Architecture
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July 13, 2020

US Environmental Protection Agency
Office of Ecosystem Protection
5 Post Office Square – Suite 100
Boston, MA 02109-3912
Attention Ms. Shauna Little

		Notice of Intent for Remediation General Permit
Re:	Project:	Wheeler Self Storage Facility
	Site:	0 Wheeler Road Burlington, Massachusetts
	BL Project No.:	16D3253

Dear Ms. Little,

BL Companies is submitting this Notice of Intent (NOI) on behalf of Wheeler Self Storage LLC for a Remediation General Permit (RGP) under EPA's National Pollutant Discharge Elimination System (NPDES) program. The RGP is required to discharge groundwater containing regulated compounds encountered during construction dewatering activities for development of a new self-storage facility at the referenced property (hereafter the "Site").

This application is organized as follows:

- Cover Letter
- Figures
- Attachment A – RGP NOI Application Form
- Attachment B – Stream Stats Flow Statistics Report
- Attachment C – MACRIS Report
- Attachment D – Endangered and Critical Species Report
- Attachment E – Effluent Data Estimations
- Attachment F – Groundwater Data
- Attachment G – Treatment System Specifications and Data Sheets

The Site is located in Burlington, Massachusetts, is currently undeveloped land, and is known as 0 Wheeler Road. The Site consists of two parcels of land that are separated by a private road known as Rounder Way (a.k.a. Commonwealth Executive Drive). The Site is bounded to the south by Wheeler Road, to the east by Blanchard Road (a paper road) and commercial/industrial property, to the west by undeveloped land and commercial property, and to the north by Interstate 95/Route 128 and commercial property.

A Site Location Map is included as Figure 1 and a property survey map is included as Figure 2.

The Site totals approximately 11.03 acres of land and the two parcels are identified as Tax Parcel 52-4-0 and 52-6-0. No structures or impervious pavement are currently present on any portion of the Site, and there is currently no stormwater management or treatment being utilized in the existing condition. The pending construction activities will only take place on approximately two acres located at the eastern end of Tax Parcel 52-4-0. The rest of this parcel and all of Tax Parcel 52-6-0 will be preserved in its current condition via a Conservation Restriction granted to the Town of Burlington Conservation Commission. The limits of the Conservation Restriction are shown on Figure 2 and the Limit of Disturbance for construction activities is shown on Figure 3.

This Conservation Restriction is required by the following permits: Site Plan issued by the Planning Board and filed with the Town Clerk on May 25, 2018; Special Permit filed with the Town Clerk on May 25, 2018 and recorded at the Middlesex South Registry of Deeds as Book 71169 Page 489; and Superseding Order of Conditions issued by the Massachusetts Department of Environmental Protection (MADEP) and recorded at the Middlesex South Registry of Deeds as Book 73760 Page 445. The referenced decisions permit the development of an 119,651+/- square foot, five-story self-storage facility with associated surface parking and on-site infrastructure improvements.

The construction dewatering is required in order to install the foundation system for the proposed self-storage building at the east end of the Site. Groundwater in the vicinity of the proposed building is contaminated from an off-Site release(s), necessitating management and treatment of the dewatering discharge under the RGP.

Several phases of soil and groundwater investigation have been completed in anticipation of Site acquisition and development. The locations of soil borings, test pits, and monitoring wells completed at the Site are shown on the Site Investigation Plan for the development area provided as Figure 4. Regulated compounds have been detected in both soil and groundwater above MADEP reportable concentrations. The Site will be reported as a disposal Site under the Massachusetts Contingency Plan (MCP) by the applicant upon acquisition of the Site, which is scheduled to occur in the next week. Known contaminants in the groundwater at the Site include Chlorinated Volatile Organic Compounds (CVOCs), and several metals. The CVOCs are attributed to an upgradient release of CVOCs from the release(s) at the former High Voltage Energy Corporation/Bellofram facility (RTN 3-0000981), and possibly other off-site disposal sites. Wheeler Self Storage, LLC will file for Downgradient Property Status under the MCP due to the impact to the Site from the upgradient release(s) of CVOCs. A source of CVOCs has not been identified on the Site and there is no history of such usage. The metals concentrations in groundwater are attributed to naturally occurring conditions.

