



July 15, 2020

To: Benjamin McPherson (NYSDEC)

From: John Black (Inventum)

CC: Jon Williams (Riverview); John Yensan (OSC); Craig Slater (CS Law); Todd Waldrop and James Edwards (Inventum)

RE: Mixing Pad Dewatering IRM Work Plan
Riverview Innovation & Technology Campus, Inc.
Brownfield Cleanup Program Site No. C915353
Town of Tonawanda, New York

Inventum Engineering, P.C. (Inventum), on behalf of Riverview Innovation & Technology Campus, Inc. (Riverview), is submitting this Mixing Pad Dewatering IRM Work Plan (Mixing Pad Water IRM) to the New York State Department of Environmental Conservation (NYSDEC) for the Riverview Brownfield Cleanup Program (BCP) Site (#C915353) located at 3875 River Road, Tonawanda, New York.

Summary and Background

The mixing pad at the property (Grids AE23 to AF24, Figure 2) was used by the Tonawanda Coke Corporation for blending Tar Decanter Sludge (Listed Waste K087 if not recycled) with coal and coke breeze prior to the blended product being charged to the battery for coke production. The mixing pad is inspected weekly and the storm water observed on May 1, 2020 was approaching the limits of the desired freeboard. The warm weather has evaporated a significant amount of the water and the June 17, 2020 inspection (photograph taken the following day) showed significantly less water.



Mixing Pad, May 2020 View Looking Down and toward the East



Mixing Pad, June 18, 2020 View Looking Down and Toward the East

Background

The concrete walled mixing pad has accumulated water from inflow and direct precipitation. The surface water flow into the mixing pad has been redirected, but the pad continues to be exposed to precipitation.

The mixing pad has been covered with water since acquisition by Riverview, but the water is clear and solid material is visible in the containment. Prior to being able to decontaminate this area, stormwater contained within the mixing pad is proposed to be managed as a K087 listed waste. This water will be treated using granular activated carbon prior to discharge in accordance with existing permits that allow for discharge of treated stormwater from diked/bermed areas. After dewatering, the mixing pad will be



inspected and the solid materials in the mixing pad will be consolidated and placed in drums or lined roll off containers (number depending on volume). After the loose solid materials are removed from the structure, the surface will be decontaminated by scraping and either power or dry ice washing.

There was an estimated 35,000- to 45,000-gallons of water in the mixing pad. (average depth of 36 inches over 1,500 square feet). While the water in the containment is from precipitation and not a process, the debris, rubble, and other materials in the mixing pad are in contact with the accumulated water and no records¹ of the mixing pad having been decontaminated are available. TCC was allowed under a Beneficial Use Determination (BUD) to place breeze used to clean up petroleum spills on the Mixing Pad. This material was blended with coal/ decanter sludge and charged to the coke ovens. The material, if any, contained in the former mixing pad may meet the definition of a K087 listed hazardous waste under 6NYCRR Part 371 and 40 CFR §261.32.

The liquid materials within the mixing pad will be treated and discharged to the Town of Tonawanda sewer system in accordance with Riverview's existing permit (Industrial Sewer Connection Permit No. 331) until the solids are removed and the concrete is decontaminated. Surface water after sampling and decontamination will be managed in accordance with an approved BCP Site SWPPP.

Scope of Work

Community Air Monitoring

In addition to the perimeter air monitoring program, VOCs and dust will be monitored during all active operations on the mixing pad. The activity specific Air Monitoring Station will be located as shown on Figure 2. VOC and Dust concentrations will be recorded and reported (Daily values reported weekly) during active management operations.

Dewatering

The water in the mixing pad is not located near a sewer inlet that would allow direct discharge to the POTW. The water was tested for the POTW parameters (See Attachment A) and complies with the discharge limits as it exists.

¹ There are no records, but site personnel believe the pad was decontaminated during the shutdown process. No records or confirmatory sampling data are available and therefore it will be managed as though no, or incomplete, decontamination was conducted.



Analyte	Units	Town of Tonawanda Industrial Pre-Treatment Permit No. 331 Limits	Mixing Pad Sample (1/31/2020)
pH	SU	5.0 - 9.5	
SGT-HEM	ppm	100	NS
Total Cyanide	mg/L	1.1	<0.01
Biochemical Oxygen Demand	mg/L	250	NS
Total Suspended Solids	mg/L	250	3.8
Total Phosphorus	mg/L	6	NS
Total Mercury	mg/L	0.001	<0.000200
Total Arsenic	mg/L	0.5	<0.01
Total Selenium	mg/L	N/A	<0.02
Total Recoverable Phenolics	mg/L	N/A	NS
Priority Pollutant PAH's (625)	mg/L	N/A	NS
Total Ammonia	mg/L	N/A	NS
Priority Pollutant SVOCs and Metals	mg/L	N/A	Note 1

Bold Red text indicates analyte from grab samples is greater than monthly permit limit.

N/A = Not Applicable. Monitoring

Only

NS = Not sampled.

Note 1 - PP SVOCs and PP Metals were sampled on 1/31/2020 but are not reported in this table.

Iron and Manganese were detected (Iron 0.279 mg/L and Manganese .0158 mg/L). No SVOCs were detected.

The water will be pumped from the secondary containment, through a series of bag filters, a nominal 2,000-pound granular activated carbon treatment unit and discharged to the Town of Tonawanda POTW Outfall (Figure 1). The filter housings and carbon vessel will be decontaminated prior to shipment to the site or first use. All bag filters will be new. The carbon will be regenerated or new granulated activated carbon. No previously used un-regenerated GAC will be transported to the site. The discharge will be accomplished by pumping the treated water through a dedicated hose and discharged directly to the POTW outfall (Figures 1 and 2). The hose will be inspected daily following the procedures listed below:

- Prior to startup each day, walk the line and inspect for any damage that may have occurred overnight;
- Prior to startup check all couplings to make sure they are secure;
- Verify the discharge is within the POTW Outfall drop inlet;
- Start pumping;
- Walk the line within 1 hour after starting the pump(s) to ensure no significant leakage is occurring;
- At the end of the day, if temperatures are forecast to be below freezing, make sure the pump and discharge line can drain.



The treatment unit and suction hoses will remain at the mixing pad until the confirmation samples show the surfaces no longer allow constituents of concern to impact precipitation falling on the pad. After the NYSDEC determines that the surface water from the mixing pad can be managed under the SWPPP, the hoses, piping, pumps, and filter housing used to empty the mixing pad (all equipment upstream of the GAC) will be decontaminated by flushing with potable water. During flushing the water will be treated through the GAC and discharged to the POTW. After three full cycles of rinsate (Based on the combined storage volume of the equipment, but no less than 3,000 gallons per cycle), a sample of water pumped through the system will be collected and analyzed for VOCs and SVOCs. After a sample that meets the POTW discharge criteria without GAC treatment the equipment will be considered suitable for reuse on the property. The GAC unit, unless the carbon is spent, will be reused on the property. The activated carbon in the unit will be shipped for recycling before the GAC unit is decontaminated and moved from the property, but the partially used activated carbon can be used elsewhere on the property.

Solids Screening and Sampling

After the water has been removed, samples of residual solids in the mixing pad will be collected. Representative solids (Marked with "MPS") will collect those locations in the mixing pad that represent the range of solid residuals left in the mixing pad. Headspace screening of the solids will be conducted with a PID equipped with a 10.6 eV lamp.

Solid samples for headspace screening will be collected using shovels or stainless-steel spoons. The spoons and shovels will be decontaminated prior to and after the sampling with an Alconox wash and a distilled water rinse. This decontamination water will be discharged to the Town of Tonawanda sewer system in accordance with Riverview's existing permit (Industrial Sewer Connection Permit No. 331).

Samples for laboratory analysis will be collected from the locations with the highest PID, olfactory and visual indication of organic compounds.

Laboratory Analysis

Solid and concrete sample(s) will be tested to characterize the material and to obtain a waste profile. Laboratory reporting will include a NYSDEC Category A deliverable and an EDD.

- Characterization
 - Toxicity Characteristic Leaching Procedure (TCLP) using EPA Method 1311 for:
 - Semi-Volatile Organic Compounds (SVOCs) using EPA Method 8270D
 - VOCs using EPA Method 8260C
 - Resource Conservation and Recovery Act (RCRA) Metals using EPA Method 6010C
 - Mercury using EPA Method 7470A
 - Pesticides using EPA Method 8081B
 - Herbicides using EPA Method 8151A
 - Volatile Organic Compounds, including xylenes
 - Semi-volatile Organic Compounds
 - Metals
 - Polychlorinated Biphenyls (PCBs) using EPA Method 8082A
 - Flash Point using EPA Method 1010A



- pH using EPA Method 9045D
- Reactivity, Cyanide using EPA Method 7.3.4.2 reference
- Reactivity, Sulfide using EPA Method 7.3.4.3 reference

Solids Management

Following dewatering, any residual solids in the mixing pad perimeter will be inspected. If uniform in appearance, all solids will be removed (to a “broom clean” state and will be placed in drums or lined roll off containers. Drums will be staged on polyethylene sheeting and each drum will be closed and labeled after filling. Roll off containers will be double lined and covered. If more than one material, based on visual observations, is present, they will be segregated in separate lined roll off containers or open-topped drums (depending on volume). The containers will be labeled hazardous waste (K087) pending analysis.

The solids will be sampled to determine if they exhibit the characteristics of hazardous waste and if they contain the constituents of K087. If the solids exhibit the characteristics of hazardous waste or contain the constituents of K087 the materials will be transported offsite and disposed as hazardous waste. If the materials do not contain the constituents of K087 or the characteristics of hazardous waste, they will be shipped offsite for non-hazardous waste disposal.

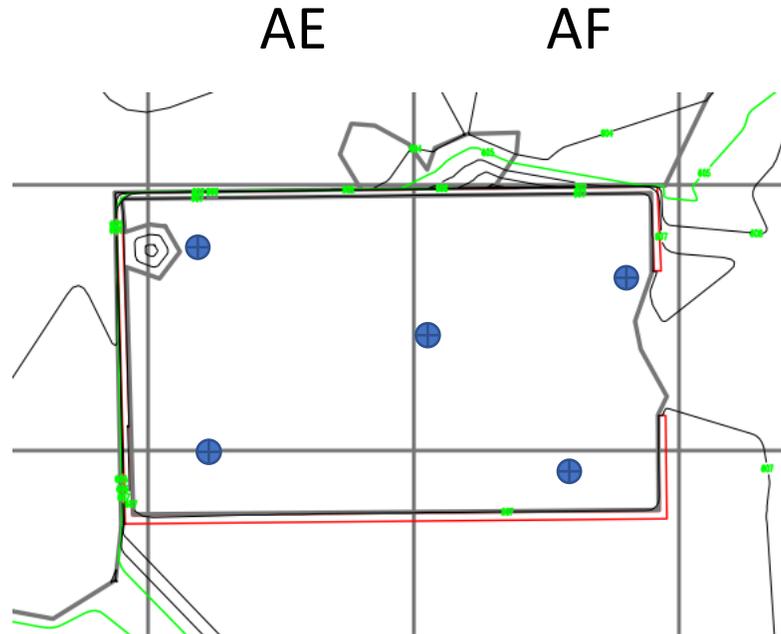
Decontamination

The mixing pad will be decontaminated to remove any residual and solid materials adhered to the surfaces. The decontamination procedure will include:

- Detailed mapping of the interior slab and walls. All cracks or defects will be noted on a scale drawing of the pad;
- Inspect the perimeter of the mixing pad to identify any tar that may have been released from the unit;
- Power wash (water and or dry ice) the entire interior surface of the pad to remove all loose materials. All wash water will be treated through the bag filters and carbon and discharged to the sewer;
- Sampling the surface by coring five locations (in a die pattern biased to staining) of the concrete and analyzing the top 1-inch and the mid-depth of each core for hazardous characteristics analysis. All sample locations will be resealed with epoxy grout. The pattern will be based on field observations, but will resemble:



24



Recommendations

The following recommendations are proposed:

1. The liquids in the mixing pad are primarily surface water but will be managed as K087 hazardous waste until treated with GAC and discharged to the POTW under Permit No. 331. This water will be pumped through a carbon vessel into a hose system discharging to the POTW outfall.
2. After pumping the free water to the POTW outfall, the solids in, and the visible surfaces of, the mixing pad will be inspected.
3. Samples of the material will be field screened for the presence of odor, liquid materials, and with a PID.
4. The solid materials will be removed from the mixing pad and placed in a lined roll off container or 55-gallon drums.
5. Representative sample(s) of the solid materials in the mixing pad will be submitted to a certified laboratory for characterization.
6. The walls and visible slab will be inspected for cracks or signs of deterioration.
7. A detailed, scale drawing of the mixing pad and any cracks or deterioration will be prepared.
8. The perimeter of the mixing pad will be inspected to note any tar material that may have been released from the mixing pad;
9. The surface of the mixing pad will be decontaminated with a power washer or dry ice blasting. All wash water will be treated prior to discharge to the POTW.
10. The concrete will be cored to determine the characteristics of the surface of the pad and the character of the bulk concrete. All core holes will be repaired with epoxy grout.
11. Following receipt of the mixing pad solids sample results, the material will be transported offsite for proper disposal.



12. Following receipt of the concrete core sample results a determination on the effectiveness of the decontamination will be made. The data and interpretation will be submitted to the NYSDEC for review.



Figures



A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

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TREATED WATER DISCHARGE

**CENTRAL WEST SECTION OF PROPERTY
TANKS AND RAIL CARS**

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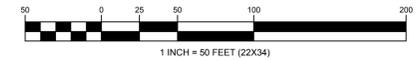
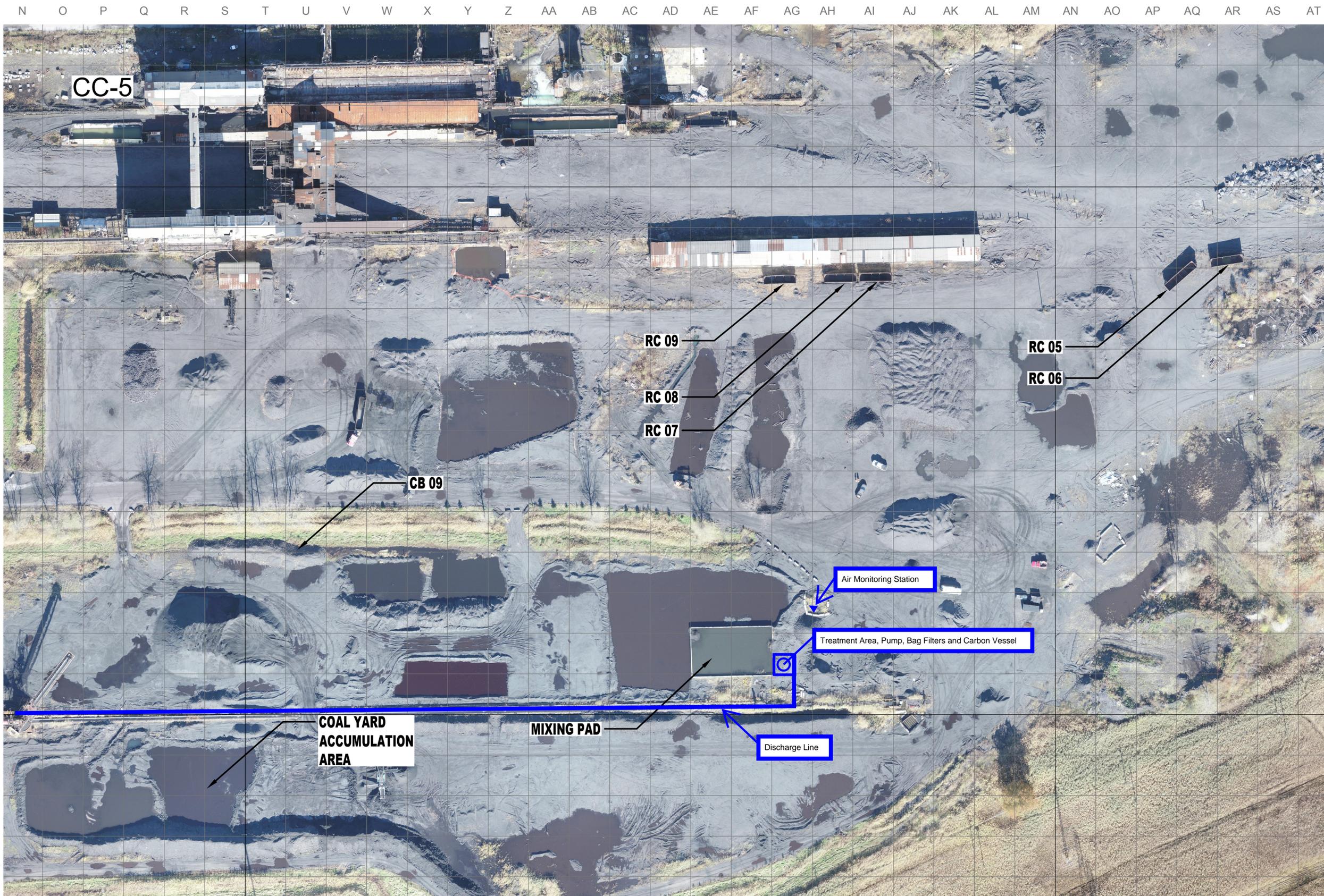


FIGURE 1

DRAWING NUMBER
107A



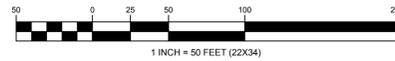
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TREATED WATER DISCHARGE
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FIGURE 2
 DRAWING NUMBER
107A

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JULY 15, 2020

Attachment A
Laboratory Report





Analytical Report For
Inventum Engineering, P.C.

For Lab Project ID

200501

Referencing

Riverview

Prepared

Monday, February 10, 2020

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

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

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Report Prepared Monday, February 10, 2020



Client: Inventum Engineering, P.C.

Project Reference: Riverview

Sample Identifier: Outfall 2-01312020

Lab Sample ID: 200501-01

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

Mercury

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Mercury	< 0.000200	mg/L		2/7/2020 11:05
Method Reference(s):	EPA 7470A			
Preparation Date:	2/6/2020			
Data File:	Hg200207A			

Priority Pollutant Metals (ICP)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Aluminum	< 0.100	mg/L		2/6/2020 10:33
Antimony	< 0.0600	mg/L		2/4/2020 20:23
Arsenic	< 0.0100	mg/L		2/6/2020 10:33
Beryllium	< 0.00500	mg/L		2/4/2020 20:23
Cadmium	< 0.00500	mg/L		2/4/2020 20:23
Chromium	< 0.0100	mg/L		2/4/2020 20:23
Copper	< 0.0400	mg/L		2/4/2020 20:23
Iron	0.457	mg/L		2/6/2020 10:33
Lead	< 0.0100	mg/L		2/4/2020 20:23
Manganese	0.184	mg/L		2/4/2020 20:23
Nickel	< 0.0400	mg/L		2/4/2020 20:23
Selenium	< 0.0200	mg/L		2/6/2020 10:33
Silver	< 0.0100	mg/L		2/4/2020 20:23
Thallium	< 0.0250	mg/L		2/4/2020 20:23
Zinc	< 0.0600	mg/L		2/4/2020 20:23
Method Reference(s):	EPA 6010C EPA 3005A			
Preparation Date:	2/3/2020			
Data File:	200206A			

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	< 10.0	ug/L		2/4/2020 14:29

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Lab Project ID: 200501

Client: Inventum Engineering, P.C.

Project Reference: Riverview

Sample Identifier: Outfall 2-01312020

Lab Sample ID: 200501-01

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

1,2,4,5-Tetrachlorobenzene	< 10.0	ug/L	2/4/2020 14:29
1,2,4-Trichlorobenzene	< 10.0	ug/L	2/4/2020 14:29
1,2-Dichlorobenzene	< 10.0	ug/L	2/4/2020 14:29
1,3-Dichlorobenzene	< 10.0	ug/L	2/4/2020 14:29
1,4-Dichlorobenzene	< 10.0	ug/L	2/4/2020 14:29
2,2-Oxybis (1-chloropropane)	< 10.0	ug/L	2/4/2020 14:29
2,3,4,6-Tetrachlorophenol	< 10.0	ug/L	2/4/2020 14:29
2,4,5-Trichlorophenol	< 10.0	ug/L	2/4/2020 14:29
2,4,6-Trichlorophenol	< 20.0	ug/L	2/4/2020 14:29
2,4-Dichlorophenol	< 10.0	ug/L	2/4/2020 14:29
2,4-Dimethylphenol	< 10.0	ug/L	2/4/2020 14:29
2,4-Dinitrophenol	< 20.0	ug/L	2/4/2020 14:29
2,4-Dinitrotoluene	< 10.0	ug/L	2/4/2020 14:29
2,6-Dinitrotoluene	< 10.0	ug/L	2/4/2020 14:29
2-Chloronaphthalene	< 10.0	ug/L	2/4/2020 14:29
2-Chlorophenol	< 10.0	ug/L	2/4/2020 14:29
2-Methylnaphthalene	< 10.0	ug/L	2/4/2020 14:29
2-Methylphenol	< 10.0	ug/L	2/4/2020 14:29
2-Nitroaniline	< 20.0	ug/L	2/4/2020 14:29
2-Nitrophenol	< 10.0	ug/L	2/4/2020 14:29
3&4-Methylphenol	< 10.0	ug/L	2/4/2020 14:29
3,3'-Dichlorobenzidine	< 10.0	ug/L	2/4/2020 14:29
3-Nitroaniline	< 20.0	ug/L	2/4/2020 14:29
4,6-Dinitro-2-methylphenol	< 20.0	ug/L	2/4/2020 14:29
4-Bromophenyl phenyl ether	< 10.0	ug/L	2/4/2020 14:29
4-Chloro-3-methylphenol	< 10.0	ug/L	2/4/2020 14:29
4-Chloroaniline	< 10.0	ug/L	2/4/2020 14:29
4-Chlorophenyl phenyl ether	< 10.0	ug/L	2/4/2020 14:29
4-Nitroaniline	< 20.0	ug/L	2/4/2020 14:29
4-Nitrophenol	< 20.0	ug/L	2/4/2020 14:29

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Lab Project ID: 200501

Client: Inventum Engineering, P.C.

Project Reference: Riverview

Sample Identifier: Outfall 2-01312020

Lab Sample ID: 200501-01

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

Acenaphthene	< 10.0	ug/L	2/4/2020 14:29
Acenaphthylene	< 10.0	ug/L	2/4/2020 14:29
Acetophenone	< 10.0	ug/L	2/4/2020 14:29
Anthracene	< 10.0	ug/L	2/4/2020 14:29
Atrazine	< 10.0	ug/L	2/4/2020 14:29
Benzaldehyde	< 10.0	ug/L	2/4/2020 14:29
Benzo (a) anthracene	< 10.0	ug/L	2/4/2020 14:29
Benzo (a) pyrene	< 10.0	ug/L	2/4/2020 14:29
Benzo (b) fluoranthene	< 10.0	ug/L	2/4/2020 14:29
Benzo (g,h,i) perylene	< 10.0	ug/L	2/4/2020 14:29
Benzo (k) fluoranthene	< 10.0	ug/L	2/4/2020 14:29
Bis (2-chloroethoxy) methane	< 10.0	ug/L	2/4/2020 14:29
Bis (2-chloroethyl) ether	< 10.0	ug/L	2/4/2020 14:29
Bis (2-ethylhexyl) phthalate	< 10.0	ug/L	2/4/2020 14:29
Butylbenzylphthalate	< 10.0	ug/L	2/4/2020 14:29
Caprolactam	< 10.0	ug/L	2/4/2020 14:29
Carbazole	< 10.0	ug/L	2/4/2020 14:29
Chrysene	< 10.0	ug/L	2/4/2020 14:29
Dibenz (a,h) anthracene	< 10.0	ug/L	2/4/2020 14:29
Dibenzofuran	< 10.0	ug/L	2/4/2020 14:29
Diethyl phthalate	< 10.0	ug/L	2/4/2020 14:29
Dimethyl phthalate	< 20.0	ug/L	2/4/2020 14:29
Di-n-butyl phthalate	< 10.0	ug/L	2/4/2020 14:29
Di-n-octylphthalate	< 10.0	ug/L	2/4/2020 14:29
Fluoranthene	< 10.0	ug/L	2/4/2020 14:29
Fluorene	< 10.0	ug/L	2/4/2020 14:29
Hexachlorobenzene	< 10.0	ug/L	2/4/2020 14:29
Hexachlorobutadiene	< 10.0	ug/L	2/4/2020 14:29
Hexachlorocyclopentadiene	< 10.0	ug/L	2/4/2020 14:29
Hexachloroethane	< 10.0	ug/L	2/4/2020 14:29

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Client: Inventum Engineering, P.C.

Project Reference: Riverview

Sample Identifier: Outfall 2-01312020

Lab Sample ID: 200501-01

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

Indeno (1,2,3-cd) pyrene	< 10.0	ug/L	2/4/2020	14:29
Isophorone	< 10.0	ug/L	2/4/2020	14:29
Naphthalene	< 10.0	ug/L	2/4/2020	14:29
Nitrobenzene	< 10.0	ug/L	2/4/2020	14:29
N-Nitroso-di-n-propylamine	< 10.0	ug/L	2/4/2020	14:29
N-Nitrosodiphenylamine	< 10.0	ug/L	2/4/2020	14:29
Pentachlorophenol	< 20.0	ug/L	2/4/2020	14:29
Phenanthrene	< 10.0	ug/L	2/4/2020	14:29
Phenol	< 10.0	ug/L	2/4/2020	14:29
Pyrene	< 10.0	ug/L	2/4/2020	14:29

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
2,4,6-Tribromophenol	75.5	59.6 - 114		2/4/2020 14:29
2-Fluorobiphenyl	56.4	36.2 - 99.1		2/4/2020 14:29
2-Fluorophenol	35.0	14.9 - 105		2/4/2020 14:29
Nitrobenzene-d5	68.1	53.7 - 102		2/4/2020 14:29
Phenol-d5	25.2	10 - 106		2/4/2020 14:29
Terphenyl-d14	79.7	58.7 - 116		2/4/2020 14:29

Method Reference(s): EPA 8270D
EPA 3510C
Preparation Date: 2/4/2020
Data File: B44291.D

Total Suspended Solids

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Solids, Suspended	5.0	mg/L		2/3/2020

Method Reference(s): SM 2540 D
Subcontractor ELAP ID: 11148

Total Cyanide

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Cyanide, Total	0.0134	mg/L		2/5/2020



Lab Project ID: 200501

Client: Inventum Engineering, P.C.

Project Reference: Riverview

Sample Identifier: Outfall 2-01312020

Lab Sample ID: 200501-01

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

Method Reference(s): SM 4500 CN E - 2011

SM 4500 CN C - 2011

Preparation Date: 2/5/2020

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

Project Reference: Riverview

Sample Identifier: Settling Pond-01/31/2020

Lab Sample ID: 200501-02

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

Mercury

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Mercury	< 0.000200	mg/L		2/7/2020 11:11

Method Reference(s): EPA 7470A

Preparation Date: 2/6/2020

Data File: Hg200207A

Priority Pollutant Metals (ICP)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Aluminum	1.14	mg/L		2/6/2020 10:46
Antimony	< 0.0600	mg/L		2/4/2020 20:37
Arsenic	< 0.0100	mg/L		2/6/2020 10:46
Beryllium	< 0.00500	mg/L		2/4/2020 20:37
Cadmium	< 0.00500	mg/L		2/4/2020 20:37
Chromium	< 0.0100	mg/L		2/4/2020 20:37
Copper	< 0.0400	mg/L		2/4/2020 20:37
Iron	2.73	mg/L		2/6/2020 10:46
Lead	< 0.0100	mg/L		2/4/2020 20:37
Manganese	1.38	mg/L		2/4/2020 20:37
Nickel	< 0.0400	mg/L		2/4/2020 20:37
Selenium	0.0278	mg/L		2/6/2020 10:46
Silver	< 0.0100	mg/L		2/4/2020 20:37
Thallium	< 0.0250	mg/L		2/4/2020 20:37
Zinc	0.105	mg/L		2/4/2020 20:37

Method Reference(s): EPA 6010C

EPA 3005A

Preparation Date: 2/3/2020

Data File: 200206A

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	< 10.0	ug/L		2/4/2020 14:58

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Lab Project ID: 200501

Client: Inventum Engineering, P.C.

Project Reference: Riverview

Sample Identifier: Settling Pond-01/31/2020

Lab Sample ID: 200501-02

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

1,2,4,5-Tetrachlorobenzene	< 10.0	ug/L	2/4/2020 14:58
1,2,4-Trichlorobenzene	< 10.0	ug/L	2/4/2020 14:58
1,2-Dichlorobenzene	< 10.0	ug/L	2/4/2020 14:58
1,3-Dichlorobenzene	< 10.0	ug/L	2/4/2020 14:58
1,4-Dichlorobenzene	< 10.0	ug/L	2/4/2020 14:58
2,2-Oxybis (1-chloropropane)	< 10.0	ug/L	2/4/2020 14:58
2,3,4,6-Tetrachlorophenol	< 10.0	ug/L	2/4/2020 14:58
2,4,5-Trichlorophenol	< 10.0	ug/L	2/4/2020 14:58
2,4,6-Trichlorophenol	< 20.0	ug/L	2/4/2020 14:58
2,4-Dichlorophenol	< 10.0	ug/L	2/4/2020 14:58
2,4-Dimethylphenol	< 10.0	ug/L	2/4/2020 14:58
2,4-Dinitrophenol	< 20.0	ug/L	2/4/2020 14:58
2,4-Dinitrotoluene	< 10.0	ug/L	2/4/2020 14:58
2,6-Dinitrotoluene	< 10.0	ug/L	2/4/2020 14:58
2-Chloronaphthalene	< 10.0	ug/L	2/4/2020 14:58
2-Chlorophenol	< 10.0	ug/L	2/4/2020 14:58
2-Methylnaphthalene	< 10.0	ug/L	2/4/2020 14:58
2-Methylphenol	< 10.0	ug/L	2/4/2020 14:58
2-Nitroaniline	< 20.0	ug/L	2/4/2020 14:58
2-Nitrophenol	< 10.0	ug/L	2/4/2020 14:58
3&4-Methylphenol	< 10.0	ug/L	2/4/2020 14:58
3,3'-Dichlorobenzidine	< 10.0	ug/L	2/4/2020 14:58
3-Nitroaniline	< 20.0	ug/L	2/4/2020 14:58
4,6-Dinitro-2-methylphenol	< 20.0	ug/L	2/4/2020 14:58
4-Bromophenyl phenyl ether	< 10.0	ug/L	2/4/2020 14:58
4-Chloro-3-methylphenol	< 10.0	ug/L	2/4/2020 14:58
4-Chloroaniline	< 10.0	ug/L	2/4/2020 14:58
4-Chlorophenyl phenyl ether	< 10.0	ug/L	2/4/2020 14:58
4-Nitroaniline	< 20.0	ug/L	2/4/2020 14:58
4-Nitrophenol	< 20.0	ug/L	2/4/2020 14:58

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: 200501

Client: Inventum Engineering, P.C.

Project Reference: Riverview

Sample Identifier: Settling Pond-01/31/2020

Lab Sample ID: 200501-02

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

Acenaphthene	< 10.0	ug/L	2/4/2020 14:58
Acenaphthylene	< 10.0	ug/L	2/4/2020 14:58
Acetophenone	< 10.0	ug/L	2/4/2020 14:58
Anthracene	< 10.0	ug/L	2/4/2020 14:58
Atrazine	< 10.0	ug/L	2/4/2020 14:58
Benzaldehyde	< 10.0	ug/L	2/4/2020 14:58
Benzo (a) anthracene	< 10.0	ug/L	2/4/2020 14:58
Benzo (a) pyrene	< 10.0	ug/L	2/4/2020 14:58
Benzo (b) fluoranthene	< 10.0	ug/L	2/4/2020 14:58
Benzo (g,h,i) perylene	< 10.0	ug/L	2/4/2020 14:58
Benzo (k) fluoranthene	< 10.0	ug/L	2/4/2020 14:58
Bis (2-chloroethoxy) methane	< 10.0	ug/L	2/4/2020 14:58
Bis (2-chloroethyl) ether	< 10.0	ug/L	2/4/2020 14:58
Bis (2-ethylhexyl) phthalate	< 10.0	ug/L	2/4/2020 14:58
Butylbenzylphthalate	< 10.0	ug/L	2/4/2020 14:58
Caprolactam	< 10.0	ug/L	2/4/2020 14:58
Carbazole	< 10.0	ug/L	2/4/2020 14:58
Chrysene	< 10.0	ug/L	2/4/2020 14:58
Dibenz (a,h) anthracene	< 10.0	ug/L	2/4/2020 14:58
Dibenzofuran	< 10.0	ug/L	2/4/2020 14:58
Diethyl phthalate	< 10.0	ug/L	2/4/2020 14:58
Dimethyl phthalate	< 20.0	ug/L	2/4/2020 14:58
Di-n-butyl phthalate	< 10.0	ug/L	2/4/2020 14:58
Di-n-octylphthalate	< 10.0	ug/L	2/4/2020 14:58
Fluoranthene	< 10.0	ug/L	2/4/2020 14:58
Fluorene	< 10.0	ug/L	2/4/2020 14:58
Hexachlorobenzene	< 10.0	ug/L	2/4/2020 14:58
Hexachlorobutadiene	< 10.0	ug/L	2/4/2020 14:58
Hexachlorocyclopentadiene	< 10.0	ug/L	2/4/2020 14:58
Hexachloroethane	< 10.0	ug/L	2/4/2020 14:58

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Client: Inventum Engineering, P.C.

Project Reference: Riverview

Sample Identifier: Settling Pond-01/31/2020

Lab Sample ID: 200501-02

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

Indeno (1,2,3-cd) pyrene	< 10.0	ug/L	2/4/2020	14:58
Isophorone	< 10.0	ug/L	2/4/2020	14:58
Naphthalene	< 10.0	ug/L	2/4/2020	14:58
Nitrobenzene	< 10.0	ug/L	2/4/2020	14:58
N-Nitroso-di-n-propylamine	< 10.0	ug/L	2/4/2020	14:58
N-Nitrosodiphenylamine	< 10.0	ug/L	2/4/2020	14:58
Pentachlorophenol	< 20.0	ug/L	2/4/2020	14:58
Phenanthrene	< 10.0	ug/L	2/4/2020	14:58
Phenol	< 10.0	ug/L	2/4/2020	14:58
Pyrene	< 10.0	ug/L	2/4/2020	14:58

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
2,4,6-Tribromophenol	76.4	59.6 - 114		2/4/2020 14:58
2-Fluorobiphenyl	56.6	36.2 - 99.1		2/4/2020 14:58
2-Fluorophenol	34.6	14.9 - 105		2/4/2020 14:58
Nitrobenzene-d5	66.0	53.7 - 102		2/4/2020 14:58
Phenol-d5	24.9	10 - 106		2/4/2020 14:58
Terphenyl-d14	70.9	58.7 - 116		2/4/2020 14:58

Method Reference(s): EPA 8270D
EPA 3510C
Preparation Date: 2/4/2020
Data File: B44292.D

Total Suspended Solids

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Solids, Suspended	58	mg/L		2/3/2020

Method Reference(s): SM 2540 D
Subcontractor ELAP ID: 11148

Total Cyanide

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Cyanide, Total	0.0131	mg/L		2/5/2020

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Lab Project ID: 200501

Client: Inventum Engineering, P.C.

Project Reference: Riverview

Sample Identifier: Settling Pond-01/31/2020

Lab Sample ID: 200501-02

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

Method Reference(s): SM 4500 CN E - 2011

SM 4500 CN C - 2011

Preparation Date: 2/5/2020



Client: Inventum Engineering, P.C.

Project Reference: Riverview

Sample Identifier: Mixing Pond-01/31/2020

Lab Sample ID: 200501-03

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

Mercury

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Mercury	< 0.000200	mg/L		2/7/2020 11:13
Method Reference(s):	EPA 7470A			
Preparation Date:	2/6/2020			
Data File:	Hg200207A			

Priority Pollutant Metals (ICP)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Aluminum	< 0.100	mg/L		2/6/2020 10:51
Antimony	< 0.0600	mg/L		2/4/2020 20:41
Arsenic	< 0.0100	mg/L		2/6/2020 10:51
Beryllium	< 0.00500	mg/L		2/4/2020 20:41
Cadmium	< 0.00500	mg/L		2/4/2020 20:41
Chromium	< 0.0100	mg/L		2/4/2020 20:41
Copper	< 0.0400	mg/L		2/4/2020 20:41
Iron	0.279	mg/L		2/6/2020 10:51
Lead	< 0.0100	mg/L		2/4/2020 20:41
Manganese	0.0158	mg/L		2/4/2020 20:41
Nickel	< 0.0400	mg/L		2/4/2020 20:41
Selenium	< 0.0200	mg/L		2/4/2020 20:41
Silver	< 0.0100	mg/L		2/4/2020 20:41
Thallium	< 0.0250	mg/L		2/4/2020 20:41
Zinc	< 0.0600	mg/L		2/4/2020 20:41
Method Reference(s):	EPA 6010C EPA 3005A			
Preparation Date:	2/3/2020			
Data File:	200206A			

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	< 10.4	ug/L		2/4/2020 15:26

