CDW CONSULTANTS, INC.
CIVIL & ENVIRONMENTAL ENGINEERS

March 5, 2018

U.S. Environmental Protection Agency
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912
ATTN: Remediation General Permit NOI Processing

Re: Notice of Intent for Coverage Under EPA's 2016 Remediation General Permit
600-1000 Iron Horse Park, Billerica, MA
CDW Project # 1559.00

To Whom It May Concern:

CDW Consultants, Inc. (CDW) is submitting this Notice of Intent (NOI) on behalf of the Massachusetts Bay Transportation Authority (MBTA) for coverage under the United States Environmental Protection Agency's (EPA's) 2016 Remediation General Permit (RGP) under EPA's National Pollutants Discharge Elimination System (NPDES) program. The RGP is required for contaminated site dewatering during construction activities for development of a new operations control center building at the above-referenced site.

Iron Horse Park is a former railyard Boston & Maine Railroad developed in the early 1900s. Contamination from a long history of industrial activities at Iron Horse Park resulted in its designation as a Superfund Site by the United States Environmental Protection Agency (EPA) in September 1984. The Iron Horse Park Operations Control Center (IHPOCC) project at Iron Horse Park in Billerica, Massachusetts, involves the construction of a new control center building and parking lot to house and support the Massachusetts Bay Transportation Authority (MBTA) and Pan Am Railways, Inc. (Pan Am) train dispatching operations. The project site (Site) is shown on the attached Figures 1 and 3 and covers portions of three MBTA-owned parcels at Iron Horse Park. It is our understanding that a series of rails crossed the northwest portion of the project site until sometime in the mid-1950s to early 1960s, at which point the rails were removed and the site was used to store lumber. This portion of the site is now vacant and will be utilized for the new IHPOCC site. Though multiple contaminants have been identified across the Iron Horse Park site, including four separate Operable Units (OUs) covering seven Areas of Concern (AOCs), the project area is not located within any AOC. The dewatering is occurring during excavations for the building foundations and utilities.

CDW collected two samples of the potential influent from on-Site monitoring wells representing worst-case conditions on September 21, 2017 for VOCs, total and dissolved metals, polychlorinated biphenyls (PCBs), total petroleum hydrocarbons (TPH), total phenols, chloride, total cyanide, total suspended solids (TSS), total residual chlorine (TRC), trivalent chromium, hexavalent chromium, 1,4-dioxane, ammonia, ethanol, hardness, pH,, reactivity, and semi-volatile organic compounds (SVOCs). Our proposed groundwater treatment system for this project consists of a fractionation tank(s), bag filter(s) to remove suspended solids, carbon treatment units, and a cartridge filter before discharging to the drainage system that leads to an outfall at the Unnamed Brook. Dewatering may be intermittent as needed, and may not be conducted at all locations during construction.

In addition to the NOI application form, we have attached:

- Figure 1: Discharge Location and Receiving Water
- Figure 2: Example Water Treatment System Schematic
- Figure 3: Natural Heritage Atlas and ACEC Map
- Figure 4: Priority Resource Areas Map
- Documentation of the Results of the ESA Eligibility Determination
- Endangered Species Act Documentation
- Documentation of the Results of the NHPA Eligibility Determination
- Massachusetts Cultural Resource Information Report and Documents
- WQBEL Calculations
- ESS Laboratory Analytical Data Reports

Please call if you have any questions.

Very truly yours,
CDW CONSULTANTS, INC.

Lars Andresen
Assistant Project Manager

William J. Betters, PG, LSP
Director of Environmental Services

II. Suggested Format for the Remediation General Permit Notice of Intent (NOI)

A. General site information:

<table>
<tr><td rowspan="2">1. Name of site:
Iron Horse Park</td><td colspan="3">Site address: 600-1000 Iron Horse Park
Street:</td></tr>
<tr><td>City: Billerica</td><td>State: MA</td><td>Zip: 01862</td></tr>
<tr><td rowspan="4">2. Site owner
Massachusetts Bay Transportation Authority

Owner is (check one): ☐ Federal ■ State/Tribal ☐ Private
☐ Other; if so, specify:</td><td colspan="3">Contact Person: Holly Palmgren</td></tr>
<tr><td colspan="2">Telephone: 617-222-1580</td><td>Email: HPalmgren@mbta.com</td></tr>
<tr><td colspan="3">Mailing address: 10 Park Plaza, Suite 6720
Street:</td></tr>
<tr><td>City: Boston</td><td>State: MA</td><td>Zip: 02116-3974</td></tr>
<tr><td rowspan="4">3. Site operator, if different than owner</td><td colspan="3">Contact Person:</td></tr>
<tr><td colspan="2">Telephone:</td><td>Email:</td></tr>
<tr><td colspan="3">Mailing address:
Street:</td></tr>
<tr><td>City:</td><td>State:</td><td>Zip:</td></tr>
<tr><td colspan="2">4. NPDES permit number assigned by EPA:
NA

NPDES permit is (check all that apply: ☐ RGP ☐ DGP ☐ CGP
☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:</td><td colspan="2">5. Other regulatory program(s) that apply to the site (check all that apply):
☐ MA Chapter 21e; list RTN(s):

☐ NH Groundwater Management Permit or Groundwater Release Detection Permit:

■ CERCLA MAD051787323
☐ UIC Program
☐ POTW Pretreatment
☐ CWA Section 404</td></tr>
</table>

B. Receiving water information:

1. Name of receiving water(s):	Waterbody identification of receiving water(s):	Classification of receiving water(s):
Content Brook	MA83-09	Class B

Receiving water is (check any that apply): ☐ Outstanding Resource Water ☐ Ocean Sanctuary ☐ territorial sea ☐ Wild and Scenic River

2. Has the operator attached a location map in accordance with the instructions in B, above? (check one): ■ Yes ☐ No

Are sensitive receptors present near the site? (check one): ■ Yes ☐ No

If yes, specify: Wetlands and a Potential Vernal Pool

3. Indicate if the receiving water(s) is listed in the State's Integrated List of Waters (i.e., CWA Section 303(d)). Include which designated uses are impaired, and any pollutants indicated. Also, indicate if a final TMDL is available for any of the indicated pollutants. For more information, contact the appropriate State as noted in Part 4.6 of the RGP. NA	
4. Indicate the seven day-ten-year low flow (7Q10) of the receiving water determined in accordance with the instructions in Appendix V for sites located in Massachusetts and Appendix VI for sites located in New Hampshire.	1.3 MGD
5. Indicate the requested dilution factor for the calculation of water quality-based effluent limitations (WQBELs) determined in accordance with the instructions in Appendix V for sites in Massachusetts and Appendix VI for sites in New Hampshire.	1

6. Has the operator received confirmation from the appropriate State for the 7Q10and dilution factor indicated? (check one): ■ Yes ☐ No

If yes, indicate date confirmation received: June 26, 2018

7. Has the operator attached a summary of receiving water sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ■ Yes ☐ No

C. Source water information:

1. Source water(s) is (check any that apply):

■ Contaminated groundwater Has the operator attached a summary of influent sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ■ Yes ☐ No	☐ Contaminated surface water Has the operator attached a summary of influent sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ☐ Yes ☐ No	☐ The receiving water ☐ A surface water other than the receiving water; if so, indicate waterbody:	☐ Potable water; if so, indicate municipality or origin: ☐ Other; if so, specify:

2. Source water contaminants: Volatile Organic Compounds, Arsenic, Lead	
a. For source waters that are contaminated groundwater or contaminated surface water, indicate are any contaminants present that are not included in the RGP? (check one): ☐ Yes ■ No If yes, indicate the contaminant(s) and the maximum concentration present in accordance with the instructions in Appendix VIII.	b. For a source water that is a surface water other than the receiving water, potable water or other, indicate any contaminants present at the maximum concentration in accordance with the instructions in Appendix VIII? (check one): ☐ Yes ☐ No
3. Has the source water been previously chlorinated or otherwise contains residual chlorine? (check one): ☐ Yes ■ No	

D. Discharge information

1.The discharge(s) is a(n) (check any that apply): ☐ Existing discharge ■ New discharge ☐ New source	
Outfall(s): Outfall 1 (treatment system effluent port to existing private stormwater outfall location) Outfall 2 (possible 2nd treatment system effluent port to same outfall location as Outfall 1)	Outfall location(s): (Latitude, Longitude) 42.582311, -71.263787
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ■ Indirect discharge, if so, specify: Discharge enters Unnamed Brook at existing private stormwater outfall, then flows through wetlands and the Middlesex Canal to Content Brook ■ A private storm sewer system ☐ A municipal storm sewer system If the discharge enters the receiving water via a private or municipal storm sewer system: Has notification been provided to the owner of this system? (check one): ■ Yes ☐ No Has the operator has received permission from the owner to use such system for discharges? (check one): ■ Yes ☐ No, if so, explain, with an estimated timeframe for obtaining permission: Has the operator attached a summary of any additional requirements the owner of this system has specified? (check one): ☐ Yes ■ No	
Provide the expected start and end dates of discharge(s) (month/year): 08/2018 - 08/2020 Indicate if the discharge is expected to occur over a duration of: ☐ less than 12 months ■ 12 months or more ☐ is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): ■ Yes ☐ No	

<table>
<tr><td>2. Activity Category: (check all that apply)</td><td colspan="2">3. Contamination Type Category: (check all that apply)</td></tr>
<tr><td rowspan="4">☐ I – Petroleum-Related Site Remediation
☐ II – Non-Petroleum-Related Site Remediation
■ III – Contaminated Site Dewatering
☐ IV – Dewatering of Pipelines and Tanks
☐ V – Aquifer Pump Testing
☐ VI – Well Development/Rehabilitation
☐ VII – Collection Structure Dewatering/Remediation
☐ VIII – Dredge-Related Dewatering</td><td colspan="2">a. If Activity Category I or II: (check all that apply)

☐ A. Inorganics
☐ B. Non-Halogenated Volatile Organic Compounds
☐ C. Halogenated Volatile Organic Compounds
☐ D. Non-Halogenated Semi-Volatile Organic Compounds
☐ E. Halogenated Semi-Volatile Organic Compounds
☐ F. Fuels Parameters</td></tr>
<tr><td colspan="2">b. If Activity Category III, IV, V, VI, VII or VIII: (check either G or H)</td></tr>
<tr><td>■ G. Sites with Known Contamination</td><td>☐ H. Sites with Unknown Contamination</td></tr>
<tr><td>c. If Category III-G, IV-G, V-G, VI-G, VII-G or VIII-G: (check all that apply)

■ A. Inorganics
☐ B. Non-Halogenated Volatile Organic Compounds
■ C. Halogenated Volatile Organic Compounds
☐ D. Non-Halogenated Semi-Volatile Organic Compounds
☐ E. Halogenated Semi-Volatile Organic Compounds
☐ F. Fuels Parameters</td><td>d. If Category III-H, IV-H, V-H, VI-H, VII-H or VIII-H Contamination Type Categories A through F apply</td></tr>
</table>

4. Influent and Effluent Characteristics

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
A. Inorganics									
Ammonia		✓	2	350.1	0.10	0.36	0.325	Report mg/L	---
Chloride		✓	2	300.0	50000	79800	68000	Report µg/l	---
Total Residual Chlorine	✓		2	4500Cl D	0.02	<0.02	0	0.2 mg/L	11
Total Suspended Solids		✓	2	2540D	5	5	2.5	30 mg/L	---
Antimony	✓		2	200.7	20.0	<20	0	206 µg/L	640
Arsenic		✓	2	3113B	5	<5	0	104 µg/L	10
Cadmium	✓		2	3113B	0.05	<0.05	0	10.2 µg/L	0.1629
Chromium III	✓		2	200.7	10.0	<10	0	323 µg/L	49.2
Chromium VI	✓		2	3500Cr	10.0	<10	0	323 µg/L	11.4
Copper	✓		2	200.7	4	<4	0	242 µg/L	5.2
Iron		✓	2	200.7	20	6540	4155	5,000 µg/L	1000
Lead	✓		2	3113B	1	<1	0	160 µg/L	1.33
Mercury	✓		2	245.1	0.2	<0.2	0	0.739 µg/L	0.91
Nickel	✓		2	200.7	10	<10	0	1,450 µg/L	29.2
Selenium	✓		2	3113B	2	<2	0	235.8 µg/L	5.0
Silver	✓		2	200.7	1	<1	0	35.1 µg/L	1.2
Zinc		✓	2	200.7	10	49.4	42.6	420 µg/L	67.0
Cyanide	✓		2	4500 CN	5	<5	0	178 mg/L	5.2
B. Non-Halogenated VOCs									
Total BTEX	✓		2	524.2	0.5	2.2	1.1	100 µg/L	---
Benzene		✓	2	524.2	0.5	<0.5	0	5.0 µg/L	---
1,4 Dioxane	✓		2	8270D	0.250	3.74	2.28	200 µg/L	---
Acetone		✓	2	524.2	0.005	<0.005	0	7.97 mg/L	---
Phenol		✓	2	420.1	100	<100	0	1,080 µg/L	300

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
C. Halogenated VOCs									
Carbon Tetrachloride	✓		2	524.2	0.3	<0.3	0	4.4 µg/L	1.6
1,2 Dichlorobenzene	✓		2	524.2	0.5	<0.5	0	600 µg/L	---
1,3 Dichlorobenzene	✓		2	524.2	0.5	<0.5	0	320 µg/L	---
1,4 Dichlorobenzene	✓		2	524.2	0.5	<0.5	0	5.0 µg/L	---
Total dichlorobenzene	✓		2	524.2	0.5	<0.5	0	763 µg/L in NH	---
1,1 Dichloroethane		✓	2	524.2	0.5	37	19.55	70 µg/L	---
1,2 Dichloroethane	✓		2	524.2	0.5	<0.5	0	5.0 µg/L	---
1,1 Dichloroethylene		✓	2	524.2	0.5	3.4	1.7	3.2 µg/L	---
Ethylene Dibromide	✓							0.05 µg/L	---
Methylene Chloride	✓		2	524.2	0.5	<0.5	0	4.6 µg/L	---
1,1,1 Trichloroethane		✓	2	524.2	0.5	46.6	23.3	200 µg/L	---
1,1,2 Trichloroethane	✓		2	524.2	0.5	<0.5	0	5.0 µg/L	---
Trichloroethylene		✓	2	524.2	0.5	13.1	6.55	5.0 µg/L	---
Tetrachloroethylene		✓	2	524.2	0.5	11.3	5.65	5.0 µg/L	3.3
cis-1,2 Dichloroethylene		✓	2	524.2	0.5	69.8	35.65	70 µg/L	---
Vinyl Chloride		✓	2	524.2	0.5	6.2	3.1	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	✓		2	625 SIM	2.34	<2.34	0	190 µg/L	---
Diethylhexyl phthalate	✓		2	625 SIM	0.93	<0.93	0	101 µg/L	2.2
Total Group I PAHs	✓		2	625 SIM	0.05	<0.05	0	1.0 µg/L	---
Benzo(a)anthracene	✓		2	625 SIM	0.05	<0.05	0	As Total PAHs	0.0038
Benzo(a)pyrene	✓		2	625 SIM	0.05	<0.05	0		0.0038
Benzo(b)fluoranthene	✓		2	625 SIM	0.05	<0.05	0		0.0038
Benzo(k)fluoranthene	✓		2	625 SIM	0.05	<0.05	0		0.0038
Chrysene	✓		2	625 SIM	0.05	<0.05	0		0.0038
Dibenzo(a,h)anthracene	✓		2	625 SIM	0.05	<0.05	0		0.0038
Indeno(1,2,3-cd)pyrene	✓		2	625 SIM	0.05	<0.05	0		0.0038

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
Total Group II PAHs	✓		2	625 SIM	0.05	<0.05	0	100 µg/L	---
Naphthalene	✓		2	625 SIM	0.19	<0.19	0	20 µg/L	---
E. Halogenated SVOCs									
Total PCBs	✓		2	608	0.09	<0.09	0	0.000064 µg/L	---
Pentachlorophenol	✓		2	625 SIM	0.84	<0.84	0	1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons	✓		2	1664A	5	<5	0	5.0 mg/L	---
Ethanol	✓		2	ASTM	10	<10	0	Report mg/L	---
Methyl-tert-Butyl Ether	✓		2	524.2	0.5	<0.5	0	70 µg/L	20
tert-Butyl Alcohol	✓		2	524.2	25	<25	0	120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✓		2	524.2	1	<1	0	90 µg/L in MA 140 µg/L in NH	---
Other (i.e., pH, temperature, hardness, salinity, LC_{50}, additional pollutants present); if so, specify:									
pH			2	9040	N/A	6.42	6.25		
Hardness			2	200.7	165	76400	63400		

E. Treatment system information

1. Indicate the type(s) of treatment that will be applied to effluent prior to discharge: (check all that apply)

☐ Adsorption/Absorption ☐ Advanced Oxidation Processes ☐ Air Stripping ■ Granulated Activated Carbon ("GAC")/Liquid Phase Carbon Adsorption
☐ Ion Exchange ☐ Precipitation/Coagulation/Flocculation ☐ Separation/Filtration ☐ Other; if so, specify:

2. Provide a written description of all treatment system(s) or processes that will be applied to the effluent prior to discharge.
System will comprise of a storage tank, sediment bag filter(s), carbon vessel(s), and flow meter. A sample schematic is attached. Multiple systems may be running in parallel.