Summary of Soil and Groundwater Investigations

During previous investigations at the Site completed in both 2017 and 2020, BL Companies identified regulated compounds in both soil and groundwater. EPH compounds, aromatic VOCs, 2-Methylnapthalene, and metals have been detected in soils at the southeastern corner of the Site, at concentrations above and below reportable concentrations under the MCP. The presence of these

compounds is believed to be related to the storage of construction equipment and/or placement of fill on the southeastern corner of the Site. These impacts have been noted to be above the water table, with minor impacts to groundwater in the form of C9-C12 Aliphatic hydrocarbons, and Naphthalene. During the construction of the proposed self-storage facility, the remediation of the soils containing regulated compounds above RCS-1 reportable concentrations will be completed via Release Abatement Measures under the MCP. Soil conditions are summarized as follows:

- Soil samples from SB-101 (0.5-1.6') and SB-101 (5-8.9') were collected and analyzed, as well as soil samples collected from the test pits TP-1, TP-2, TP-3, TP-4, TP-6, TP-7, TP-8 and TP-9. During the previous Phase II Investigation, SB-3 was identified within this area with low concentrations of MADEP VPH and elevated concentrations of MADEP EPH compounds. These previous VPH and EPH detections however were identified below the MADEP Reportable Concentrations in Soil (RCS-1) Criteria which applies to the Site.

- Low concentrations of EPH and VPH were identified in SB-101 (0.5-1.6'), above the observed groundwater, which were consistent with the findings of the previous Phase II Investigation sample from SB-3. These concentrations were identified as being well below the MADEP RCS-1 Criteria. The sample TP-1 (3-4') was identified with EPH compounds, including C19-C36 Aliphatic Hydrocarbons above the MassDEP RCS-1 Criteria. C9-C10-Aromatic Hydrocarbons, C9-C12, Aliphatic Hydrocarbons, Ethyl Benzene, Xylenes, Naphthalene, and C9-C18 Aliphatic Hydrocarbons were identified below the MassDEP RCS-1 Criteria. Additionally, in TP-7 and TP-8, C9-C10-Aromatic Hydrocarbons, C9-C12, Aliphatic Hydrocarbons, Ethyl Benzene, Xylenes, Naphthalene, and C9-C18 Aliphatic Hydrocarbons were identified below the MassDEP RCS-1 Criteria. Aromatic VOCs were identified in the sample SB-101 (0.5-1.6'), including 1,2,4-Trimethylbenzene, Xylenes, and Naphthalene, however the concentrations were below the RCS-1 Criteria, and total VOCs were less than 2 mg/kg. Only Naphthalene was detected for VOCs in the deeper SB-101 (5-8.9') sample, below the water, and below the MADEP RCS-1 Criteria.

- Additional samples from TP-2, TP-3, TP-4, TP-6, TP-9 and a shallow sample from TP-7 did not identify VOCs, VPH, EPH, or SVOCs above the laboratory detection limit.

- SVOCs were identified in the sample SB-101 (0.5-1.6'), including 2-Methylnapthalene, Bis(2-ethylexyl) phthalate, and Pyrene. 2-Methylnapthalene was detected at concentrations above the RCS-1 Criteria. In TP-1 (3-4') 2-Methylnapthalene was identified above the MassDEP RCS-1 Criteria. Acenaphthylene, Bis(2-ethylhexyl) phthalate, Fluoranthene, Fluorene, Naphthalene, Phenanthrene, and Pyrene were identified below the MADEP RCS-1 Criteria.

- The analytical results from these samples identified concentrations of Arsenic, Barium, Cadmium, Chromium, Nickel, Vanadium, and Zinc, however at concentrations below the RCS-1 Standard. These concentrations appear to be indicative of background, natural soil conditions, and do not represent a potential release condition at the Site. Lead was detected at a concentration above the MADEP RCS-1 Criteria.

The source of the CVOC impacts identified in the groundwater is believed to be an upgradient release(s) at the former High Voltage Energy Corporation/Bellofram facility (RTN 3-0000981). A Downgradient Property Status report (DPS) is forthcoming. The VOCs trichloroethene (TCE) and tetrachloroethene (PCE) were detected above applicable MCP Reportable Concentrations for Groundwater (RCGW-1) in the groundwater sample collected from monitoring wells MW-2, MW-101, MW-102, and MW-103, with cis 1,2-dichloroethane detected at the same locations, below the RCGW-1 criteria. 1,3,5-Trimethylbenzene was detected below the MCP reportable concentrations in sample MW-102, and MW-103. 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Xylenes, and Naphthalene were identified in the sample collected from MW-101, below the applicable RCGW-1 Criteria. VOCs were not detected at concentrations above their respective laboratory reporting limits in MW-104.

These VOC detections were similar to those previously identified in 2017. The CVOC plume generally extends across the eastern portion of the Site. An on-Site source of CVOCs has not been identified and the highest concentrations of CVOCs in groundwater are present at the upgradient property boundary with respect to groundwater flow. The presence of the CVOC plume will be reported under the MCP and the applicant intends to file for Downgradient Property Status. The proposed building will be constructed with a chemical vapor barrier and a sub-slab depressurization system to mitigate any potential vapor intrusion concerns.

Proposed Dewatering Discharge Treatment and Discharge

The dewatering discharge will be treated and subsequently discharged directly to an unnamed tributary to Vine Brook. The proposed discharge location is shown on Figure 2. Vine Brook is a Class B surface water body that flows north from the Site under I-95/Route 128 and through a highly developed commercial area. There is no alternative other than direct discharge of the dewatering effluent to Vine Brook, as the Town of Burlington will not allow discharge to the storm sewer or municipal sewer systems. Additional information regarding the receiving waters is included in Attachment B.

The most recent groundwater quality data was collected in March and May 2020 for Metals, VOCs, Extractable Petroleum Hydrocarbons (EPH), Volatile Petroleum Hydrocarbons (VPH), and Semi-Volatile Organic Compounds (SVOCs). Copies of the most recent laboratory analytical reports for groundwater in the vicinity of the proposed construction dewatering are included in Attachment F.

The proposed groundwater treatment system for this project consists of influent waters pumped from the immediate vicinity of construction excavations that will extend below the water table using a well-point system. The well-points will pump through a central manifold into an 18,000-gallon weir tank. The weir tank will be equipped with a pH adjustment system and chemical aided settling system to enhance particulate removal from the discharge. The contents of the tank will then be pumped through bag filtration to remove the metals-containing sediment, through two Granulated Activated Carbon (GAC) vessels for VOC removal, and through a Resin media vessel

for final polishing and treatment. Effluent flows will be metered for total flow documentation. The treatment system design components are illustrated in Figure 5.

The treated groundwater will then be discharged to the nearby surface water body on the adjacent western parcel, which flows to the nearby Vine Brook, ultimately discharging to the wetlands to the north of the Site. The discharge location is shown on Figure 2.

Dewatering is intended to be intermittent during the construction as groundwater is encountered during footing and foundation installation. Additional information regarding the treatment system is included in Attachments E and G.

Endangered and Critical Species Evaluation

BL Companies reviewed information through the Massachusetts Division of Fisheries and Wildlife (MADFW) Massachusetts Priority Resource Map (Figure 6) and through the US Fish and Wildlife Service for information on Endangered and Critical Species. Based on the findings, the Site and the location of proposed discharge do not appear to be locations within an Area of Critical Environmental Concern.

The review of information through the MADFW and the US Fish and Wildlife Service concluded that the Site falls under Criterion C of the RGP guidance. The guidance for Criterion C includes the following:

- Criterion C: Discharges not likely to adversely affect ESA-listed species and/or designated critical habitat. ESA-listed species and/or designated critical habitat(s) under the jurisdiction of the USFWS and/or NMFS are likely to occur in or near your site's "action area," and you certify to EPA that your site's discharges and discharge-related activities are not likely to adversely affect ESA-listed threatened or endangered species and/or designated critical habitat. This certification may include consideration of any stormwater controls and/or management practices you will adopt to ensure that your discharges and discharge-related activities are not likely to adversely affect ESA-listed species and/or designated critical habitat. To certify your eligibility under this criterion, indicate 1) the ESA-listed species and/or designated habitat located in your "action area" using the process outlined in Attachment D of this permit; 2) the distance between the site and the listed species and/or designated critical habitat in the action area (in miles); and 3) a rationale describing specifically how adverse effects to ESA-listed species will be avoided from the discharges and discharge-related activities. You must also include a copy of your site map from your SWPPP showing the upland and in-water extent of your "action area" with this NOI.

- Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion C should identify the information resources and expertise (e.g., state or federal biologists) used to arrive at this conclusion. Any supporting documentation

should explicitly state that both ESA-listed species and designated critical habitat under the jurisdiction of the USFWS and/or NMFS were considered in the evaluation.

In accordance with the guidance for Criterion C, the findings of the endangered and critical species evaluation are as follows:

Resources Consulted:

United States Fish and Wildlife Service Information for Planning and Consultation (IPaC) tool, Massachusetts Natural Heritage and Endangered Species Program online maps (https://www.mass.gov/service-details/the-northern-long-eared-bat), National Marine Fisheries Service (NMFS) Essential Fish Habitat map, and NMFS CGP Waters of Concern Map.

ESA-listed Species/Critical Habitat in Action Area:

One species, the Northern Long-Eared Bat (*Myotis septentrionalis*), or NLEB, was identified as potentially present in the vicinity of the action area according to the US Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) response. The NLEB is a forest interior species that is considered to be a "clutter specialist" as they are capable of foraging in dense, interior forests. According to NatureServe.org, this bat generally is associated with old-growth forests composed of trees 100 years old or older. It relies on intact interior forest habitat, with low edge-to-interior ratios. Relevant late-successional forest features include a high percentage of old trees, uneven forest structure (resulting in multilayered vertical structure), single and multiple tree-fall gaps, standing snags, and woody debris. During the summer, the species is widely distributed in a variety of wooded habitats and its habitat needs for roosting and foraging appear to be flexible and not specific. Thus, the USFWS does not have any critical habitat mapped for NLEB. Therefore, there is no designated critical habitat for the NLEB present within the action area.

Furthermore, according to the USFWS critical habitat mapper, there is no other critical habitats mapped within the action area. The action area is located in a relatively developed commercial area, adjacent to a major highway, making it unlikely that this species is present within the vicinity of the action area. While there are mature trees present on-site, they have been identified primarily within the portions of the Site slated for Conservation Restriction. In addition, this forested habitat is not considered "intact interior forest" and does not consist of uneven forest structures, trees with single and/or multiple tree-fall gaps, or standing snags. The aforementioned habitat is located very close to roads, a highway, and commercial office buildings and parking lots which are likely not preferred by the NLEB due to the fragmented, forest-edge condition. The presence of non-native invasive plant species exacerbates these limitations, as they are not ideal habitat or food sources for native wildlife. Larger blocks of mature forest are present in an approximate 9-acre portion of the Site to the west of the action area that has been protected via a conservation easement with the Town of Burlington, in a conservation restriction along the southern side of Wheeler Road and in an even larger forested and park area that is present approximately 0.25 mile to the east and southeast, which would be more appropriate habitat for the NLEB.

Distance Between Site and ESA-listed Species/Critical Habitat:

According to mapping from Massachusetts Natural Heritage and Endangered Species Program (NHESP), the nearest known NLEB hibernacula is are located approximately 7.3 miles northwest of the Site, and the nearest known maternity roost tree is located approximately 63 miles southeast of the Site.

How Adverse Effects will be Avoided:

Given the lack of appropriate interior forest habitat, it is highly unlikely that the NLEB is present on-site in its existing conditions. However, natural conditions on-site will be improved by the addition and enhancement of landscaped areas, and addition of stormwater treatments including a rain garden that will naturally filter stormwater before it is returned to the groundwater table or to the adjacent tributary to Vine Brook. The eastern portion of the Site where the proposed development will be located is highly disturbed and degraded due to historic land use for gravel mining and crane and construction equipment storage. Various refuse and bulky debris are noted throughout this area and consist of smaller construction equipment, concrete, typical domestic refuse, and mechanical refuse such as car batteries, and will be removed from the Site and re-vegetated. Non-native invasive plant species do limit the available habitat on-site as they do not provide food sources or shelter for native wildlife. The non-native plants in the eastern portion of the Site are overtaking native plant species, namely autumn olive (*E. umbrellata*), glossy buckhorn (*F. alnus*), and oriental bittersweet (*C. orbiculatus*). Additionally, the natural buffer along the tributary to Vine Brook will be enhanced with additional native plantings providing future habitat for roosting and foraging opportunities for this species. The addition of plantings and stormwater treatment will offer an improvement to the water quality being discharged from the Site into the Vine Brook tributary and may provide an improvement to water quality for NLEB, and other terrestrial and aquatic species that may utilize Vine Brook as a water source.

Cultural and Historic Resources Evaluation

BL Companies reviewed information through the Massachusetts Cultural Resource Information Viewer (MACRIS) regarding the potential presence of significant cultural resources in the vicinity of the Site. The MACRIS report is included in Attachment C. Based on the information reviewed, the Site and the location of proposed discharge do not appear to be within areas of historical significance through the MACRIS system.

Closing

The NOI Application is included as Attachment A. The information provided on the application form and in the attached information demonstrates that the proposed dewatering discharge is eligible for authorization under the RGP.

Should you have any questions, do not hesitate to contact the undersigned.

Sincerely,
BL Companies

Samuel R. Haydock, MS, LEP
Principal

CC: Cathy Vakalopoulos – MADEP
Samuel Weissman – Wheeler Self Storage, LLC

Attachments:

Figure 1 – Site Location Map
Figure 2 – Conservation Restriction and Easement Map
Figure 3 – Overall Limit of Disturbance Area
Figure 4 – Site Investigation Plan
Figure 5 – Treatment System Design
Figure 6 – MADFW Priority Resource Map

Attachment A – RGP NOI Application Form
Attachment B – Stream Stats Flow Statistics Report
Attachment C – MACRIS Report
Attachment D – Endangered and Critical Species Report
Attachment E – Effluent Data Estimations
Attachment F – Groundwater Data
Attachment G – Treatment System Specifications and Data Sheets

FIGURES

DocuSign Envelope ID: A312F187-F125-4CD0-AEEF-F90690E0C0FE

Image Provided By: **EDR USGS Topographic Maps**
Source: **EDR** Year(s): **1985** Scale:

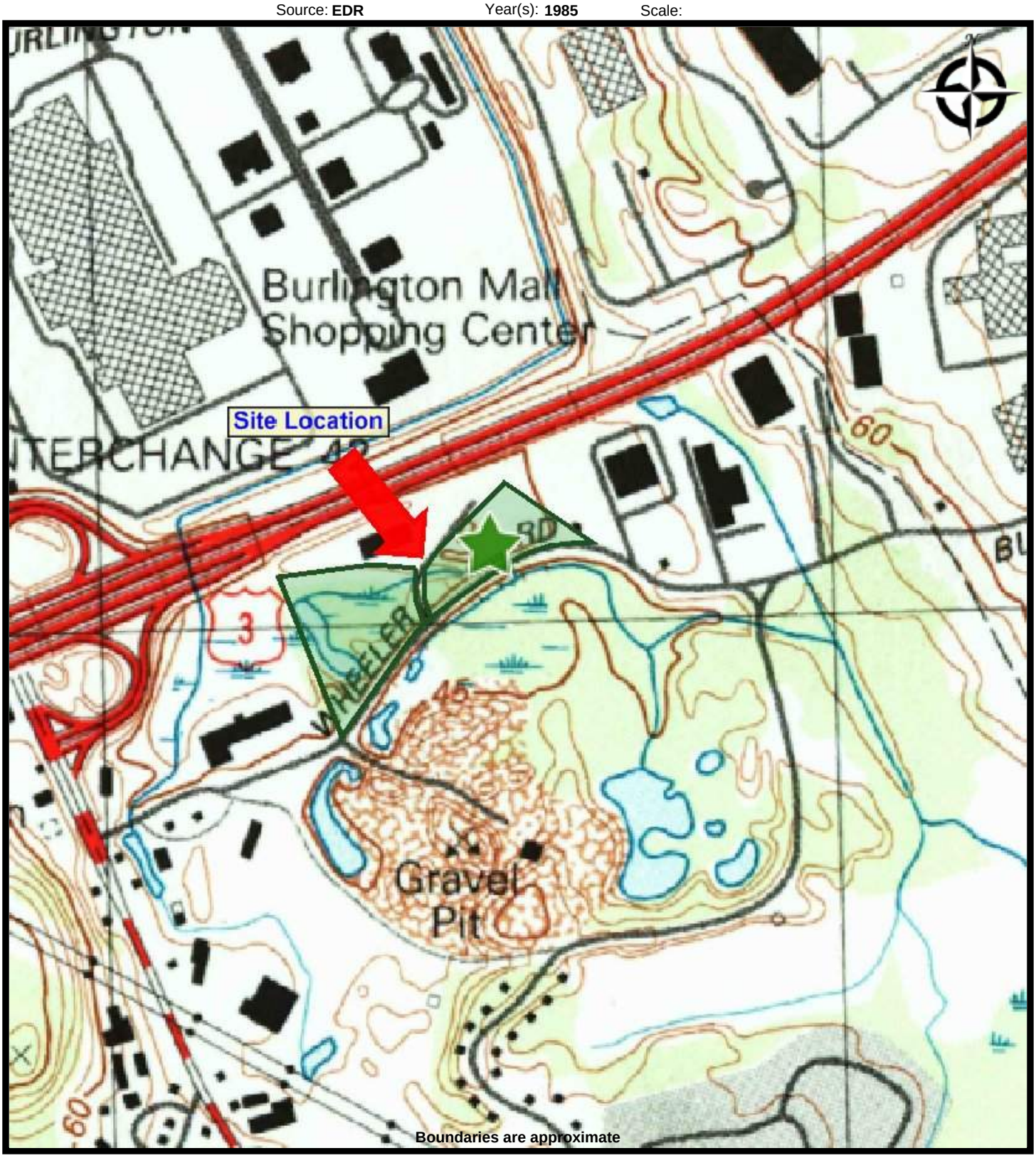

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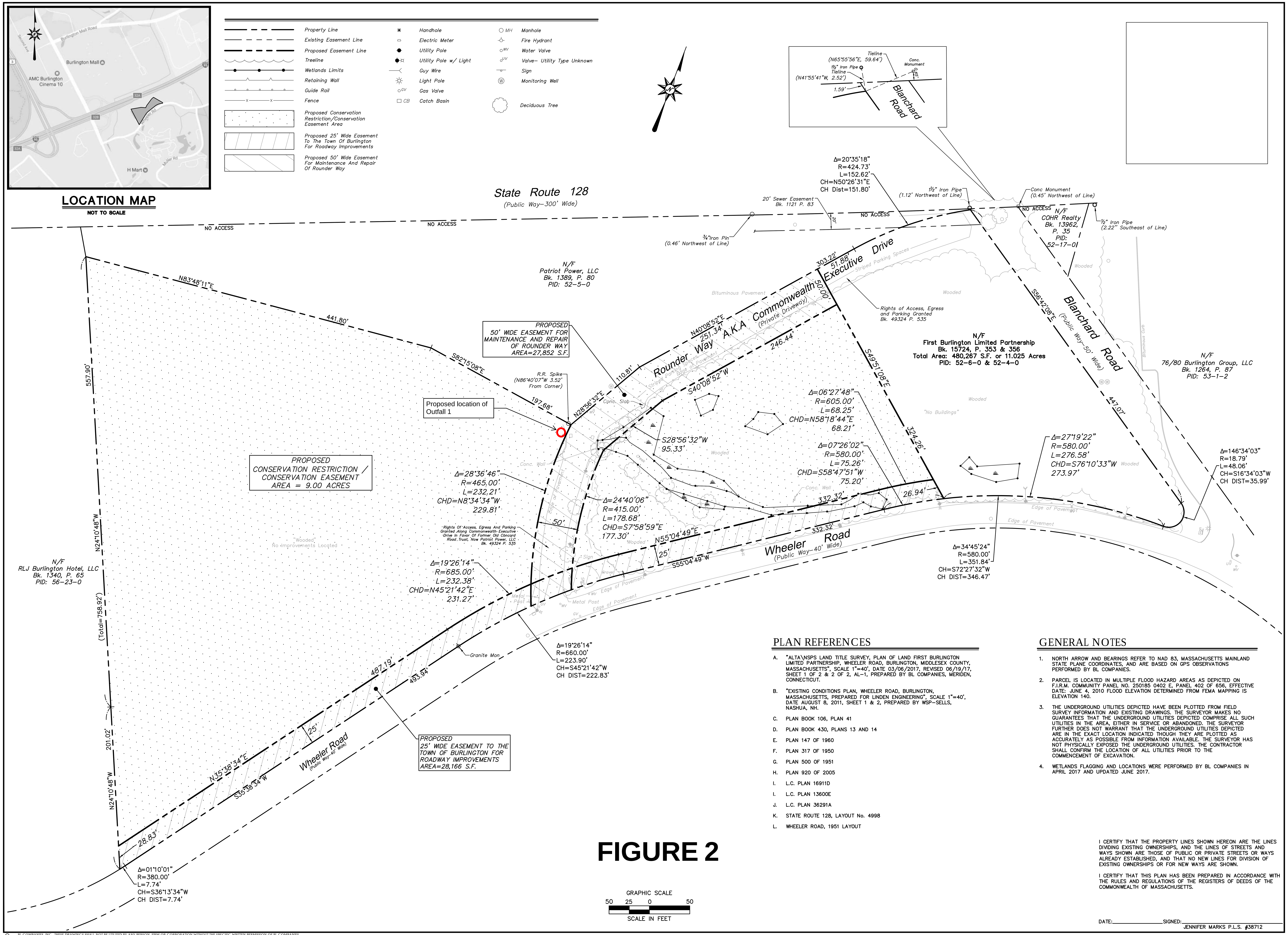
FIGURE 1 - SITE LOCATION MAP
SELF-STORAGE FACILTY SITE
Wheeler Road
Burlington, Massachusetts 01803

IMAGE YEAR: 1985

PROJ. #: 16D3253



LOCATION MