400000	ug/Kg	3/25/2022 14:10
Phenanthrene	3540000	ug/Kg	3/25/2022 14:10
Phenol	< 1200000	ug/Kg	3/25/2022 14:10
Pyrene	1220000	ug/Kg	3/25/2022 14:10



Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Sample Identifier: COG TAR-03172022

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Date Sampled 3/17/2022 14:45

Matrix: Sludge

Date Received 3/18/2022

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
2,4,6-Tribromophenol	NC	35.4 - 92.4		3/25/2022 14:10
2-Fluorobiphenyl	NC	39.6 - 84.4		3/25/2022 14:10
2-Fluorophenol	NC	35.5 - 78.9		3/25/2022 14:10
Nitrobenzene-d5	NC	36.5 - 78.2		3/25/2022 14:10
Phenol-d5	NC	37.1 - 78.3		3/25/2022 14:10
Terphenyl-d14	NC	42.3 - 103		3/25/2022 14:10

Method Reference(s): EPA 8270D
EPA 3546
Preparation Date: 3/21/2022
Data File: B60666.D

Metals

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Tin	4.2	mg/Kg	F	3/25/2022

Method Reference(s): EPA 6010C
EPA 3050B
Subcontractor ELAP ID: 10709

Volatile Organics

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	< 6300	ug/Kg		3/22/2022 16:32
1,1,1-Trichloroethane	< 6300	ug/Kg		3/22/2022 16:32
1,1,2,2-Tetrachloroethane	< 6300	ug/Kg		3/22/2022 16:32
1,1,2-Trichloroethane	< 6300	ug/Kg		3/22/2022 16:32
1,1-Dichloroethane	< 6300	ug/Kg		3/22/2022 16:32
1,1-Dichloroethene	< 6300	ug/Kg		3/22/2022 16:32
1,1-Dichloropropene	< 6300	ug/Kg		3/22/2022 16:32
1,2,3-Trichlorobenzene	< 15700	ug/Kg		3/22/2022 16:32
1,2,3-Trichloropropane	< 6300	ug/Kg		3/22/2022 16:32
1,2,4-Trichlorobenzene	< 15700	ug/Kg		3/22/2022 16:32
1,2,4-Trimethylbenzene	75900	ug/Kg		3/22/2022 16:32
1,2-Dibromo-3-Chloropropane	< 31500	ug/Kg		3/22/2022 16:32

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Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Sample Identifier: COG TAR-03172022

Lab Sample ID: 221148-01

Date Sampled 3/17/2022 14:45

Matrix: Sludge

Date Received 3/18/2022

1,2-Dibromoethane	< 6300	ug/Kg	3/22/2022 16:32
1,2-Dichlorobenzene	< 6300	ug/Kg	3/22/2022 16:32
1,2-Dichloroethane	< 6300	ug/Kg	3/22/2022 16:32
1,2-Dichloropropane	< 6300	ug/Kg	3/22/2022 16:32
1,3,5-Trimethylbenzene	48500	ug/Kg	3/22/2022 16:32
1,3-Dichlorobenzene	< 6300	ug/Kg	3/22/2022 16:32
1,3-Dichloropropane	< 6300	ug/Kg	3/22/2022 16:32
1,4-Dichlorobenzene	< 6300	ug/Kg	3/22/2022 16:32
1,4-Dioxane	< 31500	ug/Kg	3/22/2022 16:32
2,2-Dichloropropane	< 6300	ug/Kg	3/22/2022 16:32
2-Butanone	< 31500	ug/Kg	3/22/2022 16:32
2-Chlorotoluene	< 6300	ug/Kg	3/22/2022 16:32
2-Hexanone	< 15700	ug/Kg	3/22/2022 16:32
4-Chlorotoluene	< 6300	ug/Kg	3/22/2022 16:32
4-Methyl-2-pentanone	< 15700	ug/Kg	3/22/2022 16:32
Acetone	< 31500	ug/Kg	3/22/2022 16:32
Benzene	406000	ug/Kg	3/22/2022 16:32
Bromobenzene	< 15700	ug/Kg	3/22/2022 16:32
Bromochloromethane	< 15700	ug/Kg	3/22/2022 16:32
Bromodichloromethane	< 6300	ug/Kg	3/22/2022 16:32
Bromoform	< 15700	ug/Kg	3/22/2022 16:32
Bromomethane	< 6300	ug/Kg	3/22/2022 16:32
Carbon disulfide	12300	ug/Kg	3/22/2022 16:32
Carbon Tetrachloride	< 6300	ug/Kg	3/22/2022 16:32
Chlorobenzene	< 6300	ug/Kg	3/22/2022 16:32
Chloroethane	< 6300	ug/Kg	3/22/2022 16:32
Chloroform	< 6300	ug/Kg	3/22/2022 16:32
Chloromethane	< 6300	ug/Kg	3/22/2022 16:32
cis-1,2-Dichloroethene	< 6300	ug/Kg	3/22/2022 16:32
cis-1,3-Dichloropropene	< 6300	ug/Kg	3/22/2022 16:32

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Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Sample Identifier: COG TAR-03172022

Lab Sample ID: 221148-01

Date Sampled 3/17/2022 14:45

Matrix: Sludge

Date Received 3/18/2022

Cyclohexane	< 31500	ug/Kg		3/22/2022 16:32
Dibromochloromethane	< 6300	ug/Kg		3/22/2022 16:32
Dibromomethane	< 6300	ug/Kg		3/22/2022 16:32
Dichlorodifluoromethane	< 6300	ug/Kg		3/22/2022 16:32
Ethylbenzene	10400	ug/Kg		3/22/2022 16:32
Freon 113	< 6300	ug/Kg		3/22/2022 16:32
Isopropylbenzene	< 6300	ug/Kg		3/22/2022 16:32
m,p-Xylene	222000	ug/Kg		3/22/2022 16:32
Methyl acetate	< 6300	ug/Kg		3/22/2022 16:32
Methyl tert-butyl Ether	< 6300	ug/Kg		3/22/2022 16:32
Methylcyclohexane	< 6300	ug/Kg		3/22/2022 16:32
Methylene chloride	< 15700	ug/Kg		3/22/2022 16:32
Naphthalene	3360000	ug/Kg	E	3/22/2022 16:32
n-Butylbenzene	< 6300	ug/Kg		3/22/2022 16:32
n-Propylbenzene	< 6300	ug/Kg		3/22/2022 16:32
o-Xylene	53200	ug/Kg		3/22/2022 16:32
p-Isopropyltoluene	< 6300	ug/Kg		3/22/2022 16:32
sec-Butylbenzene	< 6300	ug/Kg		3/22/2022 16:32
Styrene	< 15700	ug/Kg		3/22/2022 16:32
tert-Butylbenzene	< 6300	ug/Kg		3/22/2022 16:32
Tetrachloroethene	< 6300	ug/Kg		3/22/2022 16:32
Toluene	299000	ug/Kg		3/22/2022 16:32
trans-1,2-Dichloroethene	< 6300	ug/Kg		3/22/2022 16:32
trans-1,3-Dichloropropene	< 6300	ug/Kg		3/22/2022 16:32
Trichloroethene	< 6300	ug/Kg		3/22/2022 16:32
Trichlorofluoromethane	< 6300	ug/Kg		3/22/2022 16:32
Vinyl chloride	< 6300	ug/Kg		3/22/2022 16:32

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.



Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Sample Identifier: COG TAR-03172022

Lab Sample ID: 221148-01

Date Sampled: 3/17/2022 14:45

Matrix: Sludge

Date Received 3/18/2022

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
1,2-Dichloroethane-d4	110	74.7 - 140		3/22/2022 16:32
4-Bromofluorobenzene	105	68 - 130		3/22/2022 16:32
Pentafluorobenzene	106	70.3 - 140		3/22/2022 16:32
Toluene-D8	103	69 - 138		3/22/2022 16:32

Method Reference(s): EPA 8260C
EPA 5035A -- H
Data File: z07943.D

This sample was not collected following SW846 5035A specifications. Accordingly, any Volatiles soil results that are less than 200 ug/Kg, including Non Detects, may be biased low, per ELAP method 5035 guidance document from 11/15/2012.

Total Cyanide

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Cyanide, Total	259	mg/Kg		3/25/2022

Method Reference(s): EPA 9014
EPA 9010C
Preparation Date: 3/24/2022

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery

Sample Identifier: COG TAR-03172022

Lab Sample ID: 221148-01A

Date Sampled: 3/17/2022 14:45

Matrix: TCLP Extract

Date Received 3/18/2022

TCLP Semi-Volatile Organics

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
1,4-Dichlorobenzene	< 200	ug/L	7500		3/23/2022 16:42
2,4,5-Trichlorophenol	< 200	ug/L	400000		3/23/2022 16:42
2,4,6-Trichlorophenol	< 200	ug/L	2000		3/23/2022 16:42
2,4-Dinitrotoluene	< 200	ug/L	130		3/23/2022 16:42
Cresols (as m,p,o-Cresol)	4080	ug/L	200000		3/23/2022 16:42
Hexachlorobenzene	< 200	ug/L	130		3/23/2022 16:42
Hexachlorobutadiene	< 200	ug/L	500		3/23/2022 16:42
Hexachloroethane	< 200	ug/L	3000		3/23/2022 16:42
Nitrobenzene	< 200	ug/L	2000		3/23/2022 16:42
Pentachlorophenol	< 400	ug/L	100000		3/23/2022 16:42
Pyridine	356	ug/L	5000		3/23/2022 16:42

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
2,4,6-Tribromophenol	87.5	29.6 - 139		3/23/2022 16:42
2-Fluorobiphenyl	69.4	5 - 124		3/23/2022 16:42
2-Fluorophenol	72.3	10 - 122		3/23/2022 16:42
Nitrobenzene-d5	67.8	28.7 - 119		3/23/2022 16:42
Phenol-d5	70.6	10 - 115		3/23/2022 16:42
Terphenyl-d14	77.5	32.2 - 142		3/23/2022 16:42

Method Reference(s): EPA 8270D
 EPA 1311 / 3510C
Preparation Date: 3/21/2022
Data File: B60603.D

TCLP Herbicides

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
2,4,5-TP (Silvex)	<0.25	mg/L	1		3/24/2022
2,4-D	<0.25	mg/L	10		3/24/2022

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Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Sample Identifier: COG TAR-03172022

Lab Sample ID: 221148-01A

Date Sampled: 3/17/2022 14:45

Matrix: TCLP Extract

Date Received: 3/18/2022

Method Reference(s): EPA 8321B
EPA 1311
Subcontractor ELAP ID: 10709

TCLP Mercury

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
Mercury	0.0106	mg/L	0.2		3/23/2022 06:37

Method Reference(s): EPA 7470A
EPA 1311
Preparation Date: 3/22/2022
Data File: Hg220323A

TCLP Pesticides

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
Chlordane	< 2.00	ug/L	30		3/21/2022 15:41
Endrin	< 1.00	ug/L	20		3/21/2022 15:41
gamma-BHC (Lindane)	< 1.00	ug/L	400		3/21/2022 15:41
Heptachlor	< 1.00	ug/L	8		3/21/2022 15:41
Heptachlor Epoxide	2.11	ug/L	8	P	3/21/2022 15:41
Methoxychlor	2.34	ug/L	10000	P	3/21/2022 15:41
Toxaphene	< 20.0	ug/L	500		3/21/2022 15:41