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Client: Inventum Engineering, P.C.
Project Reference: Riverview

Sample Identifier: Mixing Pond-01/31/2020

Lab Sample ID: 200501-03

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

1,2,4,5-Tetrachlorobenzene	< 10.4	ug/L	2/4/2020	15:26
1,2,4-Trichlorobenzene	< 10.4	ug/L	2/4/2020	15:26
1,2-Dichlorobenzene	< 10.4	ug/L	2/4/2020	15:26
1,3-Dichlorobenzene	< 10.4	ug/L	2/4/2020	15:26
1,4-Dichlorobenzene	< 10.4	ug/L	2/4/2020	15:26
2,2-Oxybis (1-chloropropane)	< 10.4	ug/L	2/4/2020	15:26
2,3,4,6-Tetrachlorophenol	< 10.4	ug/L	2/4/2020	15:26
2,4,5-Trichlorophenol	< 10.4	ug/L	2/4/2020	15:26
2,4,6-Trichlorophenol	< 20.8	ug/L	2/4/2020	15:26
2,4-Dichlorophenol	< 10.4	ug/L	2/4/2020	15:26
2,4-Dimethylphenol	< 10.4	ug/L	2/4/2020	15:26
2,4-Dinitrophenol	< 20.8	ug/L	2/4/2020	15:26
2,4-Dinitrotoluene	< 10.4	ug/L	2/4/2020	15:26
2,6-Dinitrotoluene	< 10.4	ug/L	2/4/2020	15:26
2-Chloronaphthalene	< 10.4	ug/L	2/4/2020	15:26
2-Chlorophenol	< 10.4	ug/L	2/4/2020	15:26
2-Methylnaphthalene	< 10.4	ug/L	2/4/2020	15:26
2-Methylphenol	< 10.4	ug/L	2/4/2020	15:26
2-Nitroaniline	< 20.8	ug/L	2/4/2020	15:26
2-Nitrophenol	< 10.4	ug/L	2/4/2020	15:26
3&4-Methylphenol	< 10.4	ug/L	2/4/2020	15:26
3,3'-Dichlorobenzidine	< 10.4	ug/L	2/4/2020	15:26
3-Nitroaniline	< 20.8	ug/L	2/4/2020	15:26
4,6-Dinitro-2-methylphenol	< 20.8	ug/L	2/4/2020	15:26
4-Bromophenyl phenyl ether	< 10.4	ug/L	2/4/2020	15:26
4-Chloro-3-methylphenol	< 10.4	ug/L	2/4/2020	15:26
4-Chloroaniline	< 10.4	ug/L	2/4/2020	15:26
4-Chlorophenyl phenyl ether	< 10.4	ug/L	2/4/2020	15:26
4-Nitroaniline	< 20.8	ug/L	2/4/2020	15:26
4-Nitrophenol	< 20.8	ug/L	2/4/2020	15:26

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Client: Inventum Engineering, P.C.
Project Reference: Riverview

Sample Identifier: Mixing Pond-01/31/2020

Lab Sample ID: 200501-03

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

Acenaphthene	< 10.4	ug/L	2/4/2020	15:26
Acenaphthylene	< 10.4	ug/L	2/4/2020	15:26
Acetophenone	< 10.4	ug/L	2/4/2020	15:26
Anthracene	< 10.4	ug/L	2/4/2020	15:26
Atrazine	< 10.4	ug/L	2/4/2020	15:26
Benzaldehyde	< 10.4	ug/L	2/4/2020	15:26
Benzo (a) anthracene	< 10.4	ug/L	2/4/2020	15:26
Benzo (a) pyrene	< 10.4	ug/L	2/4/2020	15:26
Benzo (b) fluoranthene	< 10.4	ug/L	2/4/2020	15:26
Benzo (g,h,i) perylene	< 10.4	ug/L	2/4/2020	15:26
Benzo (k) fluoranthene	< 10.4	ug/L	2/4/2020	15:26
Bis (2-chloroethoxy) methane	< 10.4	ug/L	2/4/2020	15:26
Bis (2-chloroethyl) ether	< 10.4	ug/L	2/4/2020	15:26
Bis (2-ethylhexyl) phthalate	< 10.4	ug/L	2/4/2020	15:26
Butylbenzylphthalate	< 10.4	ug/L	2/4/2020	15:26
Caprolactam	< 10.4	ug/L	2/4/2020	15:26
Carbazole	< 10.4	ug/L	2/4/2020	15:26
Chrysene	< 10.4	ug/L	2/4/2020	15:26
Dibenz (a,h) anthracene	< 10.4	ug/L	2/4/2020	15:26
Dibenzofuran	< 10.4	ug/L	2/4/2020	15:26
Diethyl phthalate	< 10.4	ug/L	2/4/2020	15:26
Dimethyl phthalate	< 20.8	ug/L	2/4/2020	15:26
Di-n-butyl phthalate	< 10.4	ug/L	2/4/2020	15:26
Di-n-octylphthalate	< 10.4	ug/L	2/4/2020	15:26
Fluoranthene	< 10.4	ug/L	2/4/2020	15:26
Fluorene	< 10.4	ug/L	2/4/2020	15:26
Hexachlorobenzene	< 10.4	ug/L	2/4/2020	15:26
Hexachlorobutadiene	< 10.4	ug/L	2/4/2020	15:26
Hexachlorocyclopentadiene	< 10.4	ug/L	2/4/2020	15:26
Hexachloroethane	< 10.4	ug/L	2/4/2020	15:26

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Client: Inventum Engineering, P.C.

Project Reference: Riverview

Sample Identifier: Mixing Pond-01/31/2020

Lab Sample ID: 200501-03

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

Indeno (1,2,3-cd) pyrene	< 10.4	ug/L	2/4/2020	15:26
Isophorone	< 10.4	ug/L	2/4/2020	15:26
Naphthalene	< 10.4	ug/L	2/4/2020	15:26
Nitrobenzene	< 10.4	ug/L	2/4/2020	15:26
N-Nitroso-di-n-propylamine	< 10.4	ug/L	2/4/2020	15:26
N-Nitrosodiphenylamine	< 10.4	ug/L	2/4/2020	15:26
Pentachlorophenol	< 20.8	ug/L	2/4/2020	15:26
Phenanthrene	< 10.4	ug/L	2/4/2020	15:26
Phenol	< 10.4	ug/L	2/4/2020	15:26
Pyrene	< 10.4	ug/L	2/4/2020	15:26

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
2,4,6-Tribromophenol	68.1	59.6 - 114		2/4/2020 15:26
2-Fluorobiphenyl	55.8	36.2 - 99.1		2/4/2020 15:26
2-Fluorophenol	35.4	14.9 - 105		2/4/2020 15:26
Nitrobenzene-d5	67.9	53.7 - 102		2/4/2020 15:26
Phenol-d5	25.3	10 - 106		2/4/2020 15:26
Terphenyl-d14	53.4	58.7 - 116	*	2/4/2020 15:26

Method Reference(s): EPA 8270D
EPA 3510C
Preparation Date: 2/4/2020
Data File: B44293.D

Total Suspended Solids

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Solids, Suspended	3.8	mg/L		2/3/2020

Method Reference(s): SM 2540 D
Subcontractor ELAP ID: 11148

Total Cyanide

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Cyanide, Total	< 0.0100	mg/L		2/5/2020

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Lab Project ID: 200501

Client: Inventum Engineering, P.C.

Project Reference: Riverview

Sample Identifier: Mixing Pond-01/31/2020

Lab Sample ID: 200501-03

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

Method Reference(s): SM 4500 CN E - 2011

SM 4500 CN C - 2011

Preparation Date: 2/5/2020



Client: Inventum Engineering, P.C.

Project Reference: Riverview

Sample Identifier: Coal Yard 1-01/31/2020

Lab Sample ID: 200501-04

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

Mercury

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Mercury	0.000441	mg/L		2/7/2020 11:15
Method Reference(s):	EPA 7470A			
Preparation Date:	2/6/2020			
Data File:	Hg200207A			

Priority Pollutant Metals (ICP)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Aluminum	5.78	mg/L		2/6/2020 10:55
Antimony	< 0.0600	mg/L		2/4/2020 20:46
Arsenic	< 0.0100	mg/L		2/6/2020 10:55
Beryllium	< 0.00500	mg/L		2/4/2020 20:46
Cadmium	< 0.00500	mg/L		2/4/2020 20:46
Chromium	< 0.0100	mg/L		2/4/2020 20:46
Copper	0.0870	mg/L		2/4/2020 20:46
Iron	13.5	mg/L		2/6/2020 10:55
Lead	0.0212	mg/L		2/4/2020 20:46
Manganese	1.81	mg/L		2/4/2020 20:46
Nickel	0.104	mg/L		2/4/2020 20:46
Selenium	< 0.0200	mg/L		2/4/2020 20:46
Silver	< 0.0100	mg/L		2/4/2020 20:46
Thallium	< 0.0250	mg/L		2/4/2020 20:46
Zinc	0.345	mg/L		2/4/2020 20:46
Method Reference(s):	EPA 6010C EPA 3005A			
Preparation Date:	2/3/2020			
Data File:	200206A			

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	< 10.0	ug/L		2/4/2020 15:55

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Client: Inventum Engineering, P.C.
Project Reference: Riverview

Sample Identifier: Coal Yard 1-01/31/2020

Lab Sample ID: 200501-04

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

1,2,4,5-Tetrachlorobenzene	< 10.0	ug/L	2/4/2020	15:55
1,2,4-Trichlorobenzene	< 10.0	ug/L	2/4/2020	15:55
1,2-Dichlorobenzene	< 10.0	ug/L	2/4/2020	15:55
1,3-Dichlorobenzene	< 10.0	ug/L	2/4/2020	15:55
1,4-Dichlorobenzene	< 10.0	ug/L	2/4/2020	15:55
2,2-Oxybis (1-chloropropane)	< 10.0	ug/L	2/4/2020	15:55
2,3,4,6-Tetrachlorophenol	< 10.0	ug/L	2/4/2020	15:55
2,4,5-Trichlorophenol	< 10.0	ug/L	2/4/2020	15:55
2,4,6-Trichlorophenol	< 20.0	ug/L	2/4/2020	15:55
2,4-Dichlorophenol	< 10.0	ug/L	2/4/2020	15:55
2,4-Dimethylphenol	< 10.0	ug/L	2/4/2020	15:55
2,4-Dinitrophenol	< 20.0	ug/L	2/4/2020	15:55
2,4-Dinitrotoluene	< 10.0	ug/L	2/4/2020	15:55
2,6-Dinitrotoluene	< 10.0	ug/L	2/4/2020	15:55
2-Chloronaphthalene	< 10.0	ug/L	2/4/2020	15:55
2-Chlorophenol	< 10.0	ug/L	2/4/2020	15:55
2-Methylnaphthalene	< 10.0	ug/L	2/4/2020	15:55
2-Methylphenol	< 10.0	ug/L	2/4/2020	15:55
2-Nitroaniline	< 20.0	ug/L	2/4/2020	15:55
2-Nitrophenol	< 10.0	ug/L	2/4/2020	15:55
3&4-Methylphenol	< 10.0	ug/L	2/4/2020	15:55
3,3'-Dichlorobenzidine	< 10.0	ug/L	2/4/2020	15:55
3-Nitroaniline	< 20.0	ug/L	2/4/2020	15:55
4,6-Dinitro-2-methylphenol	< 20.0	ug/L	2/4/2020	15:55
4-Bromophenyl phenyl ether	< 10.0	ug/L	2/4/2020	15:55
4-Chloro-3-methylphenol	< 10.0	ug/L	2/4/2020	15:55
4-Chloroaniline	< 10.0	ug/L	2/4/2020	15:55
4-Chlorophenyl phenyl ether	< 10.0	ug/L	2/4/2020	15:55
4-Nitroaniline	< 20.0	ug/L	2/4/2020	15:55
4-Nitrophenol	< 20.0	ug/L	2/4/2020	15:55

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: Riverview

Sample Identifier: Coal Yard 1-01/31/2020

Lab Sample ID: 200501-04

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

Acenaphthene	< 10.0	ug/L	2/4/2020	15:55
Acenaphthylene	< 10.0	ug/L	2/4/2020	15:55
Acetophenone	< 10.0	ug/L	2/4/2020	15:55
Anthracene	< 10.0	ug/L	2/4/2020	15:55
Atrazine	< 10.0	ug/L	2/4/2020	15:55
Benzaldehyde	< 10.0	ug/L	2/4/2020	15:55
Benzo (a) anthracene	< 10.0	ug/L	2/4/2020	15:55
Benzo (a) pyrene	< 10.0	ug/L	2/4/2020	15:55
Benzo (b) fluoranthene	< 10.0	ug/L	2/4/2020	15:55
Benzo (g,h,i) perylene	< 10.0	ug/L	2/4/2020	15:55
Benzo (k) fluoranthene	< 10.0	ug/L	2/4/2020	15:55
Bis (2-chloroethoxy) methane	< 10.0	ug/L	2/4/2020	15:55
Bis (2-chloroethyl) ether	< 10.0	ug/L	2/4/2020	15:55
Bis (2-ethylhexyl) phthalate	< 10.0	ug/L	2/4/2020	15:55
Butylbenzylphthalate	< 10.0	ug/L	2/4/2020	15:55
Caprolactam	< 10.0	ug/L	2/4/2020	15:55
Carbazole	< 10.0	ug/L	2/4/2020	15:55
Chrysene	< 10.0	ug/L	2/4/2020	15:55
Dibenz (a,h) anthracene	< 10.0	ug/L	2/4/2020	15:55
Dibenzofuran	< 10.0	ug/L	2/4/2020	15:55
Diethyl phthalate	< 10.0	ug/L	2/4/2020	15:55
Dimethyl phthalate	< 20.0	ug/L	2/4/2020	15:55
Di-n-butyl phthalate	< 10.0	ug/L	2/4/2020	15:55
Di-n-octylphthalate	< 10.0	ug/L	2/4/2020	15:55
Fluoranthene	< 10.0	ug/L	2/4/2020	15:55
Fluorene	< 10.0	ug/L	2/4/2020	15:55
Hexachlorobenzene	< 10.0	ug/L	2/4/2020	15:55
Hexachlorobutadiene	< 10.0	ug/L	2/4/2020	15:55
Hexachlorocyclopentadiene	< 10.0	ug/L	2/4/2020	15:55
Hexachloroethane	< 10.0	ug/L	2/4/2020	15:55

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Client: Inventum Engineering, P.C.

Project Reference: Riverview

Sample Identifier: Coal Yard 1-01/31/2020

Lab Sample ID: 200501-04

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

Indeno (1,2,3-cd) pyrene	< 10.0	ug/L	2/4/2020	15:55
Isophorone	< 10.0	ug/L	2/4/2020	15:55
Naphthalene	< 10.0	ug/L	2/4/2020	15:55
Nitrobenzene	< 10.0	ug/L	2/4/2020	15:55
N-Nitroso-di-n-propylamine	< 10.0	ug/L	2/4/2020	15:55
N-Nitrosodiphenylamine	< 10.0	ug/L	2/4/2020	15:55
Pentachlorophenol	< 20.0	ug/L	2/4/2020	15:55
Phenanthrene	< 10.0	ug/L	2/4/2020	15:55
Phenol	< 10.0	ug/L	2/4/2020	15:55
Pyrene	< 10.0	ug/L	2/4/2020	15:55

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
2,4,6-Tribromophenol	71.8	59.6 - 114		2/4/2020 15:55
2-Fluorobiphenyl	54.8	36.2 - 99.1		2/4/2020 15:55
2-Fluorophenol	33.1	14.9 - 105		2/4/2020 15:55
Nitrobenzene-d5	62.3	53.7 - 102		2/4/2020 15:55
Phenol-d5	23.6	10 - 106		2/4/2020 15:55
Terphenyl-d14	70.2	58.7 - 116		2/4/2020 15:55

Method Reference(s): EPA 8270D
EPA 3510C
Preparation Date: 2/4/2020
Data File: B44294.D

Total Suspended Solids

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Solids, Suspended	920	mg/L	D	2/3/2020

Method Reference(s): SM 2540 D
Subcontractor ELAP ID: 11148

Total Cyanide

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Cyanide, Total	0.0140	mg/L		2/5/2020

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Lab Project ID: 200501

Client: Inventum Engineering, P.C.

Project Reference: Riverview

Sample Identifier: Coal Yard 1-01/31/2020

Lab Sample ID: 200501-04

Date Sampled: 1/31/2020

Matrix: Aq Liquid

Date Received: 2/3/2020

Method Reference(s): SM 4500 CN E - 2011

SM 4500 CN C - 2011

Preparation Date: 2/5/2020



Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: Riverview
Lab Project ID: 200501
Matrix: Aq Liquid

Priority Pollutant Metals (ICP)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Aluminum	<0.100	mg/L		2/6/2020 10:19
Antimony	<0.0600	mg/L		2/4/2020 20:05
Arsenic	<0.0100	mg/L		2/6/2020 10:19
Beryllium	<0.00500	mg/L		2/4/2020 20:05
Cadmium	<0.00500	mg/L		2/4/2020 20:05
Chromium	<0.0100	mg/L		2/4/2020 20:05
Copper	<0.0400	mg/L		2/4/2020 20:05
Iron	<0.100	mg/L		2/6/2020 10:19
Lead	<0.0100	mg/L		2/4/2020 20:05
Manganese	<0.0150	mg/L		2/4/2020 20:05
Nickel	<0.0400	mg/L		2/4/2020 20:05
Selenium	<0.0200	mg/L		2/4/2020 20:05
Silver	<0.0100	mg/L		2/4/2020 20:05
Thallium	<0.0250	mg/L		2/4/2020 20:05
Zinc	<0.0600	mg/L		2/4/2020 20:05

Method Reference(s): EPA 6010C
EPA 3005A
Preparation Date: 2/3/2020
Data File: 200206A
QC Batch ID: QC200203Water
QC Number: 1

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QC Report for Laboratory Control Sample and Control Sample Duplicate

Client: Invention Engineering, P.C.

Project Reference: Riverview

Lab Project ID: 200501

Matrix: Aq Liquid

Priority Pollutant Metals (ICP)

Analyte	ICP Added	ICSD Added	Spike Units	ICP Result	ICSD Result	ICP % Recovery	ICSD % Recovery	% Rec Limits	ICP Outliers	ICSD Outliers	Relative % Difference	RPD Limit	RPD Outliers	Date Analyzed
Aluminum	2.50	2.50	mg/L	2.54	2.53	102	101	85 - 115			0.433	20		2/6/2020
Antimony	2.50	2.50	mg/L	2.54	2.63	102	105	85 - 115			3.27	20		2/4/2020
Arsenic	2.50	2.50	mg/L	2.46	2.45	98.3	97.9	85 - 115			0.367	20		2/6/2020
Beryllium	0.500	0.500	mg/L	0.490	0.494	98.1	98.7	85 - 115			0.691	20		2/4/2020
Cadmium	1.00	1.00	mg/L	1.11	1.13	111	113	85 - 115			1.85	20		2/4/2020
Chromium	2.50	2.50	mg/L	2.57	2.66	103	106	85 - 115			3.50	20		2/4/2020
Copper	2.50	2.50	mg/L	2.29	2.32	91.6	92.9	85 - 115			1.39	20		2/4/2020
Iron	2.50	2.50	mg/L	2.45	2.47	98.1	98.9	85 - 115			0.772	20		2/6/2020
Lead	2.50	2.50	mg/L	2.53	2.64	101	105	85 - 115			4.13	20		2/4/2020
Manganese	1.00	1.00	mg/L	1.05	1.07	105	107	85 - 115			1.37	20		2/4/2020
Nickel	5.00	5.00	mg/L	4.90	5.09	97.9	102	85 - 115			3.93	20		2/4/2020
Selenium	2.50	2.50	mg/L	2.73	2.81	109	112	85 - 115			2.92	20		2/4/2020
Silver	0.250	0.250	mg/L	0.242	0.249	96.8	99.4	85 - 115			2.72	20		2/4/2020
Thallium	2.50	2.50	mg/L	2.67	2.93	107	117	85 - 115		*	9.23	20		2/6/2020
Zinc	2.50	2.50	mg/L	2.52	2.62	101	105	85 - 115			3.92	20		2/4/2020

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QC Report for Laboratory Control Sample and Control Sample Duplicate

Client: Inventum Engineering, P.C.

Project Reference: Riverview

Lab Project ID: 200501

Matrix: Aq Liquid

Priority Pollutant Metals (ICP)

Analyte	Added	Added	Units	Result	Result	Recovery	Recovery	Limits	Outliers	Outliers	Difference	Limit	Outliers	Date

Method Reference(s): EPA 6010C
EPA 3005A

Preparation Date: 2/3/2020

Data File: 200206A

QC Number: 1

QC Batch ID: QC200203Water

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QC Report for Sample Spike and Sample Duplicate

Client: Invention Engineering, P.C.

Lab Project ID: 200501

Project Reference: Riverview

Lab Sample ID: 200501-01

Date Sampled: 1/31/2020

Sample Identifier: Outfall 2-01312020

Date Received: 2/3/2020

Matrix: Aq Liquid

Priority Pollutant Metals (ICP)

Analyte	Sample Results	Result Units	Spike Added	Spike Result	Spike % Recovery	% Rec Limits	Spike Outliers	Duplicate Result	Relative % Difference	RPD Limit	RPD Outliers	Date Analyzed
Aluminum	< 0.100	mg/L	2.50	2.73	109	75 - 125		0.101	NC	20		2/6/2020
Antimony	< 0.0600	mg/L	2.50	2.65	106	75 - 125		<0.0600	NC	20		2/4/2020
Arsenic	< 0.0100	mg/L	2.50	2.48	99.1	75 - 125		<0.0100	NC	20		2/6/2020
Beryllium	< 0.00500	mg/L	0.500	0.490	98.1	75 - 125		<0.00500	NC	20		2/4/2020
Cadmium	< 0.00500	mg/L	1.00	1.10	110	75 - 125		<0.00500	NC	20		2/4/2020
Chromium	< 0.0100	mg/L	2.50	2.66	106	75 - 125		<0.0100	NC	20		2/4/2020
Copper	< 0.0400	mg/L	2.50	2.43	97.3	75 - 125		<0.0400	NC	20		2/4/2020
Iron	0.457	mg/L	2.50	3.04	103	75 - 125		0.402	12.9	20		2/6/2020
Lead	< 0.0100	mg/L	2.50	2.62	105	75 - 125		<0.0100	NC	20		2/4/2020
Manganese	0.184	mg/L	1.00	1.30	112	75 - 125		0.181	1.76	20		2/4/2020
Nickel	< 0.0400	mg/L	5.00	5.02	100	75 - 125		<0.0400	NC	20		2/4/2020
Selenium	< 0.0200	mg/L	2.50	2.52	101	75 - 125		<0.0200	NC	20		2/6/2020
Silver	< 0.0100	mg/L	0.250	0.264	106	75 - 125		<0.0100	NC	20		2/4/2020
Thallium	< 0.0250	mg/L	2.50	2.81	113	75 - 125		<0.0250	NC	20		2/4/2020

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.

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Report Prepared Friday, February 07, 2020



QC Report for Sample Spike and Sample Duplicate

Client: Inventum Engineering, P.C.

Lab Project ID: 200501

Project Reference: Riverview

Lab Sample ID: 200501-01

Date Sampled: 1/31/2020

Sample Identifier: Outfall 2-01312020

Date Received: 2/3/2020

Matrix: Aq Liquid

Priority Pollutant Metals (ICP)

Analyte	Sample Results	Result Units	Spike Added	Spike Result	Spike % Recovery	% Rec Limits	Spike Outliers	Duplicate Result	Relative % Difference	RPD Limit	RPD Outliers	Date Analyzed
Zinc	< 0.0600	mg/L	2.50	2.69	107	75 - 125		<0.0600	NC	20		2/4/2020
Method Reference(s):		EPA 6010C										
		EPA 3005A										
Preparation Date:		2/3/2020										
		200206A										
QC Batch ID:		QC200203Water										

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.

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Report Prepared Friday, February 07, 2020



Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: Riverview
Lab Project ID: 200501
Matrix: Aq Liquid

Mercury

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Mercury	<0.000200	mg/L		2/7/2020 11:00

Method Reference(s): EPA 7470A
Preparation Date: 2/6/2020
Data File: Hg200207A
QC Batch ID: QC200206HgWater
QC Number: 1



QC Report for Laboratory Control Sample and Control Sample Duplicate

Client: Inventum Engineering, P.C.

Project Reference: Riverview

Lab Project ID: 200501

Matrix: Aq Liquid

Mercury

Analyte	Added	Added	Units	Result	Result	Recovery	Recovery	Limits	Outliers	Outliers	Difference	Limit	Outliers	Date Analyzed
Mercury	0.00200	0.00200	mg/L	0.00205	0.00206	102	103	80 - 120			0.696	20		2/7/2020

Method Reference(s): EPA 7470A
 Preparation Date: 2/6/2020
 Data File: Hg200207A
 QC Number: 1
 QC Batch ID: QC200206HgWater

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QC Report for Sample Spike and Sample Duplicate

Client: Inventum Engineering, P.C.

Lab Project ID: 200501

Project Reference: Riverview

Lab Sample ID: 200501-01

Date Sampled: 1/31/2020

Sample Identifier: Outfall 2-01312020

Date Received: 2/3/2020

Matrix: Aq Liquid

Mercury

Analyte	Sample Results	Result Units	Spike Added	Spike Result	Spike % Recovery	% Rec Limits	Spike Outliers	Duplicate Result	Relative % Difference	RPD Limit	RPD Outliers	Date Analyzed
Mercury	< 0.000200	mg/L	0.00200	0.00215	108	75 - 125		<0.000200	NC	20		2/7/2020

Method Reference(s): EPA 7470A
 Preparation Date: 2/6/2020
 Hg200207A
 QC Batch ID: QC200206HgWater

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.

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Report Prepared Friday, February 07, 2020



Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: Riverview
Lab Project ID: 200501
Matrix: Aq Liquid

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	<10.0	ug/L		2/4/2020 13:31
1,2,4,5-Tetrachlorobenzene	<10.0	ug/L		2/4/2020 13:31
1,2,4-Trichlorobenzene	<10.0	ug/L		2/4/2020 13:31
1,2-Dichlorobenzene	<10.0	ug/L		2/4/2020 13:31
1,3-Dichlorobenzene	<10.0	ug/L		2/4/2020 13:31
1,4-Dichlorobenzene	<10.0	ug/L		2/4/2020 13:31
2,2-Oxybis (1-chloropropane)	<10.0	ug/L		2/4/2020 13:31
2,3,4,6-Tetrachlorophenol	<10.0	ug/L		2/4/2020 13:31
2,4,5-Trichlorophenol	<10.0	ug/L		2/4/2020 13:31
2,4,6-Trichlorophenol	<20.0	ug/L		2/4/2020 13:31
2,4-Dichlorophenol	<10.0	ug/L		2/4/2020 13:31
2,4-Dimethylphenol	<10.0	ug/L		2/4/2020 13:31
2,4-Dinitrophenol	<20.0	ug/L		2/4/2020 13:31
2,4-Dinitrotoluene	<10.0	ug/L		2/4/2020 13:31
2,6-Dinitrotoluene	<10.0	ug/L		2/4/2020 13:31
2-Chloronaphthalene	<10.0	ug/L		2/4/2020 13:31
2-Chlorophenol	<10.0	ug/L		2/4/2020 13:31
2-Methylnaphthalene	<10.0	ug/L		2/4/2020 13:31
2-Methylphenol	<10.0	ug/L		2/4/2020 13:31
2-Nitroaniline	<20.0	ug/L		2/4/2020 13:31
2-Nitrophenol	<10.0	ug/L		2/4/2020 13:31
3&4-Methylphenol	<10.0	ug/L		2/4/2020 13:31
3,3'-Dichlorobenzidine	<10.0	ug/L		2/4/2020 13:31
3-Nitroaniline	<20.0	ug/L		2/4/2020 13:31
4,6-Dinitro-2-methylphenol	<20.0	ug/L		2/4/2020 13:31
4-Bromophenyl phenyl ether	<10.0	ug/L		2/4/2020 13:31
4-Chloro-3-methylphenol	<10.0	ug/L		2/4/2020 13:31
4-Chloroaniline	<10.0	ug/L		2/4/2020 13:31

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: Riverview
Lab Project ID: 200501
Matrix: Aq Liquid

Semi-Volatile Organics (Acid/Base Neutrals)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
4-Chlorophenyl phenyl ether	<10.0	ug/L		2/4/2020 13:31
4-Nitroaniline	<20.0	ug/L		2/4/2020 13:31
4-Nitrophenol	<20.0	ug/L		2/4/2020 13:31
Acenaphthene	<10.0	ug/L		2/4/2020 13:31
Acenaphthylene	<10.0	ug/L		2/4/2020 13:31
Acetophenone	<10.0	ug/L		2/4/2020 13:31
Anthracene	<10.0	ug/L		2/4/2020 13:31
Atrazine	<10.0	ug/L		2/4/2020 13:31
Benzaldehyde	<10.0	ug/L		2/4/2020 13:31
Benzo (a) anthracene	<10.0	ug/L		2/4/2020 13:31
Benzo (a) pyrene	<10.0	ug/L		2/4/2020 13:31
Benzo (b) fluoranthene	<10.0	ug/L		2/4/2020 13:31
Benzo (g,h,i) perylene	<10.0	ug/L		2/4/2020 13:31
Benzo (k) fluoranthene	<10.0	ug/L		2/4/2020 13:31
Bis (2-chloroethoxy) methane	<10.0	ug/L		2/4/2020 13:31
Bis (2-chloroethyl) ether	<10.0	ug/L		2/4/2020 13:31
Bis (2-ethylhexyl) phthalate	<10.0	ug/L		2/4/2020 13:31
Butylbenzylphthalate	<10.0	ug/L		2/4/2020 13:31
Caprolactam	<10.0	ug/L		2/4/2020 13:31
Carbazole	<10.0	ug/L		2/4/2020 13:31
Chrysene	<10.0	ug/L		2/4/2020 13:31
Dibenz (a,h) anthracene	<10.0	ug/L		2/4/2020 13:31
Dibenzofuran	<10.0	ug/L		2/4/2020 13:31
Diethyl phthalate	<10.0	ug/L		2/4/2020 13:31
Dimethyl phthalate	<20.0	ug/L		2/4/2020 13:31
Di-n-butyl phthalate	<10.0	ug/L		2/4/2020 13:31
Di-n-octylphthalate	<10.0	ug/L		2/4/2020 13:31
Fluoranthene	<10.0	ug/L		2/4/2020 13:31

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: Riverview
Lab Project ID: 200501
Matrix: Aq Liquid

Semi-Volatile Organics (Acid/Base Neutrals)

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Fluorene	<10.0	ug/L		2/4/2020 13:31
Hexachlorobenzene	<10.0	ug/L		2/4/2020 13:31
Hexachlorobutadiene	<10.0	ug/L		2/4/2020 13:31
Hexachlorocyclopentadiene	<10.0	ug/L		2/4/2020 13:31
Hexachloroethane	<10.0	ug/L		2/4/2020 13:31
Indeno (1,2,3-cd) pyrene	<10.0	ug/L		2/4/2020 13:31
Isophorone	<10.0	ug/L		2/4/2020 13:31
Naphthalene	<10.0	ug/L		2/4/2020 13:31
Nitrobenzene	<10.0	ug/L		2/4/2020 13:31
N-Nitroso-di-n-propylamine	<10.0	ug/L		2/4/2020 13:31
N-Nitrosodiphenylamine	<10.0	ug/L		2/4/2020 13:31
Pentachlorophenol	<20.0	ug/L		2/4/2020 13:31
Phenanthrene	<10.0	ug/L		2/4/2020 13:31
Phenol	<10.0	ug/L		2/4/2020 13:31
Pyrene	<10.0	ug/L		2/4/2020 13:31

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Limits</u>	<u>Outliers</u>	<u>Date Analyzed</u>
2,4,6-Tribromophenol	69.7	59.6 - 114		2/4/2020 13:31
2-Fluorobiphenyl	51.8	36.2 - 99.1		2/4/2020 13:31
2-Fluorophenol	39.5	14.9 - 105		2/4/2020 13:31
Nitrobenzene-d5	64.1	53.7 - 102		2/4/2020 13:31
Phenol-d5	28.2	10 - 106		2/4/2020 13:31
Terphenyl-d14	89.6	58.7 - 116		2/4/2020 13:31

Method Reference(s): EPA 8270D
EPA 3510C
Preparation Date: 2/4/2020
Data File: B44289.D
QC Batch ID: QC200204ABNW
QC Number: 1

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QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: Riverview

Lab Project ID: 200501

Matrix: Aq Liquid

Semi-Volatile Organics (Acid/Base Neutrals)

<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>
1,2,4-Trichlorobenzene	50.0	ug/L	21.3	42.7	36.1 - 98.4		2/5/2020
1,4-Dichlorobenzene	50.0	ug/L	18.0	36.0	25.3 - 97.4		2/5/2020
2,4-Dinitrotoluene	50.0	ug/L	35.6	71.1	63.5 - 110		2/5/2020
2-Chlorophenol	75.0	ug/L	45.4	60.5	59.3 - 102		2/5/2020
4-Chloro-3-methylphenol	75.0	ug/L	52.1	69.5	68.2 - 109		2/5/2020
4-Nitrophenol	75.0	ug/L	19.8	26.4	10 - 124		2/5/2020
Acenaphthene	50.0	ug/L	31.7	63.3	60 - 100		2/5/2020
N-Nitroso-di-n-propylamine	50.0	ug/L	35.6	71.3	61.9 - 105		2/5/2020
Pentachlorophenol	75.0	ug/L	74.6	99.4	58.7 - 140		2/5/2020
Phenol	75.0	ug/L	20.6	27.4	10 - 111		2/5/2020
Pyrene	50.0	ug/L	35.3	70.6	70.1 - 110		2/5/2020

Method Reference(s): EPA 8270D
EPA 3510C
Preparation Date: 2/4/2020
Data File: B44318.D
QC Number: 1
QC Batch ID: QC200204ABNW

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Method Blank Report

Client: Inventum Engineering, P.C.
Project Reference: Riverview
Lab Project ID: 200501
Matrix: Aq Liquid

Total Cyanide

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Qualifier</u>	<u>Date Analyzed</u>
Cyanide, Total	<0.0100	mg/L		2/5/2020

Method Reference(s): SM 4500 CN E - 2011
SM 4500 CN C - 2011
Preparation Date: 2/5/2020
QC Batch ID: QC200205WTCN
QC Number: 1



QC Report for Laboratory Control Sample

Client: Inventum Engineering, P.C.

Project Reference: Riverview

Lab Project ID: 200501

Matrix: Aq Liquid

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	0.200	mg/L	0.188	94.2	85 - 115		2/5/2020

Method Reference(s): SM 4500 CN E - 2011
 SM 4500 CN C - 2011
Preparation Date: 2/5/2020
QC Number: 1
QC Batch ID: QC200205WTCN

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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.

"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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2072



Chain of Custody Supplement

Client: Inventum
Lab Project ID: 200501

Completed by: Molykail
Date: 2/3/2020

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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments	_____		
Preservation	<u>met, IQN</u>	<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>3°C icul</u>		
Compliant Sample Quantity/Type	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments	<u>TSS sent directly to sub lab</u>		

CHAIN OF CUSTODY

Serial No: 02052019:09
L 2005 810

11148



REPORT TO: **Paradigm Environmental** CLIENT: **Seime** LAB PROJECT ID: **Results by 3 PM**

ADDRESS: **179 Lake Avenue** ADDRESS: **179 Lake Avenue**

CITY: **Rochester** STATE: **NY** ZIP: **14608** CITY: **Rochester** STATE: **NY** ZIP: **14608**

PHONE: **585-647-2530** PHONE: **585-647-2530**

ATTN: **reporting@paradigmenv.com** ATTN: **acppay@paradigmenv.com**

PROJECT REFERENCE: **Riverview**

Matrix Codes: **AQ - Aqueous Liquid** WA - Water DW - Drinking Water SO - Soil
MG - Non-Aqueous Liquid WG - Groundwater WW - Wastewater SL - Sludge
PT - Paint WP - Wipe OL - Oil
AR - Air

DATE COLLECTED	TIME COLLECTED	COMPOUNDS	GRADES	SAMPLE IDENTIFIER	METHODS	NC	UD	REMARKS	PARADIGM LAB SAMPLE NUMBER
1-31-2020	11:30am		X	Outfall 2 - 01312020	AA	1	X		
	2:00pm		X	Settling Pond - 01/31/2020	AA	1	X		
	2:30pm		X	Mixing Pond - 01/31/2020	AA	1	X		
	3:00pm		X	Coal Yard - 01/31/2020	AA	1	X		

Turnaround Time: Standard 5 day

Report Supplements: None Required Basic EDD None Required Basic EDD

10 day Batch QC Category A NYSDEC EDD

Rush 3 day Category B

Rush 2 day Other: Temp 25°C

Rush 1 day Other EDD

Other

Client: **Seime**

Sampled by: **John Gault** Date/Time: **1-31-20 4:15**

Reinspected by: **John Gault** Date/Time: **1/31/20 16:15**

Collected By: **John Gault** Date/Time: **1/31/20 16:30**

Reviewed @ Lab By: **John Gault** Date/Time: **2/1/20 00:50**