Identify each major treatment component (check any that apply):
■ Fractionation tanks☐ Equalization tank ☐ Oil/water separator ☐ Mechanical filter ■ Media filter
☐ Chemical feed tank ☐ Air stripping unit ■ Bag filter ☐ Other; if so, specify:

Indicate if either of the following will occur (check any that apply):
☐ Chlorination ☐ De-chlorination

3. Provide the **design flow capacity** in gallons per minute (gpm) of the most limiting component. Indicate the most limiting component: Carbon filtration vessel Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification:	50/50
Provide the proposed maximum effluent flow in gpm.	100
Provide the average effluent flow in gpm.	100
If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:	

4. Has the operator attached a schematic of flow in accordance with the instructions in E, above? (check one): ■ Yes ☐ No

F. Chemical and additive information

1. Indicate the type(s) of chemical or additive that will be applied to effluent prior to discharge or that may otherwise be present in the discharge(s): (check all that apply)

☐ Algaecides/biocides ☐ Antifoams ☐ Coagulants ☐ Corrosion/scale inhibitors ☐ Disinfectants ☐ Flocculants ☐ Neutralizing agents ☐ Oxidants ☐ Oxygen ☐ scavengers ☐ pH conditioners ☐ Bioremedial agents, including microbes ☐ Chlorine or chemicals containing chlorine ☐ Other; if so, specify:

2. Provide the following information for each chemical/additive, using attachments, if necessary:

a. Product name, chemical formula, and manufacturer of the chemical/additive;
b. Purpose or use of the chemical/additive or remedial agent;
c. Material Safety Data Sheet (MSDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive;
d. The frequency (hourly, daily, etc.), duration (hours, days), quantity (maximum and average), and method of application for the chemical/additive;
e. Any material compatibility risks for storage and/or use including the control measures used to minimize such risks; and
f. If available, the vendor's reported aquatic toxicity (NOAEL and/or LC50 in percent for aquatic organism(s)).

3. Has the operator attached an explanation which demonstrates that the addition of such chemicals/additives may be authorized under this general permit in accordance with the instructions in F, above? (check one): ☐ Yes ☐ No; if no, has the operator attached data that demonstrates each of the 126 priority pollutants in CWA Section 307(a) and 40 CFR Part 423.15(j)(1) are non-detect in discharges with the addition of the proposed chemical/additive? (check one): ☐ Yes ☐ No

G. Endangered Species Act eligibility determination

1. Indicate under which criterion the discharge(s) is eligible for coverage under this general permit:

☐ **FWS Criterion A**: No endangered or threatened species or critical habitat are in proximity to the discharges or related activities or come in contact with the "action area".

☐ **FWS Criterion B**: Formal or informal consultation with the FWS under section 7 of the ESA resulted in either a no jeopardy opinion (formal consultation) or a written concurrence by FWS on a finding that the discharges and related activities are "not likely to adversely affect" listed species or critical habitat (informal consultation). Has the operator completed consultation with FWS? (check one): ☐ Yes ☐ No; if no, is consultation underway? (check one): ☐ Yes ☐ No

■ **FWS Criterion C**: Using the best scientific and commercial data available, the effect of the discharges and related activities on listed species and critical habitat have been evaluated. Based on those evaluations, a determination is made by EPA, or by the operator and affirmed by EPA, that the discharges and related activities will have "no effect" on any federally threatened or endangered listed species or designated critical habitat under the jurisdiction of the FWS. This determination was made by: (check one) ■ the operator ☐ EPA ☐ Other; if so, specify:

☐ **NMFS Criterion**: A determination made by EPA is affirmed by the operator that the discharges and related activities will have "no effect" or are "not likely to adversely affect" any federally threatened or endangered listed species or critical habitat under the jurisdiction of NMFS and will not result in any take of listed species. Has the operator previously completed consultation with NMFS? (check one): ☐ Yes ☐ No

2. Has the operator attached supporting documentation of ESA eligibility in accordance with the instructions in Appendix I, and G, above? (check one): ■ Yes ☐ No

Does the supporting documentation include any written concurrence or finding provided by the Services? (check one): ☐ Yes ■ No; if yes, attach.

H. National Historic Preservation Act eligibility determination

1. Indicate under which criterion the discharge(s) is eligible for coverage under this general permit:

☐ **Criterion A**: No historic properties are present. The discharges and discharge-related activities (e.g., BMPs) do not have the potential to cause effects on historic properties.

■ **Criterion B**: Historic properties are present. Discharges and discharge related activities do not have the potential to cause effects on historic properties.

☐ **Criterion C**: Historic properties are present. The discharges and discharge-related activities have the potential to have an effect or will have an adverse effect on historic properties.

2. Has the operator attached supporting documentation of NHPA eligibility in accordance with the instructions in H, above? (check one): ■ Yes ☐ No

Does the supporting documentation include any written agreement with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (TPHO), or other tribal representative that outlines measures the operator will carry out to mitigate or prevent any adverse effects on historic properties? (check one): ☐ Yes ■ No

I. Supplemental information

Describe any supplemental information being provided with the NOI. Include attachments if required or otherwise necessary.

Has the operator attached data, including any laboratory case narrative and chain of custody used to support the application? (check one): ■ Yes ☐ No

Has the operator attached the certification requirement for the Best Management Practices Plan (BMPP)? (check one): ■ Yes ☐ No

J. Certification requirement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

BMPP certification statement: A BMPP meeting the requirements of this general permit will be developed and implemented upon initiation of discharge.	
Notification provided to the appropriate State, including a copy of this NOI, if required.	Check one: Yes ■ No ☐
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐
Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested.	Check one: Yes ☐ No ☐ NA ■
Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission.	Check one: Yes ☐ No ☐ NA ■
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	Check one: Yes ☐ No ☐ NA ■
Signature: Holly Palmgren	Date: 7/9/18
Print Name and Title: Holly Palmgren	Mgr of Env. Construction rdBTA

CDW CONSULTANTS, INC.
CIVIL & ENVIRONMENTAL ENGINEERS

MBTA Iron Horse Park
Billerica, MA 01862
CDW Project No. 1559.00

Figure 1
Discharge Location and Receiving Water

Legend

- NHESP Potential Vernal Pools

Non Potential Drinking Water Source Area

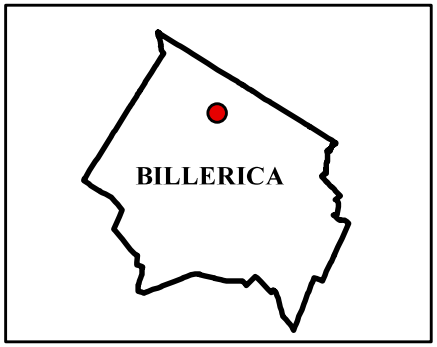
- High Yield
- Medium Yield

Aquifers

- High Yield
- Medium Yield

N

0 137.5 275 Feet



DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:

GROUNDWATER TREATMENT SCHEMATIC

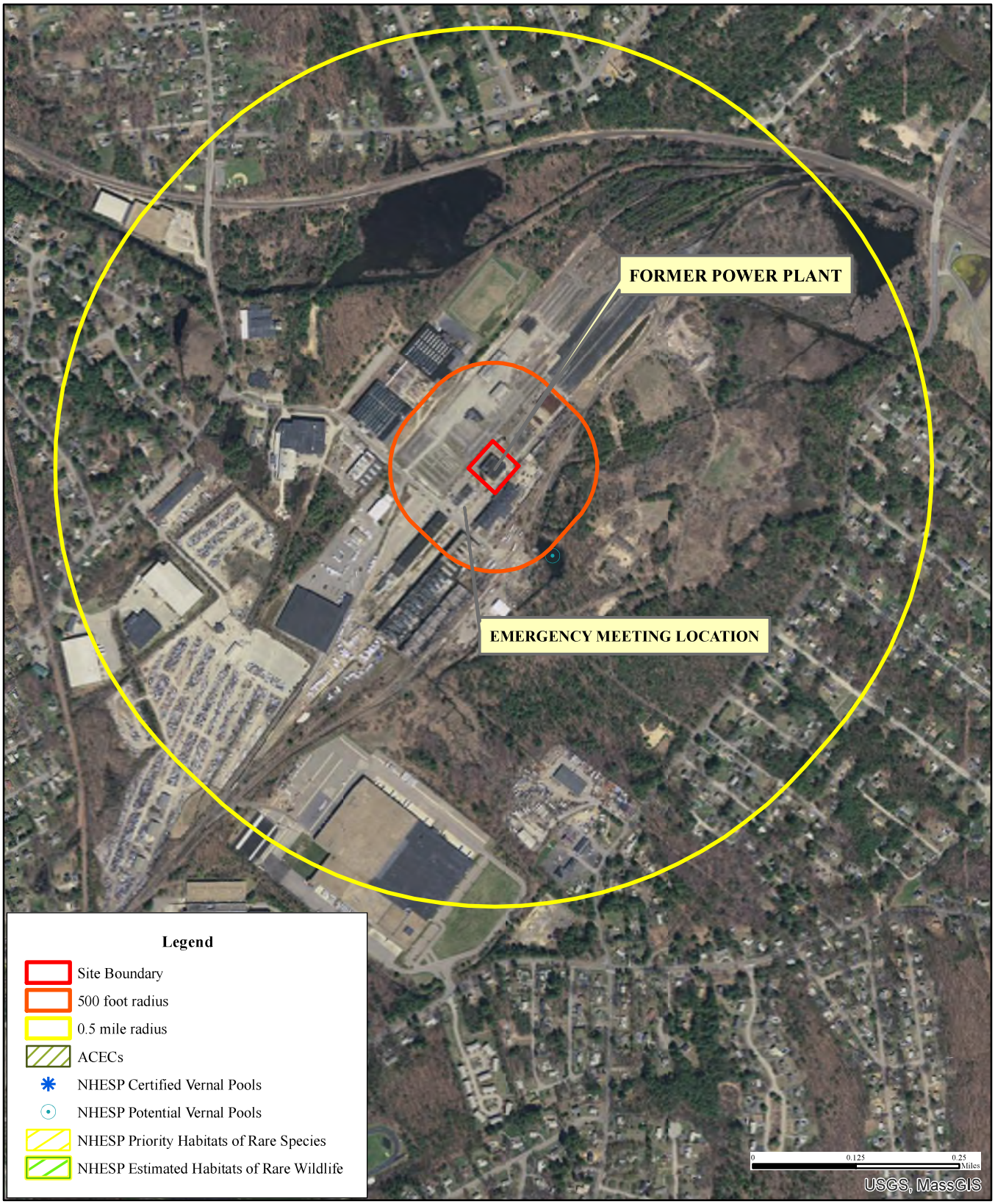
DATE: NOVEMBER 4, 2010

DATE	NO.	REVISIONS	BY

SCALE: N.T.S.

CDW CONSULTANTS, INC.
CIVIL & ENVIRONMENTAL ENGINEERS
6 HURON DRIVE
NATICK, MA 01760
TEL (508) 875-2657 FAX (508) 875-6617
www.cdwconsultants.com

FIGURE 2



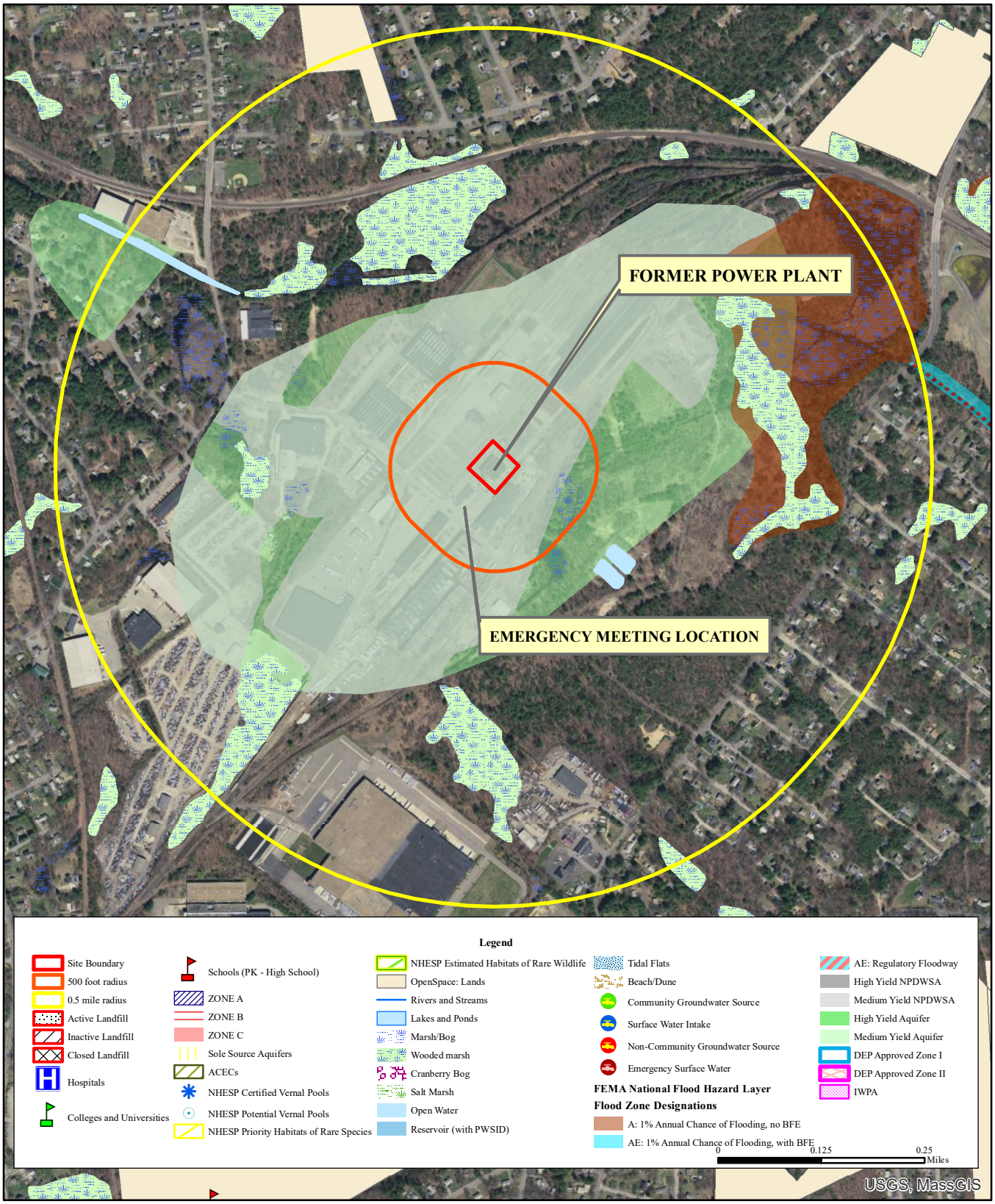
CDW CONSULTANTS, INC.

FORMER POWER PLANT
IRON HORSE PARK
BILLERICA, MA

Figure 3 - Natural Hertiage Atlas and ACEC Map

SOURCE: MASSGIS

SCALE:1 inch = 901 feet



CDW CONSULTANTS, INC.