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Decachlorobiphenyl (1)	49.8	15.5 - 160		3/21/2022 15:41
Tetrachloro-m-xylene (1)	23.4	16.9 - 135		3/21/2022 15:41

Method Reference(s): EPA 8081B
EPA 1311 / 3510C
Preparation Date: 3/21/2022

TCLP RCRA Metals (ICP)

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
Arsenic	< 0.500	mg/L	5		3/22/2022 14:44
Barium	< 0.500	mg/L	100		3/22/2022 14:44
Cadmium	< 0.0250	mg/L	1		3/22/2022 14:44

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Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Sample Identifier: COG TAR-03172022

Lab Sample ID: 221148-01A

Date Sampled: 3/17/2022 14:45

Matrix: TCLP Extract

Date Received: 3/18/2022

Chromium	< 0.500	mg/L	5	3/22/2022 14:44
Lead	< 0.500	mg/L	5	3/22/2022 14:44
Selenium	< 0.200	mg/L	1	3/22/2022 14:44
Silver	< 0.500	mg/L	5	3/22/2022 14:44

Method Reference(s): EPA 6010C
EPA 1311 / 3005A
Preparation Date: 3/21/2022
Data File: 220322B

TCLP Volatile Organics

Analyte	Result	Units	Regulatory Limit	Qualifier	Date Analyzed
1,1-Dichloroethene	< 200	ug/L	700		3/23/2022 15:37
1,2-Dichloroethane	< 200	ug/L	500		3/23/2022 15:37
2-Butanone	< 1000	ug/L	200000		3/23/2022 15:37
Benzene	6780	ug/L	500		3/23/2022 15:37
Carbon Tetrachloride	< 200	ug/L	500		3/23/2022 15:37
Chlorobenzene	< 200	ug/L	100000		3/23/2022 15:37
Chloroform	< 200	ug/L	6000		3/23/2022 15:37
Tetrachloroethene	< 200	ug/L	700		3/23/2022 15:37
Trichloroethene	< 200	ug/L	500		3/23/2022 15:37
Vinyl chloride	< 200	ug/L	200		3/23/2022 15:37

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
1,2-Dichloroethane-d4	114	81.1 - 136		3/23/2022 15:37
4-Bromofluorobenzene	96.4	75.8 - 132		3/23/2022 15:37
Pentafluorobenzene	109	82 - 132		3/23/2022 15:37
Toluene-D8	112	64.6 - 137	*	3/23/2022 15:37

Method Reference(s): EPA 8260C
EPA 1311 / 5030C
Data File: z07962.D



Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: Sludge

Mercury

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Mercury	<0.00716	mg/Kg		3/23/2022 09:33

Method Reference(s): EPA 7471B
Preparation Date: 3/22/2022
Data File: Hg220323C
QC Batch ID: QC220322HgSoil
QC Number: Blk 1

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Report Prepared Wednesday, March 23, 2022



QC Report for Laboratory Control Sample and Control Sample Duplicate

Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Lab Project ID: 221148

Matrix: Sludge

Mercury

Analyte	LCS	LCSD	Spike	LCS	LCSD	LCS %	LCSD %	% Rec	LCS	LCSD	Relative %	RPD	RPD	Date
	Added	Added	Units	Result	Result	Recovery	Recovery	Limits	Outliers	Outliers	Difference	Limit	Outliers	Analyzed
Mercury	0.0760	0.0759	mg/Kg	0.0809	0.0813	106	107	80 - 120			0.695	20		3/23/2022

Method Reference(s): EPA 7471B
 Preparation Date: 3/22/2022
 Data File: Hg220323C
 QC Number: 1
 QC Batch ID: QC220322HgSoil

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: Sludge

TAL Metals (ICP)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>	
Aluminum	<23.6	mg/Kg		3/23/2022	17:28
Antimony	<2.83	mg/Kg		3/23/2022	17:28
Arsenic	<0.472	mg/Kg		3/23/2022	17:28
Barium	<4.72	mg/Kg		3/23/2022	17:28
Beryllium	<0.236	mg/Kg		3/23/2022	17:28
Cadmium	<0.236	mg/Kg		3/23/2022	17:28
Calcium	<118	mg/Kg		3/23/2022	17:28
Chromium	<0.472	mg/Kg		3/23/2022	17:28
Cobalt	<2.36	mg/Kg		3/23/2022	17:28
Copper	<0.943	mg/Kg		3/23/2022	17:28
Iron	<9.43	mg/Kg		3/25/2022	08:38
Lead	<0.472	mg/Kg		3/24/2022	14:27
Magnesium	<118	mg/Kg		3/23/2022	17:28
Manganese	<0.708	mg/Kg		3/23/2022	17:28
Molybdenum	<1.18	mg/Kg		3/23/2022	17:28
Nickel	<1.89	mg/Kg		3/23/2022	17:28
Potassium	<118	mg/Kg		3/23/2022	17:28
Selenium	<0.943	mg/Kg		3/23/2022	17:28
Silver	<0.472	mg/Kg		3/23/2022	17:28
Sodium	<118	mg/Kg		3/23/2022	17:28
Thallium	<1.18	mg/Kg		3/23/2022	17:28
Vanadium	<1.18	mg/Kg		3/23/2022	17:28
Zinc	<2.83	mg/Kg		3/23/2022	17:28

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: Sludge

TAL Metals (ICP)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
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Method Reference(s):	EPA 6010C EPA 3050B
Preparation Date:	3/22/2022
Data File:	220323C
QC Batch ID:	QC220322Soil
QC Number:	Blk 1

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QC Report for Laboratory Control Sample and Control Sample Duplicate

Client: Invernum Engineering, P.C.

Project Reference: COG Tar - Battery

Lab Project ID: 221148

Matrix: Sludge

RCRA Metals (ICP)

Table with columns: Analyte, LCS Added, LCSD Added, Spike Units, LCS Result, LCSD Result, LCS Recovery, LCSD Recovery, % Rec, Limits, LCS Outliers, LCSD Outliers, Relative % Difference, RPD Limit, RPD Outliers, Date Analyzed. Rows include elements like Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Potassium.

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QC Report for Laboratory Control Sample and Control Sample Duplicate

Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Lab Project ID: 221148

Matrix: Sludge

RCRA Metals (ICP)

<u>Analyte</u>	<u>Added</u>	<u>Added</u>	<u>Units</u>	<u>Result</u>	<u>Result</u>	<u>Recovery</u>	<u>Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Outliers</u>	<u>Difference</u>	<u>Limit</u>	<u>Outliers</u>	<u>Date</u>
	<u>LCS</u>	<u>LCSD</u>	<u>Spike</u>	<u>LCS</u>	<u>LCSD</u>	<u>LCS %</u>	<u>LCSD %</u>	<u>% Rec</u>	<u>LCS</u>	<u>LCSD</u>	<u>Relative %</u>	<u>RPD</u>	<u>RPD</u>	<u>Analyzed</u>
Selenium	117	117	mg/Kg	107	104	91.4	89.1	80 - 120			2.54	20		3/23/2022
Silver	11.7	11.7	mg/Kg	11.0	10.9	94.3	93.5	80 - 120			0.879	20		3/23/2022
Sodium	561	561	mg/Kg	544	546	96.9	97.3	80 - 120			0.378	20		3/23/2022
Thallium	117	117	mg/Kg	117	115	100	98.6	80 - 120			1.81	20		3/23/2022
Vanadium	46.7	46.7	mg/Kg	48.9	48.1	105	103	80 - 120			1.70	20		3/23/2022
Zinc	117	117	mg/Kg	113	111	96.8	95.3	80 - 120			1.54	20		3/23/2022

Method Reference(s): EPA 6010C

EPA 3050B

Preparation Date: 3/22/2022

Data File: 220323C

QC Number: 1

QC Batch ID: QC220322Soil

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: Sludge

PCBs

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>	
PCB-1016	<0.0282	mg/Kg		3/23/2022	12:51
PCB-1221	<0.0282	mg/Kg		3/23/2022	12:51
PCB-1232	<0.0282	mg/Kg		3/23/2022	12:51
PCB-1242	<0.0282	mg/Kg		3/23/2022	12:51
PCB-1248	<0.0282	mg/Kg		3/23/2022	12:51
PCB-1254	<0.0282	mg/Kg		3/23/2022	12:51
PCB-1260	<0.0282	mg/Kg		3/23/2022	12:51
PCB-1262	<0.0282	mg/Kg		3/23/2022	12:51
PCB-1268	<0.0282	mg/Kg		3/23/2022	12:51

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>	
Tetrachloro-m-xylene	75.2	12.7 - 101		3/23/2022	12:51

Method Reference(s): EPA 8082A
EPA 3546
Preparation Date: 3/21/2022
Data File: PC112794.D
QC Batch ID: QC220321PCBS
QC Number: BlkC 1

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QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Lab Project ID: 221148

Matrix: Sludge

PCBs

<u>Analyte</u>	<u>Spike Added</u>	<u>Spike Units</u>	<u>LCS Result</u>	<u>LCS % Recovery</u>	<u>% Rec Limits</u>	<u>LCS Outliers</u>	<u>Date Analyzed</u>
PCB-1016/1260	0.140	mg/Kg	0.0633	45.1	10 - 102		3/23/2022

Method Reference(s): EPA 8082A
EPA 3546

Preparation Date: 3/21/2022

Data File: PC112795.D

QC Number: LCSC 1

QC Batch ID: QC220321PCBS

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: Sludge

Semi-Volatile Organics (Acid/Base Neutrals)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
1,1-Biphenyl	<282	ug/Kg		3/23/2022 15:15
1,2,4,5-Tetrachlorobenzene	<282	ug/Kg		3/23/2022 15:15
1,2,4-Trichlorobenzene	<282	ug/Kg		3/23/2022 15:15
1,2-Dichlorobenzene	<282	ug/Kg		3/23/2022 15:15
1,3-Dichlorobenzene	<282	ug/Kg		3/23/2022 15:15
1,4-Dichlorobenzene	<282	ug/Kg		3/23/2022 15:15
2,2-Oxybis (1-chloropropane)	<282	ug/Kg		3/23/2022 15:15
2,3,4,6-Tetrachlorophenol	<282	ug/Kg		3/23/2022 15:15
2,4,5-Trichlorophenol	<282	ug/Kg		3/23/2022 15:15
2,4,6-Trichlorophenol	<282	ug/Kg		3/23/2022 15:15
2,4-Dichlorophenol	<282	ug/Kg		3/23/2022 15:15
2,4-Dimethylphenol	<282	ug/Kg		3/23/2022 15:15
2,4-Dinitrophenol	<1130	ug/Kg		3/23/2022 15:15
2,4-Dinitrotoluene	<282	ug/Kg		3/23/2022 15:15
2,6-Dinitrotoluene	<282	ug/Kg		3/23/2022 15:15
2-Chloronaphthalene	<282	ug/Kg		3/23/2022 15:15
2-Chlorophenol	<282	ug/Kg		3/23/2022 15:15
2-Methylnapthalene	<282	ug/Kg		3/23/2022 15:15
2-Methylphenol	<282	ug/Kg		3/23/2022 15:15
2-Nitroaniline	<282	ug/Kg		3/23/2022 15:15
2-Nitrophenol	<282	ug/Kg		3/23/2022 15:15
3&4-Methylphenol	<282	ug/Kg		3/23/2022 15:15
3,3'-Dichlorobenzidine	<282	ug/Kg		3/23/2022 15:15
3-Nitroaniline	<282	ug/Kg		3/23/2022 15:15
4,6-Dinitro-2-methylphenol	<565	ug/Kg		3/23/2022 15:15
4-Bromophenyl phenyl ether	<282	ug/Kg		3/23/2022 15:15
4-Chloro-3-methylphenol	<282	ug/Kg		3/23/2022 15:15

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: Sludge

Semi-Volatile Organics (Acid/Base Neutrals)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
4-Chloroaniline	<282	ug/Kg		3/23/2022 15:15
4-Chlorophenyl phenyl ether	<282	ug/Kg		3/23/2022 15:15
4-Nitroaniline	<282	ug/Kg		3/23/2022 15:15
4-Nitrophenol	<282	ug/Kg		3/23/2022 15:15
Acenaphthene	<282	ug/Kg		3/23/2022 15:15
Acenaphthylene	<282	ug/Kg		3/23/2022 15:15
Acetophenone	<282	ug/Kg		3/23/2022 15:15
Anthracene	<282	ug/Kg		3/23/2022 15:15
Atrazine	<282	ug/Kg		3/23/2022 15:15
Benzaldehyde	<282	ug/Kg		3/23/2022 15:15
Benzo (a) anthracene	<282	ug/Kg		3/23/2022 15:15
Benzo (a) pyrene	<282	ug/Kg		3/23/2022 15:15
Benzo (b) fluoranthene	<282	ug/Kg		3/23/2022 15:15
Benzo (g,h,i) perylene	<282	ug/Kg		3/23/2022 15:15
Benzo (k) fluoranthene	<282	ug/Kg		3/23/2022 15:15
Bis (2-chloroethoxy) methane	<282	ug/Kg		3/23/2022 15:15
Bis (2-chloroethyl) ether	<282	ug/Kg		3/23/2022 15:15
Bis (2-ethylhexyl) phthalate	<282	ug/Kg		3/23/2022 15:15
Butylbenzylphthalate	<282	ug/Kg		3/23/2022 15:15
Caprolactam	<282	ug/Kg		3/23/2022 15:15
Carbazole	<282	ug/Kg		3/23/2022 15:15
Chrysene	<282	ug/Kg		3/23/2022 15:15
Dibenz (a,h) anthracene	<282	ug/Kg		3/23/2022 15:15
Dibenzofuran	<282	ug/Kg		3/23/2022 15:15
Diethyl phthalate	<282	ug/Kg		3/23/2022 15:15
Dimethyl phthalate	<282	ug/Kg		3/23/2022 15:15
Di-n-butyl phthalate	<282	ug/Kg		3/23/2022 15:15
Di-n-octylphthalate	<282	ug/Kg		3/23/2022 15:15

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: Sludge

Semi-Volatile Organics (Acid/Base Neutrals)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Fluoranthene	<282	ug/Kg		3/23/2022 15:15
Fluorene	<282	ug/Kg		3/23/2022 15:15
Hexachlorobenzene	<282	ug/Kg		3/23/2022 15:15
Hexachlorobutadiene	<282	ug/Kg		3/23/2022 15:15
Hexachlorocyclopentadiene	<1130	ug/Kg		3/23/2022 15:15
Hexachloroethane	<282	ug/Kg		3/23/2022 15:15
Indeno (1,2,3-cd) pyrene	<282	ug/Kg		3/23/2022 15:15
Isophorone	<282	ug/Kg		3/23/2022 15:15
Naphthalene	<282	ug/Kg		3/23/2022 15:15
Nitrobenzene	<282	ug/Kg		3/23/2022 15:15
N-Nitroso-di-n-propylamine	<282	ug/Kg		3/23/2022 15:15
N-Nitrosodiphenylamine	<282	ug/Kg		3/23/2022 15:15
Pentachlorophenol	<565	ug/Kg		3/23/2022 15:15
Phenanthrene	<282	ug/Kg		3/23/2022 15:15
Phenol	<282	ug/Kg		3/23/2022 15:15
Pyrene	<282	ug/Kg		3/23/2022 15:15

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
2,4,6-Tribromophenol	49.2	35.4 - 92.4		3/23/2022 15:15
2-Fluorobiphenyl	48.3	39.6 - 84.4		3/23/2022 15:15
2-Fluorophenol	52.7	35.5 - 78.9		3/23/2022 15:15
Nitrobenzene-d5	44.4	36.5 - 78.2		3/23/2022 15:15
Phenol-d5	55.1	37.1 - 78.3		3/23/2022 15:15
Terphenyl-d14	53.3	42.3 - 103		3/23/2022 15:15

Method Reference(s): EPA 8270D
EPA 3546
Preparation Date: 3/21/2022
Data File: B60600.D
QC Batch ID: QC220321ABNS
QC Number: Blk 1

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

Report Prepared Friday, March 25, 2022



QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Lab Project ID: 221148

Matrix: Sludge

Semi-Volatile Organics (Acid/Base Neutrals)

Analyte	Spike Added	Spike Units	LCS Result	LCS % Recovery	% Rec Limits	LCS Outliers	Date Analyzed
1,2,4-Trichlorobenzene	2810	ug/Kg	1650	58.9	36.4 - 88		3/23/2022
1,4-Dichlorobenzene	2810	ug/Kg	1570	56.0	34.3 - 78.9		3/23/2022
2,4-Dinitrotoluene	2810	ug/Kg	1840	65.4	40.2 - 99.7		3/23/2022
2-Chlorophenol	4210	ug/Kg	2740	65.1	49.5 - 80.8		3/23/2022
4-Chloro-3-methylphenol	4210	ug/Kg	2890	68.6	52.2 - 87.8		3/23/2022
4-Nitrophenol	4210	ug/Kg	1660	39.5	23.3 - 102		3/23/2022
Acenaphthene	2810	ug/Kg	1830	65.0	43.5 - 87.2		3/23/2022
N-Nitroso-di-n-propylamine	2810	ug/Kg	1690	60.1	32.6 - 89.2		3/23/2022
Pentachlorophenol	4210	ug/Kg	2370	56.3	41.8 - 107		3/23/2022
Phenol	4210	ug/Kg	2800	66.4	48.8 - 79.3		3/23/2022
Pyrene	2810	ug/Kg	2040	72.5	47.1 - 104		3/23/2022

Method Reference(s): EPA 8270D
 EPA 3546
 Preparation Date: 3/21/2022
 Data File: B60601.D
 QC Number: LCS 1
 QC Batch ID: QC220321ABNS

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: Sludge

Volatile Organics

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	<2.00	ug/Kg		3/22/2022 11:38
1,1,1-Trichloroethane	<2.00	ug/Kg		3/22/2022 11:38
1,1,2,2-Tetrachloroethane	<2.00	ug/Kg		3/22/2022 11:38
1,1,2-Trichloroethane	<2.00	ug/Kg		3/22/2022 11:38
1,1-Dichloroethane	<2.00	ug/Kg		3/22/2022 11:38
1,1-Dichloroethene	<2.00	ug/Kg		3/22/2022 11:38
1,1-Dichloropropene	<2.00	ug/Kg		3/22/2022 11:38
1,2,3-Trichlorobenzene	<5.00	ug/Kg		3/22/2022 11:38
1,2,3-Trichloropropane	<2.00	ug/Kg		3/22/2022 11:38
1,2,4-Trichlorobenzene	<5.00	ug/Kg		3/22/2022 11:38
1,2,4-Trimethylbenzene	<2.00	ug/Kg		3/22/2022 11:38
1,2-Dibromo-3-Chloropropane	<10.0	ug/Kg		3/22/2022 11:38
1,2-Dibromoethane	<2.00	ug/Kg		3/22/2022 11:38
1,2-Dichlorobenzene	<2.00	ug/Kg		3/22/2022 11:38
1,2-Dichloroethane	<2.00	ug/Kg		3/22/2022 11:38
1,2-Dichloropropane	<2.00	ug/Kg		3/22/2022 11:38
1,3,5-Trimethylbenzene	<2.00	ug/Kg		3/22/2022 11:38
1,3-Dichlorobenzene	<2.00	ug/Kg		3/22/2022 11:38
1,3-Dichloropropane	<2.00	ug/Kg		3/22/2022 11:38
1,4-Dichlorobenzene	<2.00	ug/Kg		3/22/2022 11:38
1,4-Dioxane	<10.0	ug/Kg		3/22/2022 11:38
2,2-Dichloropropane	<2.00	ug/Kg		3/22/2022 11:38
2-Butanone	<10.0	ug/Kg		3/22/2022 11:38
2-Chlorotoluene	<2.00	ug/Kg		3/22/2022 11:38
2-Hexanone	<5.00	ug/Kg		3/22/2022 11:38
4-Chlorotoluene	<2.00	ug/Kg		3/22/2022 11:38
4-Methyl-2-pentanone	<5.00	ug/Kg		3/22/2022 11:38

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Report Prepared Tuesday, September 23, 2025



Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: Sludge

Volatile Organics

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Acetone	<10.0	ug/Kg		3/22/2022 11:38
Benzene	<2.00	ug/Kg		3/22/2022 11:38
Bromobenzene	<5.00	ug/Kg		3/22/2022 11:38
Bromochloromethane	<5.00	ug/Kg		3/22/2022 11:38
Bromodichloromethane	<2.00	ug/Kg		3/22/2022 11:38
Bromoform	<5.00	ug/Kg		3/22/2022 11:38
Bromomethane	<2.00	ug/Kg		3/22/2022 11:38
Carbon disulfide	<2.00	ug/Kg		3/22/2022 11:38
Carbon Tetrachloride	<2.00	ug/Kg		3/22/2022 11:38
Chlorobenzene	<2.00	ug/Kg		3/22/2022 11:38
Chloroethane	<2.00	ug/Kg		3/22/2022 11:38
Chloroform	<2.00	ug/Kg		3/22/2022 11:38
Chloromethane	<2.00	ug/Kg		3/22/2022 11:38
cis-1,2-Dichloroethene	<2.00	ug/Kg		3/22/2022 11:38
cis-1,3-Dichloropropene	<2.00	ug/Kg		3/22/2022 11:38
Cyclohexane	<10.0	ug/Kg		3/22/2022 11:38
Dibromochloromethane	<2.00	ug/Kg		3/22/2022 11:38
Dibromomethane	<2.00	ug/Kg		3/22/2022 11:38
Dichlorodifluoromethane	<2.00	ug/Kg		3/22/2022 11:38
Ethylbenzene	<2.00	ug/Kg		3/22/2022 11:38
Freon 113	<2.00	ug/Kg		3/22/2022 11:38
Isopropylbenzene	<2.00	ug/Kg		3/22/2022 11:38
m,p-Xylene	<2.00	ug/Kg		3/22/2022 11:38
Methyl acetate	<2.00	ug/Kg		3/22/2022 11:38
Methyl tert-butyl Ether	<2.00	ug/Kg		3/22/2022 11:38
Methylcyclohexane	<2.00	ug/Kg		3/22/2022 11:38
Methylene chloride	<5.00	ug/Kg		3/22/2022 11:38
Naphthalene	<5.00	ug/Kg		3/22/2022 11:38

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Report Prepared Tuesday, September 23, 2025



Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: Sludge

Volatile Organics

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>	
n-Butylbenzene	<2.00	ug/Kg		3/22/2022	11:38
n-Propylbenzene	<2.00	ug/Kg		3/22/2022	11:38
o-Xylene	<2.00	ug/Kg		3/22/2022	11:38
p-Isopropyltoluene	<2.00	ug/Kg		3/22/2022	11:38
sec-Butylbenzene	<2.00	ug/Kg		3/22/2022	11:38
Styrene	<5.00	ug/Kg		3/22/2022	11:38
tert-Butylbenzene	<2.00	ug/Kg		3/22/2022	11:38
Tetrachloroethene	<2.00	ug/Kg		3/22/2022	11:38
Toluene	<2.00	ug/Kg		3/22/2022	11:38
trans-1,2-Dichloroethene	<2.00	ug/Kg		3/22/2022	11:38
trans-1,3-Dichloropropene	<2.00	ug/Kg		3/22/2022	11:38
Trichloroethene	<2.00	ug/Kg		3/22/2022	11:38
Trichlorofluoromethane	<2.00	ug/Kg		3/22/2022	11:38
Vinyl chloride	<2.00	ug/Kg		3/22/2022	11:38

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>	
1,2-Dichloroethane-d4	109	86.3 - 115		3/22/2022	11:38
4-Bromofluorobenzene	92.5	80 - 112		3/22/2022	11:38
Pentafluorobenzene	104	90 - 110		3/22/2022	11:38
Toluene-D8	111	90 - 110	*	3/22/2022	11:38

Method Reference(s): EPA 8260C
 EPA 5035A -- H
Data File: z07932.D
QC Batch ID: voahl220322
QC Number: Blk 1

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Report Prepared Tuesday, September 23, 2025



Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: Sludge

Volatile Organics

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	<1000	ug/Kg		3/22/2022 15:38
1,1,1-Trichloroethane	<1000	ug/Kg		3/22/2022 15:38
1,1,2,2-Tetrachloroethane	<1000	ug/Kg		3/22/2022 15:38
1,1,2-Trichloroethane	<1000	ug/Kg		3/22/2022 15:38
1,1-Dichloroethane	<1000	ug/Kg		3/22/2022 15:38
1,1-Dichloroethene	<1000	ug/Kg		3/22/2022 15:38
1,1-Dichloropropene	<1000	ug/Kg		3/22/2022 15:38
1,2,3-Trichlorobenzene	<2500	ug/Kg		3/22/2022 15:38
1,2,3-Trichloropropane	<1000	ug/Kg		3/22/2022 15:38
1,2,4-Trichlorobenzene	<2500	ug/Kg		3/22/2022 15:38
1,2,4-Trimethylbenzene	<1000	ug/Kg		3/22/2022 15:38
1,2-Dibromo-3-Chloropropane	<5000	ug/Kg		3/22/2022 15:38
1,2-Dibromoethane	<1000	ug/Kg		3/22/2022 15:38
1,2-Dichlorobenzene	<1000	ug/Kg		3/22/2022 15:38
1,2-Dichloroethane	<1000	ug/Kg		3/22/2022 15:38
1,2-Dichloropropane	<1000	ug/Kg		3/22/2022 15:38
1,3,5-Trimethylbenzene	<1000	ug/Kg		3/22/2022 15:38
1,3-Dichlorobenzene	<1000	ug/Kg		3/22/2022 15:38
1,3-Dichloropropane	<1000	ug/Kg		3/22/2022 15:38
1,4-Dichlorobenzene	<1000	ug/Kg		3/22/2022 15:38
1,4-Dioxane	<5000	ug/Kg		3/22/2022 15:38
2,2-Dichloropropane	<1000	ug/Kg		3/22/2022 15:38
2-Butanone	<5000	ug/Kg		3/22/2022 15:38
2-Chlorotoluene	<1000	ug/Kg		3/22/2022 15:38
2-Hexanone	<2500	ug/Kg		3/22/2022 15:38
4-Chlorotoluene	<1000	ug/Kg		3/22/2022 15:38
4-Methyl-2-pentanone	<2500	ug/Kg		3/22/2022 15:38
Acetone	<5000	ug/Kg		3/22/2022 15:38

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Report Prepared Tuesday, September 23, 2025



Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: Sludge

Volatile Organics

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Benzene	<1000	ug/Kg		3/22/2022 15:38
Bromobenzene	<2500	ug/Kg		3/22/2022 15:38
Bromochloromethane	<2500	ug/Kg		3/22/2022 15:38
Bromodichloromethane	<1000	ug/Kg		3/22/2022 15:38
Bromoform	<2500	ug/Kg		3/22/2022 15:38
Bromomethane	<1000	ug/Kg		3/22/2022 15:38
Carbon disulfide	<1000	ug/Kg		3/22/2022 15:38
Carbon Tetrachloride	<1000	ug/Kg		3/22/2022 15:38
Chlorobenzene	<1000	ug/Kg		3/22/2022 15:38
Chloroethane	<1000	ug/Kg		3/22/2022 15:38
Chloroform	<1000	ug/Kg		3/22/2022 15:38
Chloromethane	<1000	ug/Kg		3/22/2022 15:38
cis-1,2-Dichloroethene	<1000	ug/Kg		3/22/2022 15:38
cis-1,3-Dichloropropene	<1000	ug/Kg		3/22/2022 15:38
Cyclohexane	<5000	ug/Kg		3/22/2022 15:38
Dibromochloromethane	<1000	ug/Kg		3/22/2022 15:38
Dibromomethane	<1000	ug/Kg		3/22/2022 15:38
Dichlorodifluoromethane	<1000	ug/Kg		3/22/2022 15:38
Ethylbenzene	<1000	ug/Kg		3/22/2022 15:38
Freon 113	<1000	ug/Kg		3/22/2022 15:38
Isopropylbenzene	<1000	ug/Kg		3/22/2022 15:38
m,p-Xylene	<1000	ug/Kg		3/22/2022 15:38
Methyl acetate	<1000	ug/Kg		3/22/2022 15:38
Methyl tert-butyl Ether	<1000	ug/Kg		3/22/2022 15:38
Methylcyclohexane	<1000	ug/Kg		3/22/2022 15:38
Methylene chloride	<2500	ug/Kg		3/22/2022 15:38
Naphthalene	<2500	ug/Kg		3/22/2022 15:38
n-Butylbenzene	<1000	ug/Kg		3/22/2022 15:38

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Report Prepared Tuesday, September 23, 2025



Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: Sludge

Volatile Organics

Analyte	Result	Units	Qualifier	Date Analyzed	
n-Propylbenzene	<1000	ug/Kg		3/22/2022	15:38
o-Xylene	<1000	ug/Kg		3/22/2022	15:38
p-Isopropyltoluene	<1000	ug/Kg		3/22/2022	15:38
sec-Butylbenzene	<1000	ug/Kg		3/22/2022	15:38
Styrene	<2500	ug/Kg		3/22/2022	15:38
tert-Butylbenzene	<1000	ug/Kg		3/22/2022	15:38
Tetrachloroethene	<1000	ug/Kg		3/22/2022	15:38
Toluene	<1000	ug/Kg		3/22/2022	15:38
trans-1,2-Dichloroethene	<1000	ug/Kg		3/22/2022	15:38
trans-1,3-Dichloropropene	<1000	ug/Kg		3/22/2022	15:38
Trichloroethene	<1000	ug/Kg		3/22/2022	15:38
Trichlorofluoromethane	<1000	ug/Kg		3/22/2022	15:38
Vinyl chloride	<1000	ug/Kg		3/22/2022	15:38

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed	
1,2-Dichloroethane-d4	113	86.3 - 115		3/22/2022	15:38
4-Bromofluorobenzene	100	80 - 112		3/22/2022	15:38
Pentafluorobenzene	102	90 - 110		3/22/2022	15:38
Toluene-D8	106	90 - 110		3/22/2022	15:38

Method Reference(s): EPA 8260C
 EPA 5035A -- H
Data File: z07941.D
QC Batch ID: voahl220322
QC Number: Blk 2

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

Report Prepared Tuesday, September 23, 2025



QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Lab Project ID: 221148

Matrix: Sludge

Volatile Organics

Analyte	Spike Added	Spike Units	LCS Result	LCS % Recovery	% Rec Limits	LCS Outliers	Date Analyzed
1,1,1-Trichloroethane	20.0	ug/Kg	18.6	93.2	70.9 - 135		3/22/2022
1,1,2,2-Tetrachloroethane	20.0	ug/Kg	20.0	100	31.6 - 154		3/22/2022
1,1,2-Trichloroethane	20.0	ug/Kg	20.1	100	62 - 132		3/22/2022
1,1-Dichloroethane	20.0	ug/Kg	19.0	95.2	73 - 128		3/22/2022
1,1-Dichloroethene	20.0	ug/Kg	17.7	88.3	61.7 - 119		3/22/2022
1,2-Dichlorobenzene	20.0	ug/Kg	18.4	91.8	61 - 118		3/22/2022
1,2-Dichloroethane	20.0	ug/Kg	20.2	101	73.4 - 123		3/22/2022
1,2-Dichloropropane	20.0	ug/Kg	19.6	97.9	71.3 - 123		3/22/2022
1,3-Dichlorobenzene	20.0	ug/Kg	17.9	89.5	68.7 - 112		3/22/2022
1,4-Dichlorobenzene	20.0	ug/Kg	17.9	89.7	66.9 - 113		3/22/2022
Benzene	20.0	ug/Kg	19.9	99.7	77.8 - 119		3/22/2022
Bromodichloromethane	20.0	ug/Kg	19.4	97.0	65.7 - 125		3/22/2022
Bromoform	20.0	ug/Kg	18.7	93.7	54.7 - 130		3/22/2022
Bromomethane	20.0	ug/Kg	17.2	86.0	44.6 - 167		3/22/2022
Carbon Tetrachloride	20.0	ug/Kg	18.1	90.6	61.8 - 138		3/22/2022
Chlorobenzene	20.0	ug/Kg	19.7	98.3	77.2 - 108		3/22/2022

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.



QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Lab Project ID: 221148

Matrix: Sludge

Volatile Organics

Analyte	Spike Added	Spike Units	LCS Result	LCS % Recovery	% Rec Limits	LCS Outliers	Date Analyzed
Chloroethane	20.0	ug/Kg	19.3	96.6	55.5 - 151		3/22/2022
Chloroform	20.0	ug/Kg	19.7	98.7	70.1 - 134		3/22/2022
Chloromethane	20.0	ug/Kg	15.4	77.2	42.4 - 168		3/22/2022
cis-1,3-Dichloropropene	20.0	ug/Kg	19.9	99.5	66.7 - 122		3/22/2022
Dibromochloromethane	20.0	ug/Kg	19.8	99.2	61.2 - 130		3/22/2022
Ethylbenzene	20.0	ug/Kg	19.1	95.4	71.6 - 112		3/22/2022
Methylene chloride	20.0	ug/Kg	19.3	96.6	38.2 - 155		3/22/2022
Tetrachloroethene	20.0	ug/Kg	19.1	95.5	61.4 - 137		3/22/2022
Toluene	20.0	ug/Kg	19.6	98.0	71.1 - 124		3/22/2022
trans-1,2-Dichloroethene	20.0	ug/Kg	18.7	93.6	67.3 - 127		3/22/2022
trans-1,3-Dichloropropene	20.0	ug/Kg	19.8	99.1	55 - 126		3/22/2022
Trichloroethene	20.0	ug/Kg	19.7	98.3	69.3 - 128		3/22/2022
Trichlorofluoromethane	20.0	ug/Kg	18.1	90.3	64 - 140		3/22/2022
Vinyl chloride	20.0	ug/Kg	16.7	83.7	51.2 - 160		3/22/2022

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QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Lab Project ID: 221148

Matrix: Sludge

Volatile Organics

<u>Analyte</u>	<u>Spike Added</u>	<u>Spike Units</u>	<u>LCS Result</u>	<u>LCS % Recovery</u>	<u>% Rec Limits</u>	<u>LCS Outliers</u>	<u>Date Analyzed</u>
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Method Reference(s):	EPA 8260C
	EPA 5035A -- H
Data File:	z07931.D
QC Number:	LCS 1
QC Batch ID:	voah1220322

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.



Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: Sludge

Total Cyanide

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Cyanide, Total	<0.472	mg/Kg		3/25/2022

Method Reference(s): EPA 9014
EPA 9010C
Preparation Date: 3/25/2022
QC Batch ID: QC220325WTCN
QC Number: Blk 1



QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Lab Project ID: 221148

Matrix: Sludge

Total Cyanide

<u>Analyte</u>	<u>Spike Added</u>	<u>Spike Units</u>	<u>LCS Result</u>	<u>LCS % Recovery</u>	<u>% Rec Limits</u>	<u>LCS Outliers</u>	<u>Date Analyzed</u>
Cyanide, Total	4.85	mg/Kg	4.68	96.3	85 - 115		3/25/2022

Method Reference(s): EPA 9014
EPA 9010C
Preparation Date: 3/25/2022
QC Number: 1
QC Batch ID: QC220325WTCN

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: TCLP Fluid

TCLP Semi-Volatile Organics

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
1,2-Diphenylhydrazine (as Azobenzene)		ug/L		
1,4-Dichlorobenzene	<40.0	ug/L		3/21/2022 13:20
2,4,5-Trichlorophenol	<40.0	ug/L		3/21/2022 13:20
2,4,6-Trichlorophenol	<40.0	ug/L		3/21/2022 13:20
2,4-Dinitrotoluene	<40.0	ug/L		3/21/2022 13:20
Cresols (as m,p,o-Cresol)	<80.0	ug/L		3/21/2022 13:20
Hexachlorobenzene	<40.0	ug/L		3/21/2022 13:20
Hexachlorobutadiene	<40.0	ug/L		3/21/2022 13:20
Hexachloroethane	<40.0	ug/L		3/21/2022 13:20
Nitrobenzene	<40.0	ug/L		3/21/2022 13:20
Pentachlorophenol	<80.0	ug/L		3/21/2022 13:20
Pyridine	<40.0	ug/L		3/21/2022 13:20

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
2,4,6-Tribromophenol	97.1	29.6 - 139		3/21/2022 13:20
2-Fluorobiphenyl	50.0	5 - 124		3/21/2022 13:20
2-Fluorophenol	65.2	10 - 122		3/21/2022 13:20
Nitrobenzene-d5	49.6	28.7 - 119		3/21/2022 13:20
Phenol-d5	56.3	10 - 115		3/21/2022 13:20
Terphenyl-d14	68.3	32.2 - 142		3/21/2022 13:20

Method Reference(s): EPA 8270D
EPA 3510C
Preparation Date: 3/21/2022
QC Batch ID: QC220321ABNT
QC Number: Blk 1

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QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Lab Project ID: 221148

Matrix: TCLP Fluid

TCLP Semi-Volatile Organics

<u>Analyte</u>	<u>Spike Added</u>	<u>Spike Units</u>	<u>LCS Result</u>	<u>LCS % Recovery</u>	<u>% Rec Limits</u>	<u>LCS Outliers</u>	<u>Date Analyzed</u>
1,4-Dichlorobenzene	200	ug/L	131	65.5	27.5 - 93.4		3/21/2022
2,4,6-Trichlorophenol	300	ug/L	286	95.4	50.5 - 126		3/21/2022
2,4-Dinitrotoluene	200	ug/L	176	87.9	55.2 - 112		3/21/2022
Pentachlorophenol	300	ug/L	326	109	26.5 - 160		3/21/2022

Method Reference(s): EPA 8270D
EPA 3510C
Preparation Date: 3/21/2022
Data File: B60547.D
QC Number: LCS 1
QC Batch ID: QC220321ABNT

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: TCLP Fluid

TCLP Mercury

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Mercury	<0.00200	mg/L		3/23/2022 06:14

Method Reference(s): EPA 7470A
Preparation Date: 3/22/2022
Data File: Hg220323A
QC Batch ID: QC220322HgTCLP
QC Number: Blk 1



QC Report for Laboratory Control Sample and Control Sample Duplicate

Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Lab Project ID: 221148

Matrix: TCLP Fluid

TCLP Mercury

<u>Analyte</u>	<u>LCS</u>	<u>LCSD</u>	<u>Spike</u>	<u>LCS</u>	<u>LCSD</u>	<u>LCS %</u>	<u>LCSD %</u>	<u>% Rec</u>	<u>LCS</u>	<u>LCSD</u>	<u>Relative %</u>	<u>RPD</u>	<u>RPD</u>	<u>Date</u>
<u>Added</u>	<u>Added</u>	<u>Units</u>	<u>Result</u>	<u>Result</u>	<u>Recovery</u>	<u>Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Outliers</u>	<u>Difference</u>	<u>Limit</u>	<u>Outliers</u>	<u>Analized</u>	
Mercury	0.0200	0.0200	mg/L	0.0182	0.0188	91.0	94.2	80 - 120			3.39	20	3/23/2022	

Method Reference(s): EPA 7470A
 Preparation Date: 3/22/2022
 Data File: Hg220323A
 QC Number: 1
 QC Batch ID: QC220322HgTCLP

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: TCLP Fluid

TCLP Pesticides

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Chlordane	<2.00	ug/L		3/21/2022 14:52
Endrin	<1.00	ug/L		3/21/2022 14:52
gamma-BHC (Lindane)	<1.00	ug/L		3/21/2022 14:52
Heptachlor	<1.00	ug/L		3/21/2022 14:52
Heptachlor Epoxide	<1.00	ug/L		3/21/2022 14:52
Methoxychlor	<1.00	ug/L		3/21/2022 14:52
Toxaphene	<20.0	ug/L		3/21/2022 14:52

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
Decachlorobiphenyl (1)	76.2	15.5 - 160		3/21/2022 14:52
Tetrachloro-m-xylene (1)	74.3	16.9 - 135		3/21/2022 14:52

Method Reference(s): EPA 8081B
 EPA 3510C
Preparation Date: 3/21/2022
QC Batch ID: QC220321PESTT
QC Number: Blk 1



QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Lab Project ID: 221148

Matrix: TCLP Fluid

TCLP Pesticides

Analyte	Spike Added	Spike Units	LCS Result	LCS % Recovery	% Rec Limits	LCS Outliers	Date Analyzed
Chlordane (1)	10.0	ug/L	8.86	88.6	N/A		3/21/2022
Endrin (1)	5.00	ug/L	4.05	81.0	33 - 140		3/21/2022
gamma-BHC (Lindane) (1)	5.00	ug/L	4.06	81.2	46.5 - 126		3/21/2022
Heptachlor (1)	5.00	ug/L	4.61	92.3	36.2 - 136		3/21/2022
Heptachlor Epoxide (1)	5.00	ug/L	4.50	90.0	51.9 - 132		3/21/2022
Methoxychlor (1)	5.00	ug/L	6.16	123	39.2 - 198		3/21/2022
Method Reference(s):							
			EPA 8081B				
			EPA 3510C				
Preparation Date:			3/21/2022				
QC Number:			LCS 1				
QC Batch ID:			QC220321PESTT				

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: TCLP Fluid

TCLP RCRA Metals (ICP)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>	
Arsenic	<0.500	mg/L		3/22/2022	13:35
Barium	<0.500	mg/L		3/22/2022	13:35
Cadmium	<0.0250	mg/L		3/22/2022	13:35
Chromium	<0.500	mg/L		3/22/2022	13:35
Lead	<0.500	mg/L		3/22/2022	13:35
Selenium	<0.200	mg/L		3/22/2022	13:35
Silver	<0.500	mg/L		3/22/2022	13:35

Method Reference(s): EPA 6010C
 EPA 3005
Preparation Date: 3/21/2022
Data File: 220322B
QC Batch ID: QC220321TCLP
QC Number: Blk 1



QC Report for Laboratory Control Sample and Control Sample Duplicate

Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Lab Project ID: 221148

Matrix: TCLP Fluid

TCLP Metals (TCP)

Analyte	LCS Added	LCSD Added	Spike Units	LCS Result	LCSD Result	LCS % Recovery	LCSD % Recovery	% Rec Limits	LCS Outliers	LCSD Outliers	Relative % Difference	RPD Limit	RPD Outliers	Date Analyzed
Arsenic	12.5	12.5	mg/L	11.9	12.2	95.2	97.8	80 - 120			2.69	20		3/22/2022
Barium	12.5	12.5	mg/L	12.7	12.9	102	103	80 - 120			1.25	20		3/22/2022
Cadmium	5.00	5.00	mg/L	5.04	5.10	101	102	80 - 120			1.21	20		3/22/2022
Chromium	12.5	12.5	mg/L	12.1	12.3	96.6	98.0	80 - 120			1.43	20		3/22/2022
Lead	12.5	12.5	mg/L	11.8	12.0	94.1	95.6	80 - 120			1.59	20		3/22/2022
Selenium	12.5	12.5	mg/L	12.5	12.7	99.9	102	80 - 120			1.91	20		3/22/2022
Silver	1.25	1.25	mg/L	1.20	1.21	95.6	97.0	80 - 120			1.40	20		3/22/2022

Method Reference(s): EPA 6010C
EPA 3005
Preparation Date: 3/21/2022
Data File: 220322B
QC Number: 1
QC Batch ID: QC220321TCLP

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: COG Tar - Battery
Lab Project ID: 221148
Matrix: TCLP Fluid

TCLP Volatile Organics

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
1,1-Dichloroethene	<20.0	ug/L		3/23/2022 14:39
1,2-Dichloroethane	<20.0	ug/L		3/23/2022 14:39
2-Butanone	<100	ug/L		3/23/2022 14:39
Benzene	<20.0	ug/L		3/23/2022 14:39
Carbon Tetrachloride	<20.0	ug/L		3/23/2022 14:39
Chlorobenzene	<20.0	ug/L		3/23/2022 14:39
Chloroform	<20.0	ug/L		3/23/2022 14:39
Tetrachloroethene	<20.0	ug/L		3/23/2022 14:39
Trichloroethene	<20.0	ug/L		3/23/2022 14:39
Vinyl chloride	<20.0	ug/L		3/23/2022 14:39

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
1,2-Dichloroethane-d4	111	81.1 - 136		3/23/2022 14:39
4-Bromofluorobenzene	100	75.8 - 132		3/23/2022 14:39
Pentafluorobenzene	112	82 - 132		3/23/2022 14:39
Toluene-D8	112	64.6 - 137		3/23/2022 14:39

Method Reference(s): EPA 8260C
 EPA 5030
Data File: z07959.D
QC Batch ID: voax220323
QC Number: Blk 1



QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: COG Tar - Battery

Lab Project ID: 221148

Matrix: TCLP Fluid

TCLP Volatile Organics

Analyte	Added Spike	Spike Units	LCS Result	LCS % Recovery	% Rec Limits	LCS Outliers	Date Analyzed
1,1-Dichloroethene	20.0	ug/L	18.4	91.9	65.5 - 116		3/23/2022
1,2-Dichloroethane	20.0	ug/L	20.6	103	78.3 - 122		3/23/2022
Benzene	20.0	ug/L	20.5	103	81.6 - 114		3/23/2022
Carbon Tetrachloride	20.0	ug/L	19.1	95.6	76.4 - 129		3/23/2022
Chlorobenzene	20.0	ug/L	19.8	98.8	77.2 - 106		3/23/2022
Chloroform	20.0	ug/L	20.1	100	84.5 - 122		3/23/2022
Tetrachloroethene	20.0	ug/L	19.6	98.1	64.4 - 130		3/23/2022
Trichloroethene	20.0	ug/L	20.3	102	73.4 - 122		3/23/2022
Vinyl chloride	20.0	ug/L	17.1	85.3	50.9 - 164		3/23/2022

Method Reference(s): EPA 8260C
 EPA 5030
 #07958.D
QC Number: LCS 1
QC Batch ID: voax220323

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Analytical Report Appendix

The reported results relate only to the samples as they have been received by the laboratory.

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All soil/sludge samples have been reported on a dry weight basis, unless qualified "reported as received". Other solids are reported as received.

Low level Volatiles blank reports for soil/solid matrix are based on a nominal 5 gram weight. Sample results and reporting limits are based on actual weight, which may be more or less than 5 grams.

The Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt. Sample condition requirements are defined under the 2003 NELAC Standard, sections 5.5.8.3.1 and 5.5.8.3.2.

NYSDOH ELAP does not certify for all parameters. Paradigm Environmental Services or the indicated subcontracted laboratory does hold certification for all analytes where certification is offered by ELAP unless otherwise specified. Aliquots separated for certain tests, such as TCLP, are indicated on the Chain of Custody and final reports with an "A" suffix.

Data qualifiers are used, when necessary, to provide additional information about the data. This information may be communicated as a flag or as text at the bottom of the report. Please refer to the following list of analyte-specific, frequently used data flags and their meaning:

"<" = Analyzed for but not detected at or above the quantitation limit.

"E" = Result has been estimated, calibration limit exceeded.

"H" = Denotes a parameter analyzed outside of holding time.

"Z" = See case narrative.

"D" = Sample, Laboratory Control Sample, or Matrix Spike Duplicate results above Relative Percent Difference limit.

"M" = Matrix spike recoveries outside QC limits. Matrix bias indicated.

"B" = Method blank contained trace levels of analyte. Refer to included method blank report.

"J" = Result estimated between the quantitation limit and half the quantitation limit.

"L" = Laboratory Control Sample recovery outside accepted QC limits.

"P" = Concentration differs by more than 40% between the primary and secondary analytical columns.

"NC" = Not calculable. Applicable to RPD if sample or duplicate result is non-detect or estimated (see primary report for data flags). Applicable to MS if sample is greater or equal to ten times the spike added. Applicable to sample surrogates or MS if sample dilution is 10x or higher.

"" = Indicates any recoveries outside associated acceptance windows. Surrogate outliers in samples are presumed matrix effects. LCS demonstrates method compliance unless otherwise noted.*

"(1)" = Indicates data from primary column used for QC calculation.

"A" = denotes a parameter for which ELAP does not offer approval as part of their laboratory certification program.

"F" = denotes a parameter for which Paradigm does not carry certification, the results for which should therefore only be used where ELAP certification is not required, such as personal exposure assessment.

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GENERAL TERMS AND CONDITIONS

LABORATORY SERVICES

These Terms and Conditions embody the whole agreement of the parties in the absence of a signed and executed contract between the Laboratory (LAB) and Client. They shall supersede all previous communications, representations, or agreements, either verbal or written, between the parties. The LAB specifically rejects all additional, inconsistent, or conflicting terms, whether printed or otherwise set forth in any purchase order or other communication from the Client to the LAB. The invalidity or unenforceability in whole or in part of any provision, term or condition hereof shall not affect in any way the validity or enforceability of the remainder of the Terms and Conditions. No waiver by LAB of any provision, term, or condition hereof or of any breach by or obligation of the Client hereunder shall constitute a waiver of such provision, term, or condition on any other occasion or a waiver of any other breach by or obligation of the Client. This agreement shall be administered and interpreted under the laws of the state which services are procured.

Warranty.

Recognizing that the nature of many samples is unknown and that some may contain potentially hazardous components, LAB warrants only that it will perform testing services, obtain findings, and prepare reports in accordance with generally accepted analytical laboratory principles and practices at the time of performance of services. LAB makes no other warranty, express or implied.

Scope and Compensation.

LAB agrees to perform the services described in the chain of custody to which these terms and conditions are attached. Unless the parties agree in writing to the contrary, the duties of LAB shall not be construed to exceed the services specifically described. LAB will use LAB default method for all tests unless specified otherwise on the Work Order.

Payment terms are net 30 days from the date of invoice. All overdue payments are subject to an interest charge of one and one-half percent (1-1/2%) per month or a portion thereof. Client shall also be responsible for costs of collection, including payment of reasonable attorney fees if such expense is incurred. The prices, unless stated, do not include any sale, use or other taxes. Such taxes will be added to invoice prices when required.

Prices.

Compensation for services performed will be based on the current Lab Analytical Fee Schedule or on quotations agreed to in writing by the parties. Turnaround time based charges are determined from the time of resolution of all work order questions. Testimony, court appearances or data compilation for legal action will be charged separately. Evaluation and reporting of initial screening runs may incur additional fees.

Limitations of Liability.

In the event of any error, omission, or other professional negligence, the sole and exclusive responsibility of LAB shall be to re-perform the deficient work at its own expense and LAB shall have no other liability whatsoever. All claims shall be deemed waived unless made in writing and received by LAB within ninety (90) days following completion of services.

LAB shall have no liability, obligation, or responsibility of any kind for losses, costs, expenses, or other damages (including but not limited to any special, direct, incidental or consequential damages) with respect to LAB's services or results.

All results provided by LAB are strictly for the use of its clients and LAB is in no way responsible for the use of such results by clients or third parties. All reports should be considered in their entirety, and LAB is not responsible for the separation, detachment, or other use of any portion of these reports. Client may not assign the lab report without the written consent of the LAB.

Client covenants and agrees, at its/his/her sole expense, to indemnify, protect, defend, and save harmless the LAB from and against any and all damages, losses, liabilities, obligations, penalties, claims, litigation, demands, defenses, judgments, suits, actions, proceedings, costs, disbursements and/or expenses (including, without limitation attorneys' and experts' fees and disbursements) of any kind whatsoever which may at any time be imposed upon, incurred by or asserted or awarded against client relating to, resulting from or arising out of (a) the breach of this agreement by this client, (b) the negligence of the client in handling, delivering or disclosing any hazardous substance, (c) the violation of the Client of any applicable law, (d) non-compliance by the Client with any environmental permit or (e) a material misrepresentation in disclosing the materials to be tested.

Hazard Disclosure.

Client represents and warrants that any sample delivered to LAB will be preceded or accompanied by complete written disclosure of the presence of any hazardous substances known or suspected by Client. Client further warrants that any sample containing any hazardous substance that is to be delivered to LAB will be packaged, labeled, transported, and delivered properly and in accordance with applicable laws.

Sample Handling.

Prior to LAB's acceptance of any sample (or after any revocation of acceptance), the entire risk of loss or of damage to such sample remains with Client. Samples are accepted when receipt is acknowledged on chain of custody documentation. In no event will LAB have any responsibility for the action or inaction of any carrier shipping or delivering any sample to or from LAB premises. Client authorizes LAB to proceed with the analysis of samples as received by the laboratory, recognizing that any samples not in compliance with all current DOH-ELAP-NELAP requirements for containers, preservation or holding time will be noted as such on the final report.

Disposal of hazardous waste samples is the responsibility of the Client. If the Client does not wish such samples returned, LAB may add storage and disposal fees to the final invoice. Maximum storage time for samples is 30 days after completion of analysis unless modified by applicable state or federal laws. Client will be required to give the LAB written instructions concerning disposal of these samples.

LAB reserves the absolute right, exercisable at any time, to refuse to receive delivery of, refuse to accept, or revoke acceptance of any sample, which, in the sole judgment of LAB (a) is of unsuitable volume, (b) may be or become unsuitable for or may pose a risk in handling, transport, or processing for any health, safety, environmental or other reason whether or not due to the presence in the sample of any hazardous substance, and whether or not such presence has been disclosed to LAB by Client or (c) if the condition or sample date make the sample unsuitable for analysis.

Legal Responsibility.

LAB is solely responsible for performance of this contract, and no affiliated company, director, officer, employee, or agent shall have any legal responsibility hereunder, whether in contract or tort including negligence.

Assignment.

LAB may assign its performance obligations under this contract to other parties, as it deems necessary. LAB shall disclose to Client any assignee (subcontractor) by ELAP ID # on the submitted final report.

Force Majeure.

LAB shall have no responsibility or liability to the Client for any failure or delay in performance by LAB, which results in whole or in part from any cause or circumstance beyond the reasonable control of LAB. Such causes and circumstances shall include, but not limited to, acts of God, acts or orders of any government authority, strikes or other labor disputes, natural disasters, accidents, wars, civil disturbances, difficulties or delays in transportation, mail or delivery services, inability to obtain sufficient services or supplies from LAB's usual suppliers, or any other cause beyond LAB's reasonable control.

Law.

This contract shall be continued under the laws of the State of New York without regard to its conflicts of laws provision.

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.



Chain of Custody Supplement

Client: Inventum

Completed by: Molykail

Lab Project ID: 221148

Date: 3/18/22

Sample Condition Requirements
Per NELAC/ELAP 210/241/242/243/244

Condition	NELAC compliance with the sample condition requirements upon receipt		
	Yes	No	N/A
Container Type	<input checked="" type="checkbox"/>	<input type="checkbox"/> VOA5035	<input type="checkbox"/>
Comments	Transferred portion of sample to 4oz glass jar for reactivity SN BTU Ammonia Subject		
Transferred to method-compliant container	<input checked="" type="checkbox"/> 631062	<input type="checkbox"/>	<input type="checkbox"/>
Headspace (<1 mL)	<input type="checkbox"/>	<input type="checkbox"/> FCUPVOA	<input checked="" type="checkbox"/>
Comments			
Preservation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments			
Chlorine Absent (<0.10 ppm per test strip)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments			
Holding Time	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments			
Temperature	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> met
Comments	6°C actual		
Compliant Sample Quantity/Type	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments			



220321029

CHAIN OF CUSTODY

ELAP ID: 18

179 Lake Avenue, Rochester, NY 14608 Office (585) 647-2530 Fax (585) 647-3311

REPORT TO: Paradigm Environmental

COMPANY: Paradigm Environmental

ADDRESS:

CITY: STATE: ZIP:

PHONE: FAX:

ATTN: Reporting

COMMENTS: Please email results to reporting@paradigmenv.com

INVOICE TO: Same

COMPANY: Same

ADDRESS:

CITY: STATE: ZIP:

PHONE: FAX:

ATTN: Accounts Payable

LAB PROJECT #:

CLIENT PROJECT:

TURNAROUND TIME: (WORKING DAYS)

STD

1 2 3 5

Date Due: 3/28/22

REQUESTED ANALYSIS

DATE	TIME	COMPOSITE	GRA B	SAMPLE LOCATION/FIELD ID	MATRIX	CONUTS	REACTIVITY	BTU	Ammonia	TCLP Herb	REMARKS	PARADIGM LAB SAMPLE NUMBER
3/17/22	1445		X	22145-01	sludge	1	Y	X	X	X	sample spemat	
23/17/22	1445		X	22145-01A	TCLP extract	1	Y	X	X	X	Paradigm on 3/18/22 for TCLP extract	
											Batch QC	

****LAB USE ONLY BELOW THIS LINE****

Sample Condition: Per NELAC/ELAP 210241242/243/244

Receipt Parameter: NELAC Compliance

Comments: Container Type: 10T AFS Y N

Comments: Preservation: Y N

Comments: Holding Time: Y N

Comments: Temperature: A/C Y N

Client

Sampled By: Molly Rysgaard Date/Time: 3/21/22 0830

Relinquished By: Molly Rysgaard Date/Time: 3/21/22 12:36

Received By: [Signature] Date/Time: 3/21/22 4:24 PM

Received @ Lab By: [Signature] Date/Time: 3/21/22 4:24 PM

Total Cost:

P.I.F.



ANALYTICAL REPORT

Lab Number:	L2152243
Client:	Inventum Engineering 481 Carlisle Drive #202 Herndon, NY 20170
ATTN:	John Black
Phone:	(571) 752-6562
Project Name:	RITC-COG-QUENCH
Project Number:	Not Specified
Report Date:	09/28/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: RITC-COG-QUENCH
Project Number: Not Specified

Lab Number: L2152243
Report Date: 09/28/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2152243-01	COG-FRACK TANK-09272021	WATER	3875 RIVER ROAD	09/27/21 11:00	09/27/21
L2152243-02	TRIP BLANK	WATER	3875 RIVER ROAD	09/20/21 00:00	09/27/21

Project Name: RITC-COG-QUENCH
Project Number: Not Specified

Lab Number: L2152243
Report Date: 09/28/21

Case Narrative

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

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

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

Please contact Project Management at 800-624-9220 with any questions.

Project Name: RITC-COG-QUENCH
Project Number: Not Specified

Lab Number: L2152243
Report Date: 09/28/21

Case Narrative (continued)

Report Submission

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

Sample Receipt

L2152243-02: A sample identified as "TRIP BLANK" was received, but not listed on the Chain of Custody. This sample was not analyzed.

Total Metals

The WG1551546-3 MS recovery for calcium (60%), performed on L2152243-01, does not apply because the sample concentration is greater than four times the spike amount added.

The WG1551547-4 Laboratory Duplicate RPD for mercury (74%), performed on L2152243-01, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

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

Authorized Signature:  Melissa Sturgis

Title: Technical Director/Representative

Date: 09/28/21

ORGANICS

VOLATILES

Project Name: RITC-COG-QUENCH**Lab Number:** L2152243**Project Number:** Not Specified**Report Date:** 09/28/21**SAMPLE RESULTS**

Lab ID: L2152243-01
 Client ID: COG-FRACK TANK-09272021
 Sample Location: 3875 RIVER ROAD

Date Collected: 09/27/21 11:00
 Date Received: 09/27/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 09/28/21 08:22
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	2.7		ug/l	0.50	0.16	1
Toluene	3.7		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: RITC-COG-QUENCH

Lab Number: L2152243

Project Number: Not Specified

Report Date: 09/28/21

SAMPLE RESULTS

Lab ID: L2152243-01
 Client ID: COG-FRACK TANK-09272021
 Sample Location: 3875 RIVER ROAD

Date Collected: 09/27/21 11:00
 Date Received: 09/27/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	4.2		ug/l	2.5	0.70	1
o-Xylene	1.9	J	ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	6.2		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	101		70-130

Project Name: RITC-COG-QUENCH
Project Number: Not Specified

Lab Number: L2152243
Report Date: 09/28/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 09/28/21 07:59
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1551714-5					
Methylene chloride	ND		ug/l	2.5	0.70
1,1-Dichloroethane	ND		ug/l	2.5	0.70
Chloroform	ND		ug/l	2.5	0.70
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.0	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	2.5	0.70
Trichlorofluoromethane	ND		ug/l	2.5	0.70
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
Bromoform	ND		ug/l	2.0	0.65
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	2.5	0.70
Ethylbenzene	ND		ug/l	2.5	0.70
Chloromethane	ND		ug/l	2.5	0.70
Bromomethane	ND		ug/l	2.5	0.70
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	2.5	0.70
1,1-Dichloroethene	ND		ug/l	0.50	0.17
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Trichloroethene	ND		ug/l	0.50	0.18
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70

Project Name: RITC-COG-QUENCH
Project Number: Not Specified

Lab Number: L2152243
Report Date: 09/28/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 09/28/21 07:59
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1551714-5					
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70
Methyl tert butyl ether	ND		ug/l	2.5	0.70
p/m-Xylene	ND		ug/l	2.5	0.70
o-Xylene	ND		ug/l	2.5	0.70
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Styrene	ND		ug/l	2.5	0.70
Dichlorodifluoromethane	ND		ug/l	5.0	1.0
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	1.0
2-Butanone	ND		ug/l	5.0	1.9
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0
2-Hexanone	ND		ug/l	5.0	1.0
Bromochloromethane	ND		ug/l	2.5	0.70
1,2-Dibromoethane	ND		ug/l	2.0	0.65
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70
Isopropylbenzene	ND		ug/l	2.5	0.70
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70
Methyl Acetate	ND		ug/l	2.0	0.23
Cyclohexane	ND		ug/l	10	0.27
1,4-Dioxane	ND		ug/l	250	61.
Freon-113	ND		ug/l	2.5	0.70
Methyl cyclohexane	ND		ug/l	10	0.40

Project Name: RITC-COG-QUENCH**Lab Number:** L2152243**Project Number:** Not Specified**Report Date:** 09/28/21**Method Blank Analysis**
Batch Quality ControlAnalytical Method: 1,8260C
Analytical Date: 09/28/21 07:59
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1551714-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	100		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: RITC-COG-QUENCH

Lab Number: L2152243

Project Number: Not Specified

Report Date: 09/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1551714-3 WG1551714-4								
Methylene chloride	92		95		70-130	3		20
1,1-Dichloroethane	100		110		70-130	10		20
Chloroform	91		93		70-130	2		20
Carbon tetrachloride	94		100		63-132	6		20
1,2-Dichloropropane	98		100		70-130	2		20
Dibromochloromethane	82		83		63-130	1		20
1,1,2-Trichloroethane	81		85		70-130	5		20
Tetrachloroethene	90		91		70-130	1		20
Chlorobenzene	94		97		75-130	3		20
Trichlorofluoromethane	84		98		62-150	15		20
1,2-Dichloroethane	89		93		70-130	4		20
1,1,1-Trichloroethane	98		100		67-130	2		20
Bromodichloromethane	86		90		67-130	5		20
trans-1,3-Dichloropropene	81		82		70-130	1		20
cis-1,3-Dichloropropene	81		84		70-130	4		20
Bromoform	79		85		54-136	7		20
1,1,2,2-Tetrachloroethane	86		99		67-130	14		20
Benzene	90		94		70-130	4		20
Toluene	96		97		70-130	1		20
Ethylbenzene	91		99		70-130	8		20
Chloromethane	120		140	Q	64-130	15		20
Bromomethane	69		79		39-139	14		20
Vinyl chloride	110		120		55-140	9		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: RITC-COG-QUENCH

Lab Number: L2152243

Project Number: Not Specified

Report Date: 09/28/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1551714-3 WG1551714-4								
Chloroethane	75		87		55-138	15		20
1,1-Dichloroethene	100		100		61-145	0		20
trans-1,2-Dichloroethene	96		100		70-130	4		20
Trichloroethene	83		85		70-130	2		20
1,2-Dichlorobenzene	94		100		70-130	6		20
1,3-Dichlorobenzene	100		100		70-130	0		20
1,4-Dichlorobenzene	100		100		70-130	0		20
Methyl tert butyl ether	70		74		63-130	6		20
p/m-Xylene	90		100		70-130	11		20
o-Xylene	90		100		70-130	11		20
cis-1,2-Dichloroethene	93		97		70-130	4		20
Styrene	90		100		70-130	11		20
Dichlorodifluoromethane	95		99		36-147	4		20
Acetone	140		140		58-148	0		20
Carbon disulfide	98		100		51-130	2		20
2-Butanone	100		110		63-138	10		20
4-Methyl-2-pentanone	95		95		59-130	0		20
2-Hexanone	81		110		57-130	30	Q	20
Bromochloromethane	93		98		70-130	5		20
1,2-Dibromoethane	80		85		70-130	6		20
1,2-Dibromo-3-chloropropane	76		85		41-144	11		20
Isopropylbenzene	100		120		70-130	18		20
1,2,3-Trichlorobenzene	83		89		70-130	7		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: RITC-COG-QUENCH

Project Number: Not Specified

Lab Number: L2152243

Report Date: 09/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1551714-3 WG1551714-4								
1,2,4-Trichlorobenzene	85		94		70-130	10		20
Methyl Acetate	90		100		70-130	11		20
Cyclohexane	130		130		70-130	0		20
1,4-Dioxane	62		66		56-162	6		20
Freon-113	100		100		70-130	0		20
Methyl cyclohexane	96		98		70-130	2		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	100		102		70-130
Toluene-d8	101		100		70-130
4-Bromofluorobenzene	105		116		70-130
Dibromofluoromethane	94		94		70-130

METALS

Project Name: RITC-COG-QUENCH

Lab Number: L2152243

Project Number: Not Specified

Report Date: 09/28/21

SAMPLE RESULTS

Lab ID: L2152243-01
 Client ID: COG-FRACK TANK-09272021
 Sample Location: 3875 RIVER ROAD

Date Collected: 09/27/21 11:00
 Date Received: 09/27/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.0456		mg/l	0.0100	0.00327	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Antimony, Total	0.00137	J	mg/l	0.00400	0.00042	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Arsenic, Total	0.00054		mg/l	0.00050	0.00016	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Barium, Total	0.09066		mg/l	0.00050	0.00017	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Cadmium, Total	0.00011	J	mg/l	0.00020	0.00005	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Calcium, Total	148.		mg/l	0.100	0.0394	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Chromium, Total	0.00044	J	mg/l	0.00100	0.00017	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Cobalt, Total	0.00095		mg/l	0.00050	0.00016	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Copper, Total	0.00271		mg/l	0.00100	0.00038	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Iron, Total	0.358		mg/l	0.0500	0.0191	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Lead, Total	0.00327		mg/l	0.00100	0.00034	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Magnesium, Total	18.5		mg/l	0.0700	0.0242	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Manganese, Total	0.9333		mg/l	0.00100	0.00044	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Mercury, Total	0.00026		mg/l	0.00020	0.00009	1	09/28/21 08:20	09/28/21 11:33	EPA 7470A	1,7470A	AC
Nickel, Total	0.00304		mg/l	0.00200	0.00055	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Potassium, Total	22.0		mg/l	0.100	0.0309	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Selenium, Total	ND		mg/l	0.00500	0.00173	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Silver, Total	ND		mg/l	0.00040	0.00016	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Sodium, Total	18.6		mg/l	0.100	0.0293	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Thallium, Total	0.00022	J	mg/l	0.00100	0.00014	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS
Zinc, Total	0.01517		mg/l	0.01000	0.00341	1	09/28/21 07:44	09/28/21 12:17	EPA 3005A	1,6020B	PS



Project Name: RITC-COG-QUENCH
Project Number: Not Specified

Lab Number: L2152243
Report Date: 09/28/21

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1551546-1										
Aluminum, Total	ND		mg/l	0.0100	0.00327	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Antimony, Total	ND		mg/l	0.00400	0.00042	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Barium, Total	ND		mg/l	0.00050	0.00017	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Calcium, Total	ND		mg/l	0.100	0.0394	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Chromium, Total	ND		mg/l	0.00100	0.00017	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Copper, Total	ND		mg/l	0.00100	0.00038	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Iron, Total	ND		mg/l	0.0500	0.0191	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Lead, Total	ND		mg/l	0.00100	0.00034	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Manganese, Total	ND		mg/l	0.00100	0.00044	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Nickel, Total	ND		mg/l	0.00200	0.00055	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Potassium, Total	ND		mg/l	0.100	0.0309	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Selenium, Total	ND		mg/l	0.00500	0.00173	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Silver, Total	ND		mg/l	0.00040	0.00016	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Sodium, Total	ND		mg/l	0.100	0.0293	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Thallium, Total	0.00022	J	mg/l	0.00100	0.00014	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS
Zinc, Total	ND		mg/l	0.01000	0.00341	1	09/28/21 07:44	09/28/21 11:48	1,6020B	PS

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1551547-1										
Mercury, Total	0.00018	J	mg/l	0.00020	0.00009	1	09/28/21 08:20	09/28/21 11:26	1,7470A	AC



Project Name: RITC-COG-QUENCH

Lab Number: L2152243

Project Number: Not Specified

Report Date: 09/28/21

Method Blank Analysis Batch Quality Control

Prep Information

Digestion Method: EPA 7470A

Lab Control Sample Analysis

Batch Quality Control

Project Name: RITC-COG-QUENCH

Lab Number: L2152243

Project Number: Not Specified

Report Date: 09/28/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1551546-2								
Aluminum, Total	107		-		80-120	-		
Antimony, Total	94		-		80-120	-		
Arsenic, Total	108		-		80-120	-		
Barium, Total	101		-		80-120	-		
Beryllium, Total	103		-		80-120	-		
Cadmium, Total	103		-		80-120	-		
Calcium, Total	92		-		80-120	-		
Chromium, Total	103		-		80-120	-		
Cobalt, Total	103		-		80-120	-		
Copper, Total	105		-		80-120	-		
Iron, Total	103		-		80-120	-		
Lead, Total	101		-		80-120	-		
Magnesium, Total	107		-		80-120	-		
Manganese, Total	99		-		80-120	-		
Nickel, Total	99		-		80-120	-		
Potassium, Total	100		-		80-120	-		
Selenium, Total	102		-		80-120	-		
Silver, Total	104		-		80-120	-		
Sodium, Total	111		-		80-120	-		
Thallium, Total	106		-		80-120	-		
Vanadium, Total	99		-		80-120	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: RITC-COG-QUENCH

Project Number: Not Specified

Lab Number: L2152243

Report Date: 09/28/21

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1551546-2					
Zinc, Total	110	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1551547-2					
Mercury, Total	110	-	80-120	-	

Matrix Spike Analysis Batch Quality Control

Project Name: RITC-COG-QUENCH

Lab Number: L2152243

Project Number: Not Specified

Report Date: 09/28/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1551546-3 QC Sample: L2152243-01 Client ID: COG-FRACK TANK-09272021												
Aluminum, Total	0.0456	2	2.04	100		-	-		75-125	-		20
Antimony, Total	0.00137J	0.5	0.5402	108		-	-		75-125	-		20
Arsenic, Total	0.00054	0.12	0.1224	102		-	-		75-125	-		20
Barium, Total	0.09066	2	1.918	91		-	-		75-125	-		20
Beryllium, Total	ND	0.05	0.04488	90		-	-		75-125	-		20
Cadmium, Total	0.00011J	0.053	0.04887	92		-	-		75-125	-		20
Calcium, Total	148.	10	154	60	Q	-	-		75-125	-		20
Chromium, Total	0.00044J	0.2	0.1876	94		-	-		75-125	-		20
Cobalt, Total	0.00095	0.5	0.4690	94		-	-		75-125	-		20
Copper, Total	0.00271	0.25	0.2390	94		-	-		75-125	-		20
Iron, Total	0.358	1	1.27	91		-	-		75-125	-		20
Lead, Total	0.00327	0.53	0.5059	95		-	-		75-125	-		20
Magnesium, Total	18.5	10	28.6	101		-	-		75-125	-		20
Manganese, Total	0.9333	0.5	1.360	85		-	-		75-125	-		20
Nickel, Total	0.00304	0.5	0.4602	91		-	-		75-125	-		20
Potassium, Total	22.0	10	32.5	105		-	-		75-125	-		20
Selenium, Total	ND	0.12	0.125	104		-	-		75-125	-		20
Silver, Total	ND	0.05	0.04659	93		-	-		75-125	-		20
Sodium, Total	18.6	10	29.8	112		-	-		75-125	-		20
Thallium, Total	0.00022J	0.12	0.1240	103		-	-		75-125	-		20
Vanadium, Total	ND	0.5	0.4570	91		-	-		75-125	-		20

Matrix Spike Analysis Batch Quality Control

Project Name: RITC-COG-QUENCH

Lab Number: L2152243

Project Number: Not Specified

Report Date: 09/28/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1551546-3 QC Sample: L2152243-01 Client ID: COG-FRACK TANK-09272021									
Zinc, Total	0.01517	0.5	0.5224	101	-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1551547-3 QC Sample: L2152243-01 Client ID: COG-FRACK TANK-09272021									
Mercury, Total	0.00026	0.005	0.00512	97	-	-	75-125	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: RITC-COG-QUENCH

Project Number: Not Specified

Lab Number: L2152243

Report Date: 09/28/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1551546-4 QC Sample: L2152243-01 Client ID: COG-FRACK TANK-09272021						
Aluminum, Total	0.0456	0.0424	mg/l	7		20
Antimony, Total	0.00137J	0.00144J	mg/l	NC		20
Arsenic, Total	0.00054	0.00057	mg/l	5		20
Barium, Total	0.09066	0.08960	mg/l	1		20
Beryllium, Total	ND	ND	mg/l	NC		20
Cadmium, Total	0.00011J	0.00010J	mg/l	NC		20
Calcium, Total	148.	143	mg/l	3		20
Chromium, Total	0.00044J	0.00044J	mg/l	NC		20
Cobalt, Total	0.00095	0.00097	mg/l	2		20
Copper, Total	0.00271	0.00278	mg/l	3		20
Iron, Total	0.358	0.302	mg/l	17		20
Lead, Total	0.00327	0.00317	mg/l	3		20
Magnesium, Total	18.5	18.1	mg/l	2		20
Manganese, Total	0.9333	0.9191	mg/l	2		20
Nickel, Total	0.00304	0.00316	mg/l	4		20
Potassium, Total	22.0	21.6	mg/l	2		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Sodium, Total	18.6	18.2	mg/l	2		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: RITC-COG-QUENCH

Project Number: Not Specified

Lab Number: L2152243

Report Date: 09/28/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1551546-4 QC Sample: L2152243-01 Client ID: COG-FRACK TANK-09272021					
Thallium, Total	0.00022J	0.00030J	mg/l	NC	20
Vanadium, Total	ND	ND	mg/l	NC	20
Zinc, Total	0.01517	0.01405	mg/l	8	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1551547-4 QC Sample: L2152243-01 Client ID: COG-FRACK TANK-09272021					
Mercury, Total	0.00026	0.00058	mg/l	74 Q	20

Project Name: RITC-COG-QUENCH**Lab Number:** L2152243**Project Number:** Not Specified**Report Date:** 09/28/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2152243-01A	Vial HCl preserved	A	NA		3.3	Y	Absent		NYTCL-8260-R2(14)
L2152243-01B	Vial HCl preserved	A	NA		3.3	Y	Absent		NYTCL-8260-R2(14)
L2152243-01C	Vial HCl preserved	A	NA		3.3	Y	Absent		NYTCL-8260-R2(14)
L2152243-01D	Plastic 250ml HNO3 preserved	A	<2	<2	3.3	Y	Absent		TL-6020T(180),FE-6020T(180),BA-6020T(180),SE-6020T(180),K-6020T(180),CA-6020T(180),CR-6020T(180),NI-6020T(180),NA-6020T(180),CU-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),V-6020T(180),SB-6020T(180),AS-6020T(180),AL-6020T(180),HG-T(28),CD-6020T(180),AG-6020T(180),MG-6020T(180),CO-6020T(180)
L2152243-02A	Vial HCl preserved	A	NA		3.3	Y	Absent		ARCHIVE()
L2152243-02B	Vial HCl preserved	A	NA		3.3	Y	Absent		ARCHIVE()

Project Name: RITC-COG-QUENCH
Project Number: Not Specified

Lab Number: L2152243
Report Date: 09/28/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: RITC-COG-QUENCH
Project Number: Not Specified

Lab Number: L2152243
Report Date: 09/28/21

Footnotes

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

Terms

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

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

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

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

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

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

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

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

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

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: RITC-COG-QUENCH
Project Number: Not Specified

Lab Number: L2152243
Report Date: 09/28/21

Data Qualifiers

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: RITC-COG-QUENCH
Project Number: Not Specified

Lab Number: L2152243
Report Date: 09/28/21

REFERENCES

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

LIMITATION OF LIABILITIES

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

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



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpineol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