FORMER POWER PLANT
IRON HORSE PARK
BILLERICA, MA

Figure 4 - Resource Areas Map

SOURCE: MASSGIS

SCALE: 1 inch = 901 feet

Documentation of the Results of the ESA Eligibility Determination:

Using Appendix I and information in Appendix II of the NPDES RGP, the Iron Horse Park Operations Control Center (IHPOCC), Billerica project is eligible for coverage under this general permit under FWS Criterion C. The IHPOCC, Billerica project is located in North Billerica in Middlesex County.

CDW consulted the Federally Listed Endangered and Threated Species in Massachusetts List Updated 2/5/2016 available on the U.S. Fish & Wildlife Service New England Field Office webpage and an Endangered Species Consultation per the attached instructions which were provided on U.S. Fish & Wildlife Service New England Field Office ECOS IPaC webpage was conducted for the Site:

- The Northern Long-eared Bat was listed as "Threatened" statewide in Massachusetts and may occur within the boundary of the project area.
- No designated critical habitats were listed in Middlesex County.

The habitat for the Northern Long-eared Bat is described as mines and caves in winter and a wide variety of forested habitats in summer. There are no critical habitats within the project area. No mines or caves are located within or near the project area. The dewatering project will be intermittent and located near an industrial area with active railways and frequent large truck traffic. Based on this evaluation, the Northern Long-eared Bat is not likely to be affected by the proposed water discharges or discharge related activities. Therefore, there is likely to be "no effect" on the listed species within the project area.

Copies of the Federally Listed Endangered and Threated Species in Massachusetts List Updated 2/5/2016 and Endangered Species Consultation Consistency Letter from the U.S. Fish & Wildlife Service New England Field Office ECOS are attached.

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN MASSACHUSETTS

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Barnstable	Piping Plover	Threatened	Coastal Beaches	All Towns
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	All Towns
	Northeastern beach tiger beetle	Threatened	Coastal Beaches	Chatham
	Sandplain gerardia	Endangered	Open areas with sandy soils.	Sandwich and Falmouth.
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Bourne (north of the Cape Cod Canal)
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Berkshire	Bog Turtle	Threatened	Wetlands	Egremont and Sheffield
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Bristol	Piping Plover	Threatened	Coastal Beaches	Fairhaven, Dartmouth, Westport
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Fairhaven, New Bedford, Dartmouth, Westport
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Taunton
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Dukes	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	All Towns
	Piping Plover	Threatened	Coastal Beaches	All Towns
	Northeastern beach tiger beetle	Threatened	Coastal Beaches	Aquinnah and Chilmark
	Sandplain gerardia	Endangered	Open areas with sandy soils.	West Tisbury
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

Updated 02/05/2016

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN MASSACHUSETTS

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Essex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Gloucester, Essex and Manchester
	Piping Plover	Threatened	Coastal Beaches	Gloucester, Essex, Ipswich, Rowley, Revere, Newbury, Newburyport and Salisbury
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Franklin	Northeastern bulrush	Endangered	Wetlands	Montague, Warwick
	Dwarf wedgemussel	Endangered	Mill River	Whately
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Hampshire	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Hadley
	Puritan tiger beetle	Threatened	Sandy beaches along the Connecticut River	Northampton and Hadley
	Dwarf wedgemussel	Endangered	Rivers and Streams.	Hatfield, Amherst and Northampton
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Hampden	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Southwick
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Middlesex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Groton
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Nantucket	Piping Plover	Threatened	Coastal Beaches	Nantucket
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Nantucket
	American burying beetle	Endangered	Upland grassy meadows	Nantucket
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

Updated 02/05/2016

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN MASSACHUSETTS

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Plymouth	Piping Plover	Threatened	Coastal Beaches	Scituate, Marshfield, Duxbury, Plymouth, Wareham and Mattapoisett
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Kingston, Middleborough, Carver, Plymouth, Bourne, Wareham, Halifax, and Pembroke
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Plymouth, Marion, Wareham, and Mattapoisett.
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Suffolk	Piping Plover	Threatened	Coastal Beaches	Revere, Winthrop
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Worcester	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Leominster
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

[1]Migratory only, scattered along the coast in small numbers

-Eastern cougar and gray wolf are considered extirpated in Massachusetts.
-Endangered gray wolves are not known to be present in Massachusetts, but dispersing individuals from source populations in Canada may occur statewide.
-Critical habitat for the Northern Red-bellied Cooter is present in Plymouth County.

Updated 02/05/2016

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To:
Consultation Code: 05E1NE00-2018-SLI-0398
Event Code: 05E1NE00-2018-E-00897
Project Name: IHPOCC

November 16, 2017

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2018-SLI-0398

Event Code: 05E1NE00-2018-E-00897

Project Name: IHPOCC

Project Type: ** OTHER **

Project Description: Dewatering project of water to existing drainage outfall under NPDES RGP.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.58276039679727N71.26557242518038W

Counties: Middlesex, MA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.

Species profile: https://ecos.fws.gov/ecp/species/9045

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
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Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

IPaC Record Locator: 424-10273900 November 16, 2017

Subject: Consistency letter for the 'IHPOCC' project under the December 15, 2016 FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated to verify that the **IHPOCC** (Proposed Action) may rely on the December 15, 2016 FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) to satisfy requirements under Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 *et seq.*). Based on the information you provided (Project Description repeated below), the Proposed Action will have no effect on the endangered Indiana bat (*Myotis sodalis*) or the threatened Northern long-eared bat (*Myotis septentrionalis*). If the Proposed Action is not modified, **no consultation is required for these two species.**

If the Proposed Action may affect any other federally-listed or proposed species or designated critical habitat, additional consultation between the lead Federal action agency and this Office is required. Please advise the lead Federal action agency for the Proposed Action accordingly.

Project Description

The following project name and description was collected in IPaC as part of the endangered species review process.

Name

IHPOCC

Description

Dewatering project of water to existing drainage outfall under NPDES RGP.

Determination Key Result

Based on your answers provided, this project will have no effect on the endangered Indiana bat and/or the threatened Northern long-eared bat. No consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required for these two species.

Qualification Interview

1. Is the project within the range of the Indiana bat[1]?

   [1] See Indiana bat species profile

   Automatically answered
   No

2. Is the project within the range of the Northern long-eared bat[1] (NLEB)?

   [1] See Northern long-eared bat species profile

   Automatically answered
   Yes

3. Which Federal Agency is the lead for the action?

   C) Federal Transit Administration (FTA)

4. Are *all* project activities limited to non-construction activities only? (examples of non-construction activities include: bridge/abandoned structure assessments, property inspections, planning and technical studies, property sales, property easements, and equipment purchases)

   No

5. Are *all* project activities completely within the existing road/rail surface[1] (e.g., road line painting)?

   [1] Road surface is defined as the driving surface and shoulders (may be pavement, gravel, etc.) and rail surface is defined as the edge of the rail ballast.

   No

6. Are *all* project activites limited to the maintenance of the surrounding landscape at existing facilities (e.g., rest areas, stormwater detention basins)?

   No

7. Are *all* project activities limited to wetland or stream protection activities associated with compensatory wetland mitigation?

   No

8. Will the project raise the road profile **above the tree canopy** within 1,000 feet of known summer habitat (based on documented roosts and/or captures)?

   No

9. Does the project include percussives or other activities (not including the removal of trees) that will increase noise levels above existing traffic/background levels?

   No

10. Is there any suitable summer habitat[1] for Indiana Bat or NLEB within the project area? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

    [1] See the Service's summer survey guidance for our current definitions of suitable habitat.

    No

11. Does the project include any ground disturbing activities?

    No

12. Is the project located within a karst area?

    No

13. Will the project include any type of activity that could impact a **known** hibernaculum[1], or impact a karst feature (e.g., sinkhole, losing stream, or spring) that could result in effects to a **known** hibernaculum?

    [1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

    No

14. Does the project include any activities **within** 0.5 miles of an Indiana bat and/or NLEB hibernaculum[1]?

    [1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

    No

15. Does the project include any activities **greater than** 300 feet from existing road/rail surfaces?

    No

16. Does the project include slash pile burning?

    No

17. Does the project include any bridge removal and/or replacement activities?

    No

18. Does the project include any bridge maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?

    No

19. Does the project include the removal and/or replacement of any structures other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)

    No

20. Does the project include maintenance activities of any structures other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)

    No

21. Will the project involve the use of **temporary** lighting during the construction/maintenance activities?

    No

22. Will the project install new (or replace existing) **permanent** lighting?

    No

Determination Key Description: FHWA, FRA, FTA Programmatic Consultation For Transportation Projects Affecting NLEB Or Indiana Bat

This key was last updated in IPaC on April 03, 2017. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) for the endangered **Indiana bat** (*Myotis sodalis*) and the threatened **Northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's revised programmatic biological opinion for transportation projects dated December 15, 2016. The programmatic biological opinion covers limited transportation activities that may affect either bat species, and addresses situations that are both likely and not likely to adversely affect either bat species. This decision key will assist in identifying the effect of a specific project/activity and applicability of the programmatic consultation. The programmatic biological opinion is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic biological opinion, or that may affect ESA-listed species other than the Indiana bat or NLEB, or any designated critical habitat, may require additional ESA Section 7 consultation.

U.S. Fish & Wildlife Service Contact List

Determination key office contact information

Assistant Director-Ecological Services
5275 Leesburg Pike, Ms: Es
Falls Church, VA 22041-3803
(703) 358-2171

Offices with jurisdiction over project area

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Documentation of the National Historic Preservation Act Eligibility Determination:

As part of this permit, a determination was made as to whether there were any historic properties or places listed on the national register in the path of the discharge or in the vicinity of the construction of treatment systems or BMPs related to the discharge. A search on the Massachusetts Cultural Resource Information System Database showed four buildings near the project area came up in the database.

The four buildings are all listed as part of the form Boston and Maine Railroad Property and include to Shop Complex (BIL.299), Equipment Storage Shed (BIL.300), Maintenance Shop (BIL.301), and Power Plant (BIL.302). These buildings are listed as constructed around 1912 and have been inventories, but not assigned a specific designation. Based on the proximity of these buildings to the discharge areas, the discharge is eligible for coverage under Criterion B: Historic Properties are prese, but discharges and discharge related activities do not have the potential to cause effects on historic properties. Supporting information is included.

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Billerica; Place: North Billerica;

Inv. No.	Property Name	Street	Town	Year
BIL.E	Billerica Mills Historic District		Billerica	
BIL.K	Middlesex Canal		Billerica	
BIL.O	Billerica Mills Historic District		Billerica	
BIL.P	Middlesex Canal Area		Billerica	
BIL.T	Middlesex Canal Historic and Archaeological		Billerica	
BIL.314		95 Boston Post Rd	Billerica	c 1960
BIL.130	Stearns, Joseph House	179 Boston Rd	Billerica	c 1825
BIL.131	Stearns, Sarah House	186 Boston Rd	Billerica	c 1848
BIL.132	Billerica Town Water Supply Pumping Station	250 Boston Rd	Billerica	1898
BIL.927	Kohlrausch Playground	Colson St	Billerica	1913
BIL.244		12 Colson St	Billerica	
BIL.256		16 Colson St	Billerica	c 1920
BIL.243	North Billerica Baptist Church Parsonage	17 Colson St	Billerica	c 1925
BIL.257		18-20 Colson St	Billerica	
BIL.242		19 Colson St	Billerica	r 1955
BIL.241	Talbot Woolen Mills Worker Housing	21-23 Colson St	Billerica	c 1888
BIL.258		22-24 Colson St	Billerica	
BIL.240	Kohlrausch House	25-27 Colson St	Billerica	c 1886
BIL.239		29 Colson St	Billerica	c 1954
BIL.259	Kohlrausch House	30 Colson St	Billerica	1901
BIL.260		32 Colson St	Billerica	1920
BIL.98	Farmer, Oliver II House	34 Colson St	Billerica	1803
BIL.261	Colson Barn	36 Colson St	Billerica	c 1803
BIL.262		40-42 Colson St	Billerica	
BIL.263		44 Colson St	Billerica	c 1915
BIL.90	McCurdy, John House	Elm St	Billerica	1847
BIL.96	North Billerica Baptist Church	Elm St	Billerica	1869

Inv. No.	Property Name	Street	Town	Year
BIL.99	Wilson, Daniel House	Elm St	Billerica	1848
BIL.92	Canal Block, The	1-7 Elm St	Billerica	c 1835
BIL.95	Dix, Capt. Joel House	2 Elm St	Billerica	1815
BIL.94	Mears Tavern	12 Elm St	Billerica	c 1814
BIL.93	Talbot, C. P. Textile Mill Housing	18 Elm St	Billerica	c 1889
BIL.88	Talbot, C. P. Mill Worker Housing	19-21 Elm St	Billerica	r 1870
BIL.87	Talbot, C. P. Mill Worker Housing	23-25 Elm St	Billerica	r 1870
BIL.251	Talbot Textile Mill Worker Housing	24 Elm St	Billerica	c 1874
BIL.254	Talbot Textile Mills Worker Housing	27-29 Elm St	Billerica	r 1865
BIL.97	Talbot Mill Worker Housing	33-35 Elm St	Billerica	c 1860
BIL.252	Talbot Textile Mill Worker Housing	34-36 Elm St	Billerica	c 1892
BIL.253	Talbot Textile Mill Worker Housing	37 Elm St	Billerica	c 1887
BIL.89	Mixer, John House	596 Elm St	Billerica	1827
BIL.78	Faulkner Kindergarten	Faulkner St	Billerica	1826
BIL.267		Faulkner St	Billerica	c 1930
BIL.317		Faulkner St	Billerica	c 1890
BIL.900	Middlesex Canal Dam and Locks	Faulkner St	Billerica	c 1828
BIL.935	Faulkner Street Bridge over Concord River	Faulkner St	Billerica	1910
BIL.79	Faulkner, James R. House	1 Faulkner St	Billerica	1859
BIL.77	Faulkner, J. R. Mills	71 Faulkner St	Billerica	1840
BIL.299	Boston and Maine Railroad Billerica Shop Complex	High St	Billerica	c 1912
BIL.300	Boston and Maine Railroad Equipment Storage Shed	High St	Billerica	c 1912
BIL.301	Boston and Maine Railroad Maintenance Shop	High St	Billerica	c 1912
BIL.302	Boston and Maine Railroad Power Plant	High St	Billerica	c 1912
BIL.918	High Street Bridge over B & M Railroad	High St	Billerica	r 1915
BIL.292	Barker House	44 High St	Billerica	c 1801
BIL.291	Danforth, Benjamin House	65 High St	Billerica	c 1750
BIL.318		96 High St	Billerica	c 1985
BIL.319		200R High St	Billerica	c 1962
BIL.947	Middlesex Canal Stone Culvert	Holt St	Billerica	c 1802
BIL.278		2-4 Letchworth Ave	Billerica	
BIL.279	Faulkner Manufacturing Company Worker Housing	6-8 Letchworth Ave	Billerica	r 1880
BIL.280	Faulkner Manufacturing Company Worker Housing	10-12 Letchworth Ave	Billerica	r 1880
BIL.946	Middlesex Canal Culvert	Lowell St	Billerica	c 1802
BIL.948	Middlesex Canal - Concord River Sluiceway	Lowell St	Billerica	c 1802

Inv. No.	Property Name	Street	Town	Year
BIL.949	Middlesex Canal - Red Lock Basin Retaining Wall	Lowell St	Billerica	c 1802
BIL.950	Middlesex Canal - Red Lock Basin	Lowell St	Billerica	c 1802
BIL.86	Talbot, C. P. Mill Worker Housing	1-3 Lowell St	Billerica	r 1870
BIL.264	Talbot Textile Mill Worker Housing	2-4 Lowell St	Billerica	r 1865
BIL.265	Talbot Textile Mill Worker Housing	5-7 Lowell St	Billerica	r 1865
BIL.313	Father Matthew Hall	6 Lowell St	Billerica	1886
BIL.81	Talbot, C. P. Mill Worker Housing	8 Lowell St	Billerica	r 1870
BIL.83	Talbot, C. P. Mill Worker Housing	9-11 Lowell St	Billerica	r 1870
BIL.82	Talbot, C. P. Mill Worker Housing	13-15 Lowell St	Billerica	r 1870
BIL.266		17 Lowell St	Billerica	c 1963
BIL.316	Billerica Fire Station	21 Lowell St	Billerica	c 1950
BIL.268		2-4 Mason Ave	Billerica	c 1925
BIL.277	Faulkner, William E. House	3 Mason Ave	Billerica	c 1826
BIL.269		6-8 Mason Ave	Billerica	
BIL.929	Middlesex Canal	Middlesex Canal	Billerica	c 1802
BIL.951	Middlesex Canal - Guard Lock	Middlesex Canal	Billerica	c 1802
BIL.953	Middlesex Canal Floating Towpath Peninsula	Middlesex Canal	Billerica	c 1802
BIL.954	Middlesex Canal Culvert	Middlesex Canal	Billerica	c 1802
BIL.920	Lowell Railroad Bridge (Milepost #21.72)	Mount Pleasant St	Billerica	1929
BIL.284	Whittemore, James House	16 Mount Pleasant St	Billerica	c 1865
BIL.285	Stott, James House	20 Mount Pleasant St	Billerica	c 1811
BIL.286	Talbot, Joseph Feree House	32 Mount Pleasant St	Billerica	1893
BIL.287	Clark, Frederick S. House	36 Mount Pleasant St	Billerica	c 1874
BIL.288	Rogers, Calvin House	37 Mount Pleasant St	Billerica	c 1860
BIL.290	Gould, Joseph D. House	43 Mount Pleasant St	Billerica	c 1880
BIL.289	Billerica Baptist Church Parsonage	47 Mount Pleasant St	Billerica	c 1870
BIL.80	Talbot Mills	10 Old Elm St	Billerica	1857
BIL.91	Bussey, Isaiah House	22 Old Elm St	Billerica	c 1830
BIL.925	Fordway Bridge	Pollard St	Billerica	1912
BIL.917	Pond Street Bridge over B & M Railroad	Pond St	Billerica	1834
BIL.923	Rangeway Road Bridge over Route 3	Rangeway Rd	Billerica	1953
BIL.274	Talbot Woolen Mills Worker Housing	3-7 Rogers Ct	Billerica	r 1865
BIL.273	Talbot Woolen Mills Worker Housing	4-6 Rogers Ct	Billerica	r 1865
BIL.270		10 Rogers St	Billerica	
BIL.271	Faulkner Manufacturing Company Worker Housing	14-16 Rogers St	Billerica	r 1880
BIL.128	Rogers, William House - Toothaker Tavern	18 Rogers St	Billerica	c 1807

Inv. No.	Property Name	Street	Town	Year
BIL.272	Salter House	29 Rogers St	Billerica	c 1850
BIL.283		31 Rogers St	Billerica	
BIL.282	Boston and Maine Railroad Depot	Ruggles St	Billerica	
BIL.275		3 Ruggles St	Billerica	c 1852
BIL.281		6 Station St	Billerica	1982
BIL.276		11 Station St	Billerica	r 1880
BIL.231	Saint Andrews Roman Catholic Church	Talbot Ave	Billerica	c 1915
BIL.232	Saint Andrews Roman Catholic Rectory	Talbot Ave	Billerica	c 1915
BIL.233	Talbot School	Talbot Ave	Billerica	1902
BIL.928	Talbot Avenue Oval Park	Talbot Ave	Billerica	1903
BIL.255	Talbot Textile Mills Worker Housing	2-4 Talbot Ave	Billerica	1899
BIL.220	Talbot Woolen Mills Worker Housing	6-8 Talbot Ave	Billerica	1899
BIL.238		7 Talbot Ave	Billerica	c 1970
BIL.221	Talbot Woolen Mills Worker Housing	10-12 Talbot Ave	Billerica	1899
BIL.222	Talbot Woolen Mills Worker Housing	14-16 Talbot Ave	Billerica	1902
BIL.223	Talbot Woolen Mills Worker Housing	18-20 Talbot Ave	Billerica	1902
BIL.237		21 Talbot Ave	Billerica	
BIL.224	Talbot Woolen Mills Worker Housing	22-24 Talbot Ave	Billerica	1899
BIL.236		23 Talbot Ave	Billerica	
BIL.235		25 Talbot Ave	Billerica	
BIL.225	Talbot Woolen Mills Worker Housing	26-28 Talbot Ave	Billerica	1902
BIL.234		29 Talbot Ave	Billerica	
BIL.226	Talbot Woolen Mills Worker Housing	30-32 Talbot Ave	Billerica	1902
BIL.227	Talbot Woolen Mills Worker Housing	34-36 Talbot Ave	Billerica	1899
BIL.228	Talbot Woolen Mills Worker Housing	38-40 Talbot Ave	Billerica	1899
BIL.229		42 Talbot Ave	Billerica	
BIL.230		44 Talbot Ave	Billerica	
BIL.914	Town Farm Lane Bridge over B & M Railroad	Town Farm Ln	Billerica	r 1915
BIL.250		1-3 Wilson St	Billerica	c 1880
BIL.107	Talbot Textile Mill Worker Housing	4-6 Wilson St	Billerica	c 1885
BIL.103	Talbot Textile Mill Worker Housing	5-7 Wilson St	Billerica	r 1870
BIL.108	Talbot Textile Mill Worker Housing	8-10 Wilson St	Billerica	r 1880
BIL.104	Talbot Textile Mill Worker Housing	9-11 Wilson St	Billerica	r 1870
BIL.109	Talbot Textile Mill Worker Housing	12-14 Wilson St	Billerica	r 1880
BIL.105	Talbot Textile Mill Worker Housing	13-15 Wilson St	Billerica	r 1870
BIL.119	Talbot Textile Mill Worker Housing	15-25 Wilson St	Billerica	c 1865
BIL.110	North Billerica Market	16-18 Wilson St	Billerica	c 1885
BIL.106	Talbot Textile Mill Worker Housing	17-19 Wilson St	Billerica	r 1870

Inv. No.	Property Name	Street	Town	Year
BIL.111	Talbot Textile Mills Worker Housing	20-22 Wilson St	Billerica	c 1890
BIL.247		21-23 Wilson St	Billerica	c 1860
BIL.112	Talbot Textile Mills Worker Housing	24-26 Wilson St	Billerica	c 1870
BIL.246		25-27 Wilson St	Billerica	c 1860
BIL.113	Talbot Textile Mills Worker Housing	28-28 1/2 Wilson St	Billerica	
BIL.102	Talbot Textile Mill Worker Housing	29-31 Wilson St	Billerica	r 1870
BIL.214		30-32 Wilson St	Billerica	r 1890
BIL.101	Talbot Textile Mill Worker Housing	33-35 Wilson St	Billerica	r 1870
BIL.114	Gannon, Lawrence B. House	34 Wilson St	Billerica	c 1880
BIL.215		38-40 Wilson St	Billerica	c 1860
BIL.219	Talbot Woolen Mills Worker Housing	41-43 Wilson St	Billerica	c 1875
BIL.118	Salter, Joseph House	42 Wilson St	Billerica	1846
BIL.120	Talbot Textile Mill Worker Housing	44-46 Wilson St	Billerica	c 1865
BIL.218	Talbot Woolen Mills Worker Housing	45-47 Wilson St	Billerica	1885
BIL.121	Talbot Textile Mill Worker Housing	48-50 Wilson St	Billerica	c 1865
BIL.217	Talbot Woolen Mills Worker Housing	49-51 Wilson St	Billerica	1885
BIL.122	Talbot Textile Mill Worker Housing	52-54 Wilson St	Billerica	c 1868
BIL.216	Talbot Woolen Mills Worker Housing	53-55 Wilson St	Billerica	c 1892
BIL.123	Talbot Textile Mills Worker Housing	56-58 Wilson St	Billerica	r 1860
BIL.124	Talbot Textile Mills Worker Housing	60-62 Wilson St	Billerica	r 1860
BIL.125	Mill Worker Housing	64-66 Wilson St	Billerica	r 1860
BIL.126	Talbot Textile Mills Worker Housing	68-78 Wilson St	Billerica	r 1885
BIL.127	Talbot Textile Mills Worker Housing	80-90 Wilson St	Billerica	c 1890

Massachusetts Cultural Resource Information System
MACRIS

For more information about this page and how to use it, click here.

Inventory No:	BIL.299 INV
Historic Name:	Boston and Maine Railroad Billerica Shop Complex
Common Name:	Boston and Maine Systems Office Building
Address:	High St
City/Town:	Billerica
Village/Neighborhood:	North Billerica
Local No:	780
Year Constructed:	C 1912
Architect(s):	
Architectural Style(s):	No style
Use(s):	Business Office
Significance:	Architecture; Transportation
Area(s):	
Designation(s):	
Building Material(s):	Wall: Brick; Steel; Stone, Cut Foundation: Concrete Unspecified

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Massachusetts Cultural Resource Information System
MACRIS

For more information about this page and how to use it, click here.

Inventory No:	BIL.300 INV
Historic Name:	Boston and Maine Railroad Equipment Storage Shed
Common Name:	
Address:	High St
City/Town:	Billerica
Village/Neighborhood:	North Billerica
Local No:	781
Year Constructed:	C 1912
Architect(s):	
Architectural Style(s):	Not researched
Use(s):	Warehouse
Significance:	Architecture; Transportation
Area(s):	
Designation(s):	
Building Material(s):	Roof: Metal, Undetermined Wall: Concrete Unspecified; Wood; Metal, Undetermined

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MACRIS

For more information about this page and how to use it, click here.

Inventory No:	BIL.301 INV
Historic Name:	Boston and Maine Railroad Maintenance Shop
Common Name:	
Address:	High St
City/Town:	Billerica
Village/Neighborhood:	North Billerica
Local No:	782
Year Constructed:	C 1912
Architect(s):	Johnson, Dwight P. and Company
Architectural Style(s):	Not researched
Use(s):	Blacksmith Shop; Business Office; Other Transportation
Significance:	Architecture; Industry; Transportation
Area(s):	
Designation(s):	
Building Material(s):	Wall: Brick; Wood

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Massachusetts Cultural Resource Information System
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For more information about this page and how to use it, click here.

Inventory No:	BIL.302 INV
Historic Name:	Boston and Maine Railroad Power Plant
Common Name:	
Address:	High St
City/Town:	Billerica
Village/Neighborhood:	North Billerica
Local No:	783
Year Constructed:	C 1912
Architect(s):	
Architectural Style(s):	Not researched
Use(s):	Power House
Significance:	Architecture; Engineering; Transportation
Area(s):	
Designation(s):	
Building Material(s):	Wall: Brick; Metal, Undetermined

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Dilution Factor	1.0					
A. Inorganics	TBEL applies if bolded		WQBEL applies if bolded		Compliance Level applies if shown	
Ammonia	**Report**	mg/L	---			
Chloride	**Report**	µg/L	---			
Total Residual Chlorine	0.2	mg/L	**11**	µg/L	50	µg/L
Total Suspended Solids	**30**	mg/L	---			
Antimony	**206**	µg/L	640	µg/L		
Arsenic	104	µg/L	**10**	µg/L		
Cadmium	**10.2**	µg/L	0.1629	µg/L		
Chromium III	**323**	µg/L	49.2	µg/L		
Chromium VI	**323**	µg/L	11.4	µg/L		
Copper	**242**	µg/L	5.2	µg/L		
Iron	5000	µg/L	**1000**	µg/L		
Lead	**160**	µg/L	1.33	µg/L		
Mercury	**0.739**	µg/L	0.91	µg/L		
Nickel	**1450**	µg/L	29.2	µg/L		
Selenium	**235.8**	µg/L	5.0	µg/L		
Silver	**35.1**	µg/L	1.2	µg/L		
Zinc	**420**	µg/L	67.0	µg/L		
Cyanide	**178**	mg/L	5.2	µg/L	---	µg/L
B. Non-Halogenated VOCs						
Total BTEX	**100**	µg/L	---			
Benzene	**5.0**	µg/L	---			
1,4 Dioxane	**200**	µg/L	---			
Acetone	**7970**	µg/L	---			
Phenol	**1,080**	µg/L	300	µg/L		
C. Halogenated VOCs						
Carbon Tetrachloride	**4.4**	µg/L	1.6	µg/L		
1,2 Dichlorobenzene	**600**	µg/L	---			
1,3 Dichlorobenzene	**320**	µg/L	---			
1,4 Dichlorobenzene	**5.0**	µg/L	---			
Total dichlorobenzene	**---**	µg/L	---			
1,1 Dichloroethane	**70**	µg/L	---			
1,2 Dichloroethane	**5.0**	µg/L	---			
1,1 Dichloroethylene	**3.2**	µg/L	---			
Ethylene Dibromide	**0.05**	µg/L	---			
Methylene Chloride	**4.6**	µg/L	---			
1,1,1 Trichloroethane	**200**	µg/L	---			
1,1,2 Trichloroethane	**5.0**	µg/L	---			
Trichloroethylene	**5.0**	µg/L	---			
Tetrachloroethylene	**5.0**	µg/L	3.3	µg/L		
cis-1,2 Dichloroethylene	**70**	µg/L	---			
Vinyl Chloride	**2.0**	µg/L	---			
D. Non-Halogenated SVOCs						
Total Phthalates	**190**	µg/L	---	µg/L		
Diethylhexyl phthalate	**101**	µg/L	2.2	µg/L		
Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---			
Benzo(a)anthracene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Benzo(a)pyrene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Benzo(b)fluoranthene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Benzo(k)fluoranthene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Chrysene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Indeno(1,2,3-cd)pyrene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	**100**	µg/L	---			
Naphthalene	**20**	µg/L	---			
E. Halogenated SVOCs						
Total Polychlorinated Biphenyls	**0.000064**	µg/L	---		0.5	µg/L
Pentachlorophenol	**1.0**	µg/L	---			
F. Fuels Parameters						
Total Petroleum Hydrocarbons	**5.0**	mg/L	---			
Ethanol	**Report**	mg/L	---			
Methyl-tert-Butyl Ether	**70**	µg/L	20	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

CERTIFICATE OF ANALYSIS

Lars Andresen
CDW Consultants, Inc.
6 Huron Drive
Natick, MA 01760

RE: Iron Horse Park - RGP (1559)
ESS Laboratory Work Order Number: 1709632

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 4:24 pm, Sep 29, 2017

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP

ESS Laboratory Work Order: 1709632

SAMPLE RECEIPT

The following samples were received on September 21, 2017 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the 2017 Remediation General Permit under the National Pollutant Discharge Elimination System (NPDES).

ESS Laboratory is unable to achieve the required detection limit of 0.4 mg/L for Ethanol for the RGP permit. We have also been unable to procure a subcontract laboatory that is able to achieve this limit. The data for Ethanol has been reported using our current method reporting limit.

Lab Number	Sample Name	Matrix	Analysis
1709632-01	CDW-G1	Ground Water	1664A, 200.7, 245.1, 2540D, 300.0, 3113B, 350.1, 3500Cr B-2009, 420.1, 4500 CN CE, 4500Cl D, 504.1, 524.2, 608, 625 SIM, 8270D SIM, 9040, ASTM D3695
1709632-02	CDW-B1	Ground Water	1664A, 200.7, 245.1, 2540D, 300.0, 3113B, 350.1, 3500Cr B-2009, 420.1, 4500 CN CE, 4500Cl D, 504.1, 524.2, 608, 625 SIM, 8270D SIM, 9040, ASTM D3695
1709632-03	SW-OF1	Ground Water	1664A, 200.7, 245.1, 2540D, 300.0, 3113B, 350.1, 3500Cr B-2009, 420.1, 4500 CN CE, 4500Cl D, 504.1, 524.2, 608, 625 SIM, 8270D SIM, 9040, ASTM D3695

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP

ESS Laboratory Work Order: 1709632

PROJECT NARRATIVE

608 Polychlorinated Biphenyls (PCB)

CI72203-BSD1 **Relative percent difference for duplicate is outside of criteria (D+).**
Aroclor 1016 (37% @ 20%), Aroclor 1016 [2C] (34% @ 20%), Aroclor 1260 (34% @ 20%), Aroclor 1260 [2C] (32% @ 20%)

625(SIM) Semi-Volatile Organic Compounds

C7I0424-CCV1 **Calibration required quadratic regression (Q).**
Pentachlorophenol (96% @ 80-120%)

C7I0424-CCV1 **Continuing Calibration %Diff/Drift is above control limit (CD+).**
2,4,6-Tribromophenol (58% @ 20%), Diethylphthalate (59% @ 20%), Di-n-octylphthalate (24% @ 20%)

CI72605-BLK2 **Continuing Calibration %Diff/Drift is above control limit (CD+).**
2,4,6-Tribromophenol (44% @ 20%)

CI72605-BS2 **Blank Spike recovery is above upper control limit (B+).**
2,4,6-Tribromophenol (138% @ 15-110%)

CI72605-BSD2 **Blank Spike recovery is above upper control limit (B+).**
2,4,6-Tribromophenol (159% @ 15-110%)

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

C7I0436-TUN1 **DDT breakdown > 20%**

CI72649-BSD1 **Blank Spike recovery is above upper control limit (B+).**
1,4-Dioxane (157% @ 40-140%)

CI72649-BSD1 **Relative percent difference for duplicate is outside of criteria (D+).**
1,4-Dioxane (23% @ 20%)

Classical Chemistry

1709632-01 **The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**

1709632-02 **The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**

1709632-03 **The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**

No other observations noted.

End of Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP

ESS Laboratory Work Order: 1709632

DATA USABILITY LINKS

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Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035 - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-G1
Date Sampled: 09/21/17 11:10
Percent Solids: N/A

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-01
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Dissolved Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (20.0)		200.7		1	KJK	09/27/17 5:01	100	20	CI72503
Arsenic	**22.9** (5.0)		3113B		5	KJK	09/28/17 19:34	100	20	CI72503
Cadmium	ND (0.05)		3113B		1	KJK	09/27/17 18:05	100	20	CI72503
Chromium	ND (4.0)		200.7		1	KJK	09/27/17 5:01	100	20	CI72503
Copper	ND (4.0)		200.7		1	KJK	09/27/17 5:01	100	20	CI72503
Iron	**6540** (20.0)		200.7		1	KJK	09/27/17 5:01	100	20	CI72503
Lead	ND (1.0)		3113B		1	KJK	09/28/17 4:32	100	20	CI72503
Mercury	ND (0.20)		245.1		1	MJV	09/25/17 21:18	20	40	CI72533
Nickel	ND (10.0)		200.7		1	KJK	09/28/17 16:49	100	20	CI72503
Selenium	ND (2.0)		3113B		1	KJK	09/28/17 11:31	100	20	CI72503
Silver	ND (2.0)		200.7		1	KJK	09/27/17 5:01	100	20	CI72503
Zinc	**49.4** (10.0)		200.7		1	KJK	09/27/17 16:26	100	20	CI72503

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-G1
Date Sampled: 09/21/17 11:10
Percent Solids: N/A

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-01
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (20.0)		200.7		1	KJK	09/27/17 4:40	100	20	CI72503
Arsenic	**24.2** (5.0)		3113B		5	KJK	09/28/17 18:31	100	20	CI72503
Cadmium	ND (0.05)		3113B		1	KJK	09/27/17 16:27	100	20	CI72503
Chromium	ND (4.0)		200.7		1	KJK	09/27/17 4:40	100	20	CI72503
Chromium III	ND (10.0)		200.7		1	JLK	09/27/17 4:40	1	1	[CALC]
Copper	ND (4.0)		200.7		1	KJK	09/27/17 4:40	100	20	CI72503
Hardness	**50400** (165)		200.7		1	KJK	09/27/17 4:40	1	1	[CALC]
Iron	**6580** (20.0)		200.7		1	KJK	09/27/17 4:40	100	20	CI72503
Lead	ND (1.0)		3113B		1	KJK	09/28/17 1:35	100	20	CI72503
Mercury	ND (0.200)		245.1		1	MJV	09/25/17 21:25	20	40	CI72533
Nickel	ND (10.0)		200.7		1	KJK	09/28/17 16:15	100	20	CI72503
Selenium	ND (2.0)		3113B		1	KJK	09/28/17 10:45	100	20	CI72503
Silver	ND (1.0)		200.7		1	KJK	09/27/17 4:40	100	20	CI72503
Zinc	**46.5** (10.0)		200.7		1	KJK	09/27/17 16:05	100	20	CI72503

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-G1
Date Sampled: 09/21/17 11:10
Percent Solids: N/A
Initial Volume: 25
Final Volume: 25
Extraction Method: 524.2

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: DMC

524.2 Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1-Trichloroethane	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
1,1,2-Trichloroethane	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
1,1-Dichloroethane	**2.1** (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
1,1-Dichloroethene	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
1,2-Dichlorobenzene	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
1,2-Dichloroethane	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
1,3-Dichlorobenzene	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
1,4-Dichlorobenzene	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
Acetone	ND (5.0)		524.2		1	09/25/17 18:06	C7I0403	CI72545
Benzene	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
Carbon Tetrachloride	ND (0.3)		524.2		1	09/25/17 18:06	C7I0403	CI72545
cis-1,2-Dichloroethene	**1.5** (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
Ethylbenzene	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
Methyl tert-Butyl Ether	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
Methylene Chloride	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
Naphthalene	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
Tertiary-amyl methyl ether	ND (1.0)		524.2		1	09/25/17 18:06	C7I0403	CI72545
Tertiary-butyl Alcohol	ND (25.0)		524.2		1	09/25/17 18:06	C7I0403	CI72545
Tetrachloroethene	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
Toluene	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
Trichloroethene	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
Vinyl Chloride	ND (0.2)		524.2		1	09/25/17 18:06	C7I0403	CI72545
Xylene O	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545
Xylene P,M	ND (0.5)		524.2		1	09/25/17 18:06	C7I0403	CI72545

	%Recovery	*Qualifier*	*Limits*
Surrogate: 1,2-Dichlorobenzene-d4	*97 %*		*80-120*
Surrogate: 4-Bromofluorobenzene	*101 %*		*80-120*

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-G1
Date Sampled: 09/21/17 11:10
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: SMR
Prepared: 9/22/17 11:17

608 Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.09)		608		1	09/22/17 23:53		CI72203
Aroclor 1221	ND (0.09)		608		1	09/22/17 23:53		CI72203
Aroclor 1232	ND (0.09)		608		1	09/22/17 23:53		CI72203
Aroclor 1242	ND (0.09)		608		1	09/22/17 23:53		CI72203
Aroclor 1248	ND (0.09)		608		1	09/22/17 23:53		CI72203
Aroclor 1254	ND (0.09)		608		1	09/22/17 23:53		CI72203
Aroclor 1260	ND (0.09)		608		1	09/22/17 23:53		CI72203
Aroclor 1262	ND (0.09)		608		1	09/22/17 23:53		CI72203
Aroclor 1268	ND (0.09)		608		1	09/22/17 23:53		CI72203

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*81 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*89 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*78 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*79 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-G1
Date Sampled: 09/21/17 11:10
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: IBM
Prepared: 9/26/17 14:07

625(SIM) Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acenaphthene	ND (0.19)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Acenaphthylene	ND (0.19)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Anthracene	ND (0.19)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Benzo(a)anthracene	ND (0.05)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Benzo(a)pyrene	ND (0.05)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Benzo(b)fluoranthene	ND (0.05)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Benzo(g,h,i)perylene	ND (0.19)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Benzo(k)fluoranthene	ND (0.05)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
bis(2-Ethylhexyl)phthalate	ND (0.93)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Butylbenzylphthalate	ND (2.34)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Chrysene	ND (0.05)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Dibenzo(a,h)Anthracene	ND (0.05)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Diethylphthalate	ND (2.34)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Dimethylphthalate	ND (2.34)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Di-n-butylphthalate	ND (2.34)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Di-n-octylphthalate	ND (2.34)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Fluoranthene	ND (0.19)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Fluorene	ND (0.19)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Indeno(1,2,3-cd)Pyrene	ND (0.05)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Naphthalene	ND (0.19)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Pentachlorophenol	ND (0.84)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Phenanthrene	ND (0.19)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605
Pyrene	ND (0.19)		625 SIM		1	09/27/17 2:37	C7I0424	CI72605

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*47 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*106 %*		*15-110*
Surrogate: 2-Fluorobiphenyl	*59 %*		*30-130*
Surrogate: Nitrobenzene-d5	*74 %*		*30-130*
Surrogate: p-Terphenyl-d14	*84 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-G1
Date Sampled: 09/21/17 11:10
Percent Solids: N/A
Initial Volume: 500
Final Volume: 0.5
Extraction Method: 3535A

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: IBM
Prepared: 9/26/17 21:00

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,4-Dioxane	**0.819** (0.250)		8270D SIM		1	09/27/17 17:08	C7I0436	CI72649

	%Recovery	Qualifier	Limits
Surrogate: 1,4-Dioxane-d8	19 %		15-115

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-G1
Date Sampled: 09/21/17 11:10
Percent Solids: N/A

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-01
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**0.36** (0.10)		350.1		1	EEM	09/26/17 15:10	mg/L	CI72553
Chloride	**79.8** (50.0)		300.0		100	EEM	09/27/17 15:53	mg/L	CI72720
Hexavalent Chromium	ND (10.0)		3500Cr B-2009		1	JLK	09/21/17 22:48	ug/L	CI72135
pH	**6.08** (N/A)		9040		1	JLK	09/21/17 23:30	S.U.	CI72154
pH Sample Temp	**Aqueous pH measured in water at 14.2 ºC.** (N/A)								
Phenols	ND (100)		420.1		1	JLK	09/26/17 18:55	ug/L	CI72628
Total Cyanide (LL)	ND (5.00)		4500 CN CE		1	JLK	09/26/17 16:54	ug/L	CI72627
Total Petroleum Hydrocarbon	ND (5)		1664A		1	LAB	09/26/17 14:00	mg/L	CI72221
Total Residual Chlorine	ND (20.0)		4500Cl D		1	JLK	09/21/17 23:06	ug/L	CI72152
Total Suspended Solids	ND (5)		2540D		1	JLK	09/26/17 21:02	mg/L	CI72629

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-G1
Date Sampled: 09/21/17 11:10
Percent Solids: N/A
Initial Volume: 35
Final Volume: 2
Extraction Method: 504/8011

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: SMR
Prepared: 9/26/17 12:10

504.1 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,2-Dibromoethane	ND (0.015)		504.1		1	09/27/17 0:07		CI72622

	%Recovery	Qualifier	Limits
Surrogate: Pentachloroethane	*108 %*		*30-150*
Surrogate: Pentachloroethane [2C]	*117 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-G1
Date Sampled: 09/21/17 11:10
Percent Solids: N/A
Initial Volume: 1
Final Volume: 1
Extraction Method: No Prep

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: ZLC
Prepared: 9/28/17 9:04

Alcohol Scan by GC/FID

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Ethanol	ND (10)		ASTM D3695		1	ZLC	09/28/17 11:44		CI72805

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-B1
Date Sampled: 09/21/17 14:05
Percent Solids: N/A

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-02
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Dissolved Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (20.0)		200.7		1	KJK	09/27/17 5:17	100	20	CI72503
Arsenic	**20.7** (5.0)		3113B		5	KJK	09/28/17 19:51	100	20	CI72503
Cadmium	ND (0.05)		3113B		1	KJK	09/27/17 18:11	100	20	CI72503
Chromium	ND (4.0)		200.7		1	KJK	09/27/17 5:17	100	20	CI72503
Copper	ND (4.0)		200.7		1	KJK	09/27/17 5:17	100	20	CI72503
Iron	**1770** (20.0)		200.7		1	KJK	09/27/17 5:17	100	20	CI72503
Lead	ND (1.0)		3113B		1	KJK	09/28/17 4:38	100	20	CI72503
Mercury	ND (0.20)		245.1		1	MJV	09/25/17 21:20	20	40	CI72533
Nickel	ND (10.0)		200.7		1	KJK	09/28/17 16:53	100	20	CI72503
Selenium	ND (2.0)		3113B		1	KJK	09/28/17 11:37	100	20	CI72503
Silver	ND (2.0)		200.7		1	KJK	09/27/17 5:17	100	20	CI72503
Zinc	**35.8** (10.0)		200.7		1	KJK	09/27/17 16:30	100	20	CI72503

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-B1
Date Sampled: 09/21/17 14:05
Percent Solids: N/A

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-02
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (20.0)		200.7		1	KJK	09/27/17 4:44	100	20	CI72503
Arsenic	**21.7** (5.0)		3113B		5	KJK	09/28/17 18:49	100	20	CI72503
Cadmium	ND (0.05)		3113B		1	KJK	09/27/17 16:34	100	20	CI72503
Chromium	ND (4.0)		200.7		1	KJK	09/27/17 4:44	100	20	CI72503
Chromium III	ND (10.0)		200.7		1	JLK	09/27/17 4:44	1	1	[CALC]
Copper	ND (4.0)		200.7		1	KJK	09/27/17 4:44	100	20	CI72503
Hardness	**76400** (165)		200.7		1	KJK	09/27/17 4:44	1	1	[CALC]
Iron	**1890** (20.0)		200.7		1	KJK	09/27/17 4:44	100	20	CI72503
Lead	ND (1.0)		3113B		1	KJK	09/28/17 1:52	100	20	CI72503
Mercury	ND (0.200)		245.1		1	MJV	09/25/17 21:28	20	40	CI72533
Nickel	ND (10.0)		200.7		1	KJK	09/28/17 16:20	100	20	CI72503
Selenium	ND (2.0)		3113B		1	KJK	09/28/17 10:51	100	20	CI72503
Silver	ND (1.0)		200.7		1	KJK	09/27/17 4:44	100	20	CI72503
Zinc	**21.5** (10.0)		200.7		1	KJK	09/27/17 16:09	100	20	CI72503

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-B1
Date Sampled: 09/21/17 14:05
Percent Solids: N/A
Initial Volume: 25
Final Volume: 25
Extraction Method: 524.2

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: DMC

524.2 Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1-Trichloroethane	**46.6** (5.0)		524.2		10	09/26/17 13:32	C7I0403	CI72545
1,1,2-Trichloroethane	ND (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545
1,1-Dichloroethane	**37.0** (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545
1,1-Dichloroethene	**3.4** (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545
1,2-Dichlorobenzene	ND (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545
1,2-Dichloroethane	ND (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545
1,3-Dichlorobenzene	ND (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545
1,4-Dichlorobenzene	ND (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545
Acetone	ND (5.0)		524.2		1	09/25/17 18:41	C7I0403	CI72545
Benzene	ND (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545
Carbon Tetrachloride	ND (0.3)		524.2		1	09/25/17 18:41	C7I0403	CI72545
cis-1,2-Dichloroethene	**69.8** (5.0)		524.2		10	09/26/17 13:32	C7I0403	CI72545
Ethylbenzene	**2.2** (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545
Methyl tert-Butyl Ether	ND (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545
Methylene Chloride	ND (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545
Naphthalene	ND (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545
Tertiary-amyl methyl ether	ND (1.0)		524.2		1	09/25/17 18:41	C7I0403	CI72545
Tertiary-butyl Alcohol	ND (25.0)		524.2		1	09/25/17 18:41	C7I0403	CI72545
Tetrachloroethene	**11.3** (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545
Toluene	ND (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545
Trichloroethene	**13.1** (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545
Vinyl Chloride	**6.2** (0.2)		524.2		1	09/25/17 18:41	C7I0403	CI72545
Xylene O	ND (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545
Xylene P,M	ND (0.5)		524.2		1	09/25/17 18:41	C7I0403	CI72545

	%Recovery	*Qualifier*	*Limits*
Surrogate: 1,2-Dichlorobenzene-d4	*94 %*		*80-120*
Surrogate: 4-Bromofluorobenzene	*99 %*		*80-120*

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-B1
Date Sampled: 09/21/17 14:05
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: SMR
Prepared: 9/22/17 11:17

608 Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.09)		608		1	09/23/17 0:12		CI72203
Aroclor 1221	ND (0.09)		608		1	09/23/17 0:12		CI72203
Aroclor 1232	ND (0.09)		608		1	09/23/17 0:12		CI72203
Aroclor 1242	ND (0.09)		608		1	09/23/17 0:12		CI72203
Aroclor 1248	ND (0.09)		608		1	09/23/17 0:12		CI72203
Aroclor 1254	ND (0.09)		608		1	09/23/17 0:12		CI72203
Aroclor 1260	ND (0.09)		608		1	09/23/17 0:12		CI72203
Aroclor 1262	ND (0.09)		608		1	09/23/17 0:12		CI72203
Aroclor 1268	ND (0.09)		608		1	09/23/17 0:12		CI72203

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*76 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*83 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*60 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*71 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-B1
Date Sampled: 09/21/17 14:05
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: IBM
Prepared: 9/26/17 14:07

625(SIM) Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acenaphthene	ND (0.19)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Acenaphthylene	ND (0.19)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Anthracene	ND (0.19)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Benzo(a)anthracene	ND (0.05)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Benzo(a)pyrene	ND (0.05)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Benzo(b)fluoranthene	ND (0.05)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Benzo(g,h,i)perylene	ND (0.19)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Benzo(k)fluoranthene	ND (0.05)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
bis(2-Ethylhexyl)phthalate	ND (0.93)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Butylbenzylphthalate	ND (2.34)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Chrysene	ND (0.05)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Dibenzo(a,h)Anthracene	ND (0.05)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Diethylphthalate	ND (2.34)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Dimethylphthalate	ND (2.34)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Di-n-butylphthalate	ND (2.34)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Di-n-octylphthalate	ND (2.34)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Fluoranthene	ND (0.19)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Fluorene	ND (0.19)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Indeno(1,2,3-cd)Pyrene	ND (0.05)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Naphthalene	ND (0.19)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Pentachlorophenol	ND (0.84)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Phenanthrene	ND (0.19)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605
Pyrene	ND (0.19)		625 SIM		1	09/27/17 3:25	C7I0424	CI72605

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*51 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*105 %*		*15-110*
Surrogate: 2-Fluorobiphenyl	*65 %*		*30-130*
Surrogate: Nitrobenzene-d5	*66 %*		*30-130*
Surrogate: p-Terphenyl-d14	*82 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-B1
Date Sampled: 09/21/17 14:05
Percent Solids: N/A
Initial Volume: 500
Final Volume: 0.5
Extraction Method: 3535A

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: IBM
Prepared: 9/26/17 21:00

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,4-Dioxane	**3.74** (0.250)		8270D SIM		1	09/27/17 17:43	C7I0436	CI72649

	%Recovery	Qualifier	Limits
Surrogate: 1,4-Dioxane-d8	35 %		15-115

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-B1
Date Sampled: 09/21/17 14:05
Percent Solids: N/A

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-02
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**0.29** (0.10)		350.1		1	EEM	09/26/17 15:23	mg/L	CI72553
Chloride	**56.2** (50.0)		300.0		100	EEM	09/27/17 16:09	mg/L	CI72720
Hexavalent Chromium	ND (10.0)		3500Cr B-2009		1	JLK	09/21/17 22:48	ug/L	CI72135
pH	**6.42** (N/A)		9040		1	JLK	09/21/17 23:30	S.U.	CI72154
pH Sample Temp	**Aqueous pH measured in water at 13.4 ºC.** (N/A)								
Phenols	ND (100)		420.1		1	JLK	09/26/17 18:55	ug/L	CI72628
Total Cyanide (LL)	ND (5.00)		4500 CN CE		1	JLK	09/26/17 16:54	ug/L	CI72627
Total Petroleum Hydrocarbon	ND (5)		1664A		1	LAB	09/27/17 13:49	mg/L	CI72624
Total Residual Chlorine	ND (20.0)		4500Cl D		1	JLK	09/21/17 23:06	ug/L	CI72152
Total Suspended Solids	**5** (5)		2540D		1	JLK	09/26/17 21:02	mg/L	CI72629

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-B1
Date Sampled: 09/21/17 14:05
Percent Solids: N/A
Initial Volume: 35
Final Volume: 2
Extraction Method: 504/8011

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: SMR
Prepared: 9/26/17 12:10

504.1 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,2-Dibromoethane	ND (0.015)		504.1		1	09/27/17 0:32		CI72622

	%Recovery	Qualifier	Limits
Surrogate: Pentachloroethane	*112 %*		*30-150*
Surrogate: Pentachloroethane [2C]	*111 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: CDW-B1
Date Sampled: 09/21/17 14:05
Percent Solids: N/A
Initial Volume: 1
Final Volume: 1
Extraction Method: No Prep

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-02
Sample Matrix: Ground Water
Units: mg/L
Analyst: ZLC
Prepared: 9/28/17 9:04

Alcohol Scan by GC/FID

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Ethanol	ND (10)		ASTM D3695		1	ZLC	09/28/17 12:29		CI72805

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: SW-OF1
Date Sampled: 09/21/17 14:45
Percent Solids: N/A

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-03
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Dissolved Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (20.0)		200.7		1	KJK	09/27/17 5:22	100	20	CI72503
Arsenic	ND (1.0)		3113B		1	KJK	09/28/17 19:56	100	20	CI72503
Cadmium	**0.07** (0.05)		3113B		1	KJK	09/27/17 18:17	100	20	CI72503
Chromium	ND (4.0)		200.7		1	KJK	09/27/17 5:22	100	20	CI72503
Copper	ND (4.0)		200.7		1	KJK	09/27/17 5:22	100	20	CI72503
Iron	**303** (20.0)		200.7		1	KJK	09/27/17 5:22	100	20	CI72503
Lead	ND (1.0)		3113B		1	KJK	09/28/17 5:07	100	20	CI72503
Mercury	ND (0.20)		245.1		1	MJV	09/25/17 21:23	20	40	CI72533
Nickel	ND (10.0)		200.7		1	KJK	09/28/17 16:57	100	20	CI72503
Selenium	ND (2.0)		3113B		1	KJK	09/28/17 11:42	100	20	CI72503
Silver	ND (2.0)		200.7		1	KJK	09/27/17 5:22	100	20	CI72503
Zinc	**17.0** (10.0)		200.7		1	KJK	09/27/17 17:50	100	20	CI72503

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: SW-OF1
Date Sampled: 09/21/17 14:45
Percent Solids: N/A

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-03
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (20.0)		200.7		1	KJK	09/27/17 4:48	100	20	CI72503
Arsenic	**2.4** (1.0)		3113B		1	KJK	09/28/17 18:54	100	20	CI72503
Cadmium	**0.68** (0.25)		3113B		5	KJK	09/27/17 17:14	100	20	CI72503
Chromium	ND (4.0)		200.7		1	KJK	09/27/17 4:48	100	20	CI72503
Chromium III	ND (10.0)		200.7		1	JLK	09/27/17 4:48	1	1	[CALC]
Copper	**49.2** (4.0)		200.7		1	KJK	09/27/17 4:48	100	20	CI72503
Hardness	**91100** (165)		200.7		1	KJK	09/27/17 4:48	1	1	[CALC]
Iron	**4900** (20.0)		200.7		1	KJK	09/27/17 4:48	100	20	CI72503
Lead	**129** (4.0)		200.7		1	KJK	09/27/17 16:13	100	20	CI72503
Mercury	ND (0.200)		245.1		1	MJV	09/25/17 21:30	20	40	CI72533
Nickel	ND (10.0)		200.7		1	KJK	09/28/17 16:36	100	20	CI72503
Selenium	ND (2.0)		3113B		1	KJK	09/28/17 10:57	100	20	CI72503
Silver	ND (1.0)		200.7		1	KJK	09/27/17 4:48	100	20	CI72503
Zinc	**109** (10.0)		200.7		1	KJK	09/27/17 16:13	100	20	CI72503

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: SW-OF1
Date Sampled: 09/21/17 14:45
Percent Solids: N/A
Initial Volume: 25
Final Volume: 25
Extraction Method: 524.2

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: DMC

524.2 Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1-Trichloroethane	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
1,1,2-Trichloroethane	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
1,1-Dichloroethane	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
1,1-Dichloroethene	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
1,2-Dichlorobenzene	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
1,2-Dichloroethane	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
1,3-Dichlorobenzene	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
1,4-Dichlorobenzene	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
Acetone	ND (5.0)		524.2		1	09/25/17 19:15	C7I0403	CI72545
Benzene	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
Carbon Tetrachloride	ND (0.3)		524.2		1	09/25/17 19:15	C7I0403	CI72545
cis-1,2-Dichloroethene	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
Ethylbenzene	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
Methyl tert-Butyl Ether	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
Methylene Chloride	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
Naphthalene	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
Tertiary-amyl methyl ether	ND (1.0)		524.2		1	09/25/17 19:15	C7I0403	CI72545
Tertiary-butyl Alcohol	ND (25.0)		524.2		1	09/25/17 19:15	C7I0403	CI72545
Tetrachloroethene	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
Toluene	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
Trichloroethene	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
Vinyl Chloride	ND (0.2)		524.2		1	09/25/17 19:15	C7I0403	CI72545
Xylene O	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545
Xylene P,M	ND (0.5)		524.2		1	09/25/17 19:15	C7I0403	CI72545

	%Recovery	*Qualifier*	*Limits*
Surrogate: 1,2-Dichlorobenzene-d4	*98 %*		*80-120*
Surrogate: 4-Bromofluorobenzene	*103 %*		*80-120*

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: SW-OF1
Date Sampled: 09/21/17 14:45
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: SMR
Prepared: 9/22/17 11:17

608 Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.09)		608		1	09/23/17 0:31		CI72203
Aroclor 1221	ND (0.09)		608		1	09/23/17 0:31		CI72203
Aroclor 1232	ND (0.09)		608		1	09/23/17 0:31		CI72203
Aroclor 1242	ND (0.09)		608		1	09/23/17 0:31		CI72203
Aroclor 1248	ND (0.09)		608		1	09/23/17 0:31		CI72203
Aroclor 1254	ND (0.09)		608		1	09/23/17 0:31		CI72203
Aroclor 1260	ND (0.09)		608		1	09/23/17 0:31		CI72203
Aroclor 1262	ND (0.09)		608		1	09/23/17 0:31		CI72203
Aroclor 1268	ND (0.09)		608		1	09/23/17 0:31		CI72203

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*75 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*69 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*61 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*46 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: SW-OF1
Date Sampled: 09/21/17 14:45
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: IBM
Prepared: 9/26/17 14:07

625(SIM) Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acenaphthene	ND (0.19)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Acenaphthylene	ND (0.19)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Anthracene	ND (0.19)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Benzo(a)anthracene	**0.28** (0.05)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Benzo(a)pyrene	**0.30** (0.05)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Benzo(b)fluoranthene	**0.51** (0.05)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Benzo(g,h,i)perylene	**0.25** (0.19)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Benzo(k)fluoranthene	**0.18** (0.05)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
bis(2-Ethylhexyl)phthalate	ND (0.93)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Butylbenzylphthalate	ND (2.34)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Chrysene	**0.36** (0.05)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Dibenzo(a,h)Anthracene	**0.07** (0.05)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Diethylphthalate	ND (2.34)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Dimethylphthalate	ND (2.34)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Di-n-butylphthalate	ND (2.34)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Di-n-octylphthalate	ND (2.34)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Fluoranthene	**0.64** (0.19)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Fluorene	ND (0.19)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Indeno(1,2,3-cd)Pyrene	**0.30** (0.05)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Naphthalene	ND (0.19)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Pentachlorophenol	ND (0.84)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Phenanthrene	**0.20** (0.19)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605
Pyrene	**0.54** (0.19)		625 SIM		1	09/27/17 4:13	C7I0424	CI72605

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*54 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*104 %*		*15-110*
Surrogate: 2-Fluorobiphenyl	*66 %*		*30-130*
Surrogate: Nitrobenzene-d5	*78 %*		*30-130*
Surrogate: p-Terphenyl-d14	*82 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: SW-OF1
Date Sampled: 09/21/17 14:45
Percent Solids: N/A
Initial Volume: 500
Final Volume: 0.5
Extraction Method: 3535A

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: IBM
Prepared: 9/26/17 21:00

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,4-Dioxane	ND (0.250)		8270D SIM		1	09/27/17 18:18	C7I0436	CI72649

	%Recovery	Qualifier	Limits
Surrogate: 1,4-Dioxane-d8	41 %		15-115

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: SW-OF1
Date Sampled: 09/21/17 14:45
Percent Solids: N/A

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-03
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**0.23** (0.10)		350.1		1	EEM	09/26/17 15:24	mg/L	CI72553
Chloride	**236** (50.0)		300.0		100	EEM	09/27/17 16:25	mg/L	CI72720
Hexavalent Chromium	ND (10.0)		3500Cr B-2009		1	JLK	09/21/17 22:48	ug/L	CI72135
pH	**6.48** (N/A)		9040		1	JLK	09/21/17 23:30	S.U.	CI72154
pH Sample Temp	**Aqueous pH measured in water at 14.9 ºC.** (N/A)								
Phenols	ND (100)		420.1		1	JLK	09/26/17 18:55	ug/L	CI72628
Total Cyanide (LL)	ND (5.00)		4500 CN CE		1	JLK	09/26/17 16:54	ug/L	CI72627
Total Petroleum Hydrocarbon	ND (5)		1664A		1	LAB	09/27/17 13:49	mg/L	CI72624
Total Residual Chlorine	ND (20.0)		4500Cl D		1	JLK	09/21/17 23:06	ug/L	CI72152
Total Suspended Solids	**42** (5)		2540D		1	JLK	09/26/17 21:02	mg/L	CI72629

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: SW-OF1
Date Sampled: 09/21/17 14:45
Percent Solids: N/A
Initial Volume: 35
Final Volume: 2
Extraction Method: 504/8011

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: SMR
Prepared: 9/26/17 12:10

504.1 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,2-Dibromoethane	ND (0.015)		504.1		1	09/27/17 0:57		CI72622

	%Recovery	Qualifier	Limits
Surrogate: Pentachloroethane	*112 %*		*30-150*
Surrogate: Pentachloroethane [2C]	*119 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP
Client Sample ID: SW-OF1
Date Sampled: 09/21/17 14:45
Percent Solids: N/A
Initial Volume: 1
Final Volume: 1
Extraction Method: No Prep

ESS Laboratory Work Order: 1709632
ESS Laboratory Sample ID: 1709632-03
Sample Matrix: Ground Water
Units: mg/L
Analyst: ZLC
Prepared: 9/28/17 9:04

Alcohol Scan by GC/FID

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Ethanol	ND (10)		ASTM D3695		1	ZLC	09/28/17 13:15		CI72805

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP

ESS Laboratory Work Order: 1709632

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Dissolved Metals										
Batch CI72503 - 3005A/200.7										
Blank										
Antimony	ND	10.0	ug/L							
Arsenic	ND	1.0	ug/L							
Cadmium	ND	0.05	ug/L							
Chromium	ND	4.0	ug/L							
Copper	ND	4.0	ug/L							
Iron	ND	20.0	ug/L							
Lead	ND	1.0	ug/L							
Nickel	ND	10.0	ug/L							
Selenium	ND	2.0	ug/L							
Silver	ND	2.0	ug/L							
Zinc	ND	10.0	ug/L							
LCS										
Antimony	101	10.0	ug/L	100.0		101	85-115			
Arsenic	89.1	25.0	ug/L	100.0		89	85-115			
Cadmium	46.1	25.0	ug/L	50.00		92	80-120			
Chromium	92.1	4.0	ug/L	100.0		92	80-120			
Copper	93.2	4.0	ug/L	100.0		93	80-120			
Iron	438	20.0	ug/L	500.0		88	80-120			
Lead	106	25.0	ug/L	100.0		106	80-120			
Nickel	98.7	10.0	ug/L	100.0		99	85-115			
Selenium	200	50.0	ug/L	200.0		100	80-120			
Silver	46.5	2.0	ug/L	50.00		93	85-115			
Zinc	96.7	10.0	ug/L	100.0		97	85-115			
LCS Dup										
Arsenic	99.7	25.0	ug/L	100.0		100	85-115	11	20	
Batch CI72533 - 245.1/7470A										
Blank										
Mercury	ND	0.20	ug/L							
LCS										
Mercury	6.24	0.20	ug/L	6.000		104	85-115			
LCS Dup										
Mercury	6.28	0.20	ug/L	6.000		105	85-115	0.7	20	
Total Metals										
Batch CI72135 - [CALC]										
Blank										
Chromium III	ND	10.0	ug/L							
LCS										
Chromium III	ND	10.0	ug/L							
LCS Dup										
Chromium III	ND	10.0	ug/L							

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP

ESS Laboratory Work Order: 1709632

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch CI72503 - 3005A/200.7										
Blank										
Antimony	ND	10.0	ug/L							
Arsenic	ND	1.0	ug/L							
Cadmium	ND	0.05	ug/L							
Chromium	ND	4.0	ug/L							
Chromium III	ND	4.00	ug/L							
Copper	ND	2.0	ug/L							
Hardness	ND	165	ug/L							
Iron	ND	20.0	ug/L							
Lead	ND	1.0	ug/L							
Lead	ND	4.0	ug/L							
Nickel	ND	10.0	ug/L							
Selenium	ND	2.0	ug/L							
Silver	ND	1.0	ug/L							
Zinc	ND	10.0	ug/L							
LCS										
Antimony	101	10.0	ug/L	100.0		101	85-115			
Arsenic	89.1	25.0	ug/L	100.0		89	85-115			
Cadmium	46.1	25.0	ug/L	50.00		92	85-115			
Chromium	92.1	4.0	ug/L	100.0		92	85-115			
Chromium III	92.1	4.00	ug/L							
Copper	93.2	2.0	ug/L	100.0		93	85-115			
Hardness	6050	165	ug/L							
Iron	438	20.0	ug/L	500.0		88	85-115			
Lead	95.0	4.0	ug/L	100.0		95	85-115			
Lead	106	25.0	ug/L	100.0		106	85-115			
Nickel	98.7	10.0	ug/L	100.0		99	85-115			
Selenium	200	50.0	ug/L	200.0		100	85-115			
Silver	46.5	1.0	ug/L	50.00		93	85-115			
Zinc	96.7	10.0	ug/L	100.0		97	85-115			
LCS Dup										
Chromium III	97.2	4.00	ug/L							
Hardness	6420	165	ug/L							
Batch CI72533 - 245.1/7470A										
Blank										
Mercury	ND	0.200	ug/L							
LCS										
Mercury	6.24	0.200	ug/L	6.000		104	85-115			
LCS Dup										
Mercury	6.28	0.200	ug/L	6.000		105	85-115	0.7	20	
524.2 Volatile Organic Compounds										
Batch CI72545 - 524.2										

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP

ESS Laboratory Work Order: 1709632

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
524.2 Volatile Organic Compounds										
Batch CI72545 - 524.2										
Blank										
1,1,1-Trichloroethane	ND	0.5	ug/L							
1,1,2-Trichloroethane	ND	0.5	ug/L							
1,1-Dichloroethane	ND	0.5	ug/L							
1,1-Dichloroethene	ND	0.5	ug/L							
1,2-Dichlorobenzene	ND	0.5	ug/L							
1,2-Dichloroethane	ND	0.5	ug/L							
1,3-Dichlorobenzene	ND	0.5	ug/L							
1,4-Dichlorobenzene	ND	0.5	ug/L							
Acetone	ND	5.0	ug/L							
Benzene	ND	0.5	ug/L							
Carbon Tetrachloride	ND	0.3	ug/L							
cis-1,2-Dichloroethene	ND	0.5	ug/L							
Ethylbenzene	ND	0.5	ug/L							
Methyl tert-Butyl Ether	ND	0.5	ug/L							
Methylene Chloride	ND	0.5	ug/L							
Naphthalene	ND	0.5	ug/L							
Tertiary-amyl methyl ether	ND	1.0	ug/L							
Tertiary-butyl Alcohol	ND	25.0	ug/L							
Tetrachloroethene	ND	0.5	ug/L							
Toluene	ND	0.5	ug/L							
Trichloroethene	ND	0.5	ug/L							
Vinyl Chloride	ND	0.2	ug/L							
Xylene O	ND	0.5	ug/L							
Xylene P,M	ND	0.5	ug/L							
Surrogate: 1,2-Dichlorobenzene-d4	*4.99*		ug/L	*5.000*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*5.22*		ug/L	*5.000*		*104*	*80-120*			
LCS										
1,1,1-Trichloroethane	8.7		ug/L	10.00		87	70-130			
1,1,2-Trichloroethane	9.9		ug/L	10.00		99	70-130			
1,1-Dichloroethane	9.7		ug/L	10.00		97	70-130			
1,1-Dichloroethene	10.1		ug/L	10.00		101	70-130			
1,2-Dichlorobenzene	9.2		ug/L	10.00		92	70-130			
1,2-Dichloroethane	9.0		ug/L	10.00		90	70-130			
1,3-Dichlorobenzene	9.2		ug/L	10.00		92	70-130			
1,4-Dichlorobenzene	9.3		ug/L	10.00		93	70-130			
Acetone	40.4		ug/L	50.00		81	70-130			
Benzene	9.5		ug/L	10.00		95	70-130			
Carbon Tetrachloride	8.6		ug/L	10.00		86	70-130			
cis-1,2-Dichloroethene	9.5		ug/L	10.00		95	70-130			
Ethylbenzene	9.1		ug/L	10.00		91	70-130			
Methyl tert-Butyl Ether	9.0		ug/L	10.00		90	70-130			
Methylene Chloride	10.0		ug/L	10.00		100	70-130			
Naphthalene	9.5		ug/L	10.00		95	70-130			
Tertiary-amyl methyl ether	9.5		ug/L	10.00		95	70-130			

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP

ESS Laboratory Work Order: 1709632

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
524.2 Volatile Organic Compounds										
Batch CI72545 - 524.2										
Tertiary-butyl Alcohol	51.3		ug/L	50.00		103	70-130			
Tetrachloroethene	9.1		ug/L	10.00		91	70-130			
Toluene	9.0		ug/L	10.00		90	70-130			
Trichloroethene	9.5		ug/L	10.00		95	70-130			
Vinyl Chloride	9.2		ug/L	10.00		92	70-130			
Xylene O	9.2		ug/L	10.00		92	70-130			
Xylene P,M	18.1		ug/L	20.00		90	70-130			
Surrogate: 1,2-Dichlorobenzene-d4	*4.76*		ug/L	*5.000*		*95*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*4.91*		ug/L	*5.000*		*98*	*80-120*			
LCS Dup										
1,1,1-Trichloroethane	8.3		ug/L	10.00		83	70-130	4	20	
1,1,2-Trichloroethane	9.5		ug/L	10.00		95	70-130	5	20	
1,1-Dichloroethane	9.5		ug/L	10.00		95	70-130	2	20	
1,1-Dichloroethene	9.9		ug/L	10.00		99	70-130	2	20	
1,2-Dichlorobenzene	9.1		ug/L	10.00		91	70-130	0.9	20	
1,2-Dichloroethane	8.9		ug/L	10.00		89	70-130	2	20	
1,3-Dichlorobenzene	9.1		ug/L	10.00		91	70-130	0.7	20	
1,4-Dichlorobenzene	9.1		ug/L	10.00		91	70-130	2	20	
Acetone	41.3		ug/L	50.00		83	70-130	2	20	
Benzene	9.5		ug/L	10.00		95	70-130	0.6	20	
Carbon Tetrachloride	8.4		ug/L	10.00		84	70-130	3	20	
cis-1,2-Dichloroethene	9.4		ug/L	10.00		94	70-130	1	20	
Ethylbenzene	9.0		ug/L	10.00		90	70-130	2	20	
Methyl tert-Butyl Ether	9.2		ug/L	10.00		92	70-130	2	20	
Methylene Chloride	9.7		ug/L	10.00		97	70-130	3	20	
Naphthalene	9.1		ug/L	10.00		91	70-130	5	20	
Tertiary-amyl methyl ether	9.4		ug/L	10.00		94	70-130	1	20	
Tertiary-butyl Alcohol	49.1		ug/L	50.00		98	70-130	4	25	
Tetrachloroethene	8.9		ug/L	10.00		89	70-130	2	20	
Toluene	9.1		ug/L	10.00		91	70-130	0.8	20	
Trichloroethene	9.3		ug/L	10.00		93	70-130	3	20	
Vinyl Chloride	8.6		ug/L	10.00		86	70-130	6	20	
Xylene O	9.0		ug/L	10.00		90	70-130	3	20	
Xylene P,M	17.9		ug/L	20.00		89	70-130	0.9	20	
Surrogate: 1,2-Dichlorobenzene-d4	*4.90*		ug/L	*5.000*		*98*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*4.94*		ug/L	*5.000*		*99*	*80-120*			
608 Polychlorinated Biphenyls (PCB)										
Batch CI72203 - 3510C										
Blank										
Aroclor 1016	ND	0.10	ug/L							
Aroclor 1016 [2C]	ND	0.10	ug/L							
Aroclor 1221	ND	0.10	ug/L							
Aroclor 1221 [2C]	ND	0.10	ug/L							
Aroclor 1232	ND	0.10	ug/L							

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP

ESS Laboratory Work Order: 1709632

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
608 Polychlorinated Biphenyls (PCB)										
Batch CI72203 - 3510C										
Aroclor 1232 [2C]	ND	0.10	ug/L							
Aroclor 1242	ND	0.10	ug/L							
Aroclor 1242 [2C]	ND	0.10	ug/L							
Aroclor 1248	ND	0.10	ug/L							
Aroclor 1248 [2C]	ND	0.10	ug/L							
Aroclor 1254	ND	0.10	ug/L							
Aroclor 1254 [2C]	ND	0.10	ug/L							
Aroclor 1260	ND	0.10	ug/L							
Aroclor 1260 [2C]	ND	0.10	ug/L							
Aroclor 1262	ND	0.10	ug/L							
Aroclor 1262 [2C]	ND	0.10	ug/L							
Aroclor 1268	ND	0.10	ug/L							
Aroclor 1268 [2C]	ND	0.10	ug/L							
Surrogate: Decachlorobiphenyl	*0.0469*		ug/L	*0.05000*		*94*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0469*		ug/L	*0.05000*		*94*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0309*		ug/L	*0.05000*		*62*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0344*		ug/L	*0.05000*		*69*	*30-150*			
LCS										
Aroclor 1016	0.68	0.10	ug/L	1.000		68	40-140			
Aroclor 1016 [2C]	0.70	0.10	ug/L	1.000		70	40-140			
Aroclor 1260	0.71	0.10	ug/L	1.000		71	40-140			
Aroclor 1260 [2C]	0.69	0.10	ug/L	1.000		69	40-140			
Surrogate: Decachlorobiphenyl	*0.0415*		ug/L	*0.05000*		*83*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0415*		ug/L	*0.05000*		*83*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0288*		ug/L	*0.05000*		*58*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0288*		ug/L	*0.05000*		*58*	*30-150*			
LCS Dup										
Aroclor 1016	0.98	0.10	ug/L	1.000		98	40-140	37	20	D+
Aroclor 1016 [2C]	0.98	0.10	ug/L	1.000		98	40-140	34	20	D+
Aroclor 1260	1.01	0.10	ug/L	1.000		101	40-140	34	20	D+
Aroclor 1260 [2C]	0.96	0.10	ug/L	1.000		96	40-140	32	20	D+
Surrogate: Decachlorobiphenyl	*0.0527*		ug/L	*0.05000*		*105*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0501*		ug/L	*0.05000*		*100*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0393*		ug/L	*0.05000*		*79*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0382*		ug/L	*0.05000*		*76*	*30-150*			
625(SIM) Semi-Volatile Organic Compounds										
Batch CI72605 - 3510C										
Blank										
Acenaphthene	ND	0.20	ug/L							
Acenaphthylene	ND	0.20	ug/L							
Anthracene	ND	0.20	ug/L							

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP

ESS Laboratory Work Order: 1709632

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
625(SIM) Semi-Volatile Organic Compounds										
Batch CI72605 - 3510C										
Benzo(a)anthracene	ND	0.05	ug/L							
Benzo(a)pyrene	ND	0.05	ug/L							
Benzo(b)fluoranthene	ND	0.05	ug/L							
Benzo(g,h,i)perylene	ND	0.20	ug/L							
Benzo(k)fluoranthene	ND	0.05	ug/L							
bis(2-Ethylhexyl)phthalate	ND	2.50	ug/L							
Butylbenzylphthalate	ND	2.50	ug/L							
Chrysene	ND	0.05	ug/L							
Dibenzo(a,h)Anthracene	ND	0.05	ug/L							
Diethylphthalate	ND	2.50	ug/L							
Dimethylphthalate	ND	2.50	ug/L							
Di-n-butylphthalate	ND	2.50	ug/L							
Di-n-octylphthalate	ND	2.50	ug/L							
Fluoranthene	ND	0.20	ug/L							
Fluorene	ND	0.20	ug/L							
Indeno(1,2,3-cd)Pyrene	ND	0.05	ug/L							
Naphthalene	ND	0.20	ug/L							
Pentachlorophenol	ND	0.90	ug/L							
Phenanthrene	ND	0.20	ug/L							
Pyrene	ND	0.20	ug/L							
Surrogate: 1,2-Dichlorobenzene-d4	*1.69*		ug/L	*2.500*		*68*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*5.42*		ug/L	*3.750*		*144*	*15-110*			*CD+*
Surrogate: 2-Fluorobiphenyl	*2.00*		ug/L	*2.500*		*80*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.62*		ug/L	*2.500*		*105*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.55*		ug/L	*2.500*		*102*	*30-130*			
LCS										
Acenaphthene	2.91	0.20	ug/L	4.000		73	40-140			
Acenaphthylene	3.08	0.20	ug/L	4.000		77	40-140			
Anthracene	3.12	0.20	ug/L	4.000		78	40-140			
Benzo(a)anthracene	2.94	0.05	ug/L	4.000		73	40-140			
Benzo(a)pyrene	3.28	0.05	ug/L	4.000		82	40-140			
Benzo(b)fluoranthene	3.46	0.05	ug/L	4.000		87	40-140			
Benzo(g,h,i)perylene	3.51	0.20	ug/L	4.000		88	40-140			
Benzo(k)fluoranthene	3.20	0.05	ug/L	4.000		80	40-140			
bis(2-Ethylhexyl)phthalate	3.70	2.50	ug/L	4.000		93	40-140			
Butylbenzylphthalate	3.79	2.50	ug/L	4.000		95	40-140			
Chrysene	2.97	0.05	ug/L	4.000		74	40-140			
Dibenzo(a,h)Anthracene	3.68	0.05	ug/L	4.000		92	40-140			
Diethylphthalate	3.84	2.50	ug/L	4.000		96	40-140			
Dimethylphthalate	3.37	2.50	ug/L	4.000		84	40-140			
Di-n-butylphthalate	4.77	2.50	ug/L	4.000		119	40-140			
Di-n-octylphthalate	3.96	2.50	ug/L	4.000		99	40-140			
Fluoranthene	3.19	0.20	ug/L	4.000		80	40-140			
Fluorene	3.04	0.20	ug/L	4.000		76	40-140			
Indeno(1,2,3-cd)Pyrene	3.78	0.05	ug/L	4.000		94	40-140			

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP

ESS Laboratory Work Order: 1709632

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
625(SIM) Semi-Volatile Organic Compounds										
Batch CI72605 - 3510C										
Naphthalene	2.47	0.20	ug/L	4.000		62	40-140			
Pentachlorophenol	3.60	0.90	ug/L	4.000		90	30-130			
Phenanthrene	3.12	0.20	ug/L	4.000		78	40-140			
Pyrene	2.91	0.20	ug/L	4.000		73	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*1.74*		ug/L	*2.500*		*69*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*5.16*		ug/L	*3.750*		*138*	*15-110*			*B+*
Surrogate: 2-Fluorobiphenyl	*2.07*		ug/L	*2.500*		*83*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.37*		ug/L	*2.500*		*95*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.45*		ug/L	*2.500*		*98*	*30-130*			
LCS Dup										
Acenaphthene	3.29	0.20	ug/L	4.000		82	40-140	12	20	
Acenaphthylene	3.46	0.20	ug/L	4.000		86	40-140	12	20	
Anthracene	3.57	0.20	ug/L	4.000		89	40-140	13	20	
Benzo(a)anthracene	3.35	0.05	ug/L	4.000		84	40-140	13	20	
Benzo(a)pyrene	3.68	0.05	ug/L	4.000		92	40-140	11	20	
Benzo(b)fluoranthene	4.01	0.05	ug/L	4.000		100	40-140	15	20	
Benzo(g,h,i)perylene	3.87	0.20	ug/L	4.000		97	40-140	10	20	
Benzo(k)fluoranthene	3.44	0.05	ug/L	4.000		86	40-140	7	20	
bis(2-Ethylhexyl)phthalate	4.19	2.50	ug/L	4.000		105	40-140	12	20	
Butylbenzylphthalate	4.30	2.50	ug/L	4.000		107	40-140	13	20	
Chrysene	3.44	0.05	ug/L	4.000		86	40-140	14	20	
Dibenzo(a,h)Anthracene	4.04	0.05	ug/L	4.000		101	40-140	9	20	
Diethylphthalate	4.29	2.50	ug/L	4.000		107	40-140	11	20	
Dimethylphthalate	3.82	2.50	ug/L	4.000		95	40-140	13	20	
Di-n-butylphthalate	5.19	2.50	ug/L	4.000		130	40-140	8	20	
Di-n-octylphthalate	4.43	2.50	ug/L	4.000		111	40-140	11	20	
Fluoranthene	3.57	0.20	ug/L	4.000		89	40-140	11	20	
Fluorene	3.45	0.20	ug/L	4.000		86	40-140	13	20	
Indeno(1,2,3-cd)Pyrene	4.10	0.05	ug/L	4.000		103	40-140	8	20	
Naphthalene	2.83	0.20	ug/L	4.000		71	40-140	13	20	
Pentachlorophenol	3.89	0.90	ug/L	4.000		97	30-130	8	20	
Phenanthrene	3.49	0.20	ug/L	4.000		87	40-140	11	20	
Pyrene	3.33	0.20	ug/L	4.000		83	40-140	13	20	
Surrogate: 1,2-Dichlorobenzene-d4	*1.67*		ug/L	*2.500*		*67*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*5.96*		ug/L	*3.750*		*159*	*15-110*			*B+*
Surrogate: 2-Fluorobiphenyl	*2.03*		ug/L	*2.500*		*81*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.38*		ug/L	*2.500*		*95*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.46*		ug/L	*2.500*		*99*	*30-130*			
8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution										
Batch CI72649 - 3535A										
Blank										
1,4-Dioxane	ND	0.250	ug/L							
Surrogate: 1,4-Dioxane-d8	*3.14*		ug/L	*5.000*		*63*	*15-115*			
LCS										

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP

ESS Laboratory Work Order: 1709632

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution										
Batch CI72649 - 3535A										
1,4-Dioxane	12.5	0.250	ug/L	10.00		125	40-140			
Surrogate: 1,4-Dioxane-d8	*2.25*		ug/L	*5.000*		*45*	*15-115*			
LCS Dup										
1,4-Dioxane	15.7	0.250	ug/L	10.00		157	40-140	23	20	B+, D+
Surrogate: 1,4-Dioxane-d8	*2.24*		ug/L	*5.000*		*45*	*15-115*			
Classical Chemistry										
Batch CI72135 - General Preparation										
Blank										
Hexavalent Chromium	ND	10.0	ug/L							
LCS										
Hexavalent Chromium	493	10.0	ug/L	499.8		99	90-110			
LCS Dup										
Hexavalent Chromium	491	10.0	ug/L	499.8		98	90-110	0.3	20	
Batch CI72152 - General Preparation										
Blank										
Total Residual Chlorine	ND	20.0	ug/L							
LCS										
Total Residual Chlorine	1.80		mg/L	1.800		100	85-115			
Batch CI72221 - General Preparation										
Blank										
Total Petroleum Hydrocarbon	ND	5	mg/L							
LCS										
Total Petroleum Hydrocarbon	14	5	mg/L	19.38		71	66-114			
Batch CI72553 - NH4 Prep										
Blank										
Ammonia as N	ND	0.10	mg/L							
LCS										
Ammonia as N	0.10	0.10	mg/L	0.09994		104	80-120			
LCS										
Ammonia as N	0.95	0.10	mg/L	0.9994		95	80-120			
Batch CI72624 - NH4 Prep										
Blank										
Total Petroleum Hydrocarbon	ND	5	mg/L							
LCS										
Total Petroleum Hydrocarbon	14	5	mg/L	19.38		74	66-114			
Batch CI72627 - TCN Prep										
Blank										
Total Cyanide (LL)	ND	5.00	ug/L							
LCS										

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP

ESS Laboratory Work Order: 1709632

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch CI72627 - TCN Prep										
Total Cyanide (LL)	20.1	5.00	ug/L	20.06		100	90-110			
LCS										
Total Cyanide (LL)	150	5.00	ug/L	150.4		100	90-110			
LCS Dup										
Total Cyanide (LL)	149	5.00	ug/L	150.4		99	90-110	0.7	20	
Batch CI72628 - General Preparation										
Blank										
Phenols	ND	100	ug/L							
LCS										
Phenols	92	100	ug/L	100.0		92	80-120			
LCS										
Phenols	1010	100	ug/L	1000		101	80-120			
Batch CI72629 - General Preparation										
Blank										
Total Suspended Solids	ND	5	mg/L							
LCS										
Total Suspended Solids	34		mg/L	34.10		100	80-120			
Batch CI72720 - General Preparation										
Blank										
Chloride	ND	0.5	mg/L							
LCS										
Chloride	2.4		mg/L	2.500		97	90-110			
504.1 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane										
Batch CI72622 - 504/8011										
Blank										
1,2-Dibromoethane	ND	0.015	ug/L							
1,2-Dibromoethane [2C]	ND	0.015	ug/L							
Surrogate: Pentachloroethane	*0.166*		ug/L	*0.2000*		*83*	*30-150*			
Surrogate: Pentachloroethane [2C]	*0.174*		ug/L	*0.2000*		*87*	*30-150*			
LCS										
1,2-Dibromoethane	0.099	0.015	ug/L	0.08000		124	70-130			
1,2-Dibromoethane [2C]	0.090	0.015	ug/L	0.08000		112	70-130			
Surrogate: Pentachloroethane	*0.0886*		ug/L	*0.08000*		*111*	*30-150*			
Surrogate: Pentachloroethane [2C]	*0.0920*		ug/L	*0.08000*		*115*	*30-150*			
LCS										
1,2-Dibromoethane	0.217	0.015	ug/L	0.2000		108	70-130			
1,2-Dibromoethane [2C]	0.207	0.015	ug/L	0.2000		103	70-130			
Surrogate: Pentachloroethane	*0.220*		ug/L	*0.2000*		*110*	*30-150*			

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP

ESS Laboratory Work Order: 1709632

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
504.1 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane										
Batch CI72622 - 504/8011										
Surrogate: Pentachloroethane [2C]	*0.225*		ug/L	*0.2000*		*112*	*30-150*			
Alcohol Scan by GC/FID										
Batch CI72805 - No Prep										
Blank										
Ethanol	ND	10	mg/L							
LCS										
Ethanol	1030	10	mg/L	1007		103	60-140			
LCS Dup										
Ethanol	1090	10	mg/L	1007		108	60-140	6	30	

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP

ESS Laboratory Work Order: 1709632

Notes and Definitions

Z16b	Aqueous pH measured in water at 14.9 ºC.
Z16a	Aqueous pH measured in water at 14.2 ºC.
Z16	Aqueous pH measured in water at 13.4 ºC.
U	Analyte included in the analysis, but not detected
Q	Calibration required quadratic regression (Q).
HT	The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.
DDT	DDT breakdown > 20%
D+	Relative percent difference for duplicate is outside of criteria (D+).
D	Diluted.
CD+	Continuing Calibration %Diff/Drift is above control limit (CD+).
B+	Blank Spike recovery is above upper control limit (B+).
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit

CERTIFICATE OF ANALYSIS

Client Name: CDW Consultants, Inc.
Client Project ID: Iron Horse Park - RGP

ESS Laboratory Work Order: 1709632

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory Sample and Cooler Receipt Checklist

Client: CDW Consultants, Inc. - TB/ML

Shipped/Delivered Via: ESS Courier

ESS Project ID: 1709632
Date Received: 9/21/2017
Project Due Date: 9/28/2017
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 2.4 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** (Yes) / No / NA
10. Were any analyses received outside of hold time? Yes (No)

11. Any Subcontracting needed? Yes (No)
    ESS Sample IDs:
    Analysis:
    TAT:
12. Were VOAs received? (Yes) / No
    a. Air bubbles in aqueous VOAs? (Yes)
    b. Does methanol cover soil completely? Yes / No / NA
13. Are the samples properly preserved? (Yes) / No
    a. If metals preserved upon receipt: Date: Time: By:
    b. Low Level VOA vials frozen: Date: Time: By:

Sample Receiving Notes:

14. Was there a need to contact Project Manager? (Yes) / No
    a. Was there a need to contact the client? ~~Yes~~ / No
    Who was contacted? Date: Time: By:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
01	166285	Yes	No	Yes	VOA Vial - HCl	HCl	
01	166286	Yes	No	Yes	VOA Vial - HCl	HCl	
01	166287	Yes	No	Yes	VOA Vial - HCl	HCl	
01	166288	Yes	No	Yes	VOA Vial - Unpres	NP	
01	166289	Yes	No	Yes	VOA Vial - HCl	HCl	
01	166290	Yes	No	Yes	VOA Vial - HCl	HCl	
01	166291	Yes	No	Yes	VOA Vial - HCl	HCl	
01	166296	Yes	NA	Yes	1L Amber - H2SO4	H2SO4	
01	166297	Yes	NA	Yes	1L Amber - H2SO4	H2SO4	
01	166310	Yes	NA	Yes	1L Amber - Unpres	NP	
01	166311	Yes	NA	Yes	1L Amber - Unpres	NP	
01	166312	Yes	NA	Yes	1L Amber - Unpres	NP	
01	166313	Yes	NA	Yes	1L Amber - Unpres	NP	
01	166314	Yes	NA	Yes	1L Amber - Unpres	NP	
01	166315	Yes	NA	Yes	1L Amber - Unpres	NP	
01	166318	Yes	NA	Yes	1L Poly - Unpres	NP	
01	166321	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4	
01	166324	Yes	NA	Yes	250 mL Poly - Unpres	NP	
01	166331	Yes	NA	Yes	500 mL Poly - HNO3	HNO3	
01	166332	Yes	NA	Yes	500 mL Poly - HNO3	HNO3	
01	166333	Yes	NA	Yes	500 mL Poly - HNO3	HNO3	
01	166336	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	pH >12 2233 9/21/17 ec
02	166278	Yes	No	Yes	VOA Vial - HCl	HCl	
02	166279	Yes	No	Yes	VOA Vial - HCl	HCl	

ESS Laboratory Sample and Cooler Receipt Checklist

Client: CDW Consultants, Inc. - TB/ML

ESS Project ID: 1709632

Date Received: 9/21/2017

02	166280	Yes	No	Yes	VOA Vial - HCl	HCl			
02	166281	Yes	No	Yes	VOA Vial - Unpres	NP			
02	166282	Yes	Yes	Yes	VOA Vial - HCl	HCl			
02	166283	Yes	Yes	Yes	VOA Vial - HCl	HCl			
02	166284	Yes	No	Yes	VOA Vial - HCl	HCl			
02	166294	Yes	NA	Yes	1L Amber - H2SO4	H2SO4			
02	166295	Yes	NA	Yes	1L Amber - H2SO4	H2SO4			
02	166304	Yes	NA	Yes	1L Amber - Unpres	NP			
02	166305	Yes	NA	Yes	1L Amber - Unpres	NP			
02	166306	Yes	NA	Yes	1L Amber - Unpres	NP			
02	166307	Yes	NA	Yes	1L Amber - Unpres	NP			
02	166308	Yes	NA	Yes	1L Amber - Unpres	NP			
02	166309	Yes	NA	Yes	1L Amber - Unpres	NP			
02	166317	Yes	NA	Yes	1L Poly - Unpres	NP			
02	166320	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4			
02	166323	Yes	NA	Yes	250 mL Poly - Unpres	NP			
02	166328	Yes	NA	Yes	500 mL Poly - HNO3	HNO3			
02	166329	Yes	NA	Yes	500 mL Poly - HNO3	HNO3			
02	166330	Yes	NA	Yes	500 mL Poly - HNO3	HNO3			
02	166335	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	pH >12	2233	9/21/17 AL
03	166271	Yes	Yes	Yes	VOA Vial - HCl	HCl			
03	166272	Yes	No	Yes	VOA Vial - HCl	HCl			
03	166273	Yes	No	Yes	VOA Vial - HCl	HCl			
03	166274	Yes	No	Yes	VOA Vial - Unpres	NP			
03	166275	Yes	No	Yes	VOA Vial - HCl	HCl			
03	166276	Yes	Yes	Yes	VOA Vial - HCl	HCl			
03	166277	Yes	Yes	Yes	VOA Vial - HCl	HCl			
03	166292	Yes	NA	Yes	1L Amber - H2SO4	H2SO4			
03	166293	Yes	NA	Yes	1L Amber - H2SO4	H2SO4			
03	166298	Yes	NA	Yes	1L Amber - Unpres	NP			
03	166299	Yes	NA	Yes	1L Amber - Unpres	NP			
03	166300	Yes	NA	Yes	1L Amber - Unpres	NP			
03	166301	Yes	NA	Yes	1L Amber - Unpres	NP			
03	166302	Yes	NA	Yes	1L Amber - Unpres	NP			
03	166303	Yes	NA	Yes	1L Amber - Unpres	NP			
03	166316	Yes	NA	Yes	1L Poly - Unpres	NP			
03	166319	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4			
03	166322	Yes	NA	Yes	250 mL Poly - Unpres	NP			
03	166325	Yes	NA	Yes	500 mL Poly - HNO3	HNO3			
03	166326	Yes	NA	Yes	500 mL Poly - HNO3	HNO3			
03	166327	Yes	NA	Yes	500 mL Poly - HNO3	HNO3			
03	166334	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	pH >12	2233	9/21/17 AL

2nd Review

Are barcode labels on correct containers? Yes / No

Completed By: _____ Date & Time: 9/21/17 2234

Reviewed By: _____ Date & Time: 9/21/17 2242

Delivered By: _____ 9/21/17 2242

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston RI 02910
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 1709632

Turn Time (5-Day) Rush

Reporting Limits NPDES RGP

Regulatory State

Is this project for any of the following?: ○CT RCP ☒MA MCP ☒RGP

Electonic Deliverables ☒Limit Checker ☒Standard Excel ☐Other (Please Specify →)

Company Name: CDW Consultants, Inc.	Project #: 1559	Project Name: Iron Horse Park	
Contact Person: Lars Andresen	Address: 6 Huron Drive		
City: Natick	State: MA	Zip Code: 01760	PO #:
Telephone Number: 508-875-2657	FAX Number:	Email Address: LandResen@CDWConsultants.com	

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID
1	9/21/17	11:10	GW	AQ	CDW-G1
2	↓	14:05	↓	↓	CDW-B1
3	↓	14:45	↓	↓	SW-OF1

Analysis

	Cl, TRC, TSS	Cr +6	Cyanide	Ammonia	TPH 1664	Total Metals	1,4 Dioxane	EDB	SVOC 625 SIM	PCB 608	VOC 524	Ethanol	Hardness	Phenol	Diss. Metals (FF)	Pb
1	1	1	1	1	1	1	2	3	2	2	3	1	1	1	1	1
2	1	1	1	1	1	1	2	3	2	2	3	1	1	1	1	1
3	1	1	1	1	1	1	2	3	2	2	3	1	1	1	1	1

Container Type: AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer G - Glass O-Other P-Poly S-Sterile V-Vial

Container Volume: 1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*

Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other*

Container Type	P	P	P	P	AG	P	AG	AG	AG	AG	AG	AG	P	AG	P
Container Volume	6	3	3	5	6	5	6	7	6	6	7	7	5	6	5
Preservation Code	1	1	5	3	3	4	1	2	1	1	2	1	4	3	4

Number of Containers per Sample:

Laboratory Use Only

Cooler Present:

Seals Intact:

Cooler Temperature: 2.4 °C

Sampled by : Paul Barbaro (PJB)

Comments: Please specify "Other" preservative and containers types in this space

Dissolved metals = field filtered

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
Paul Barbaro 9/21/17	J Byrne 9/21/17 21:45	J Byrne 9/21/17 21:45	9/21/17 2155
Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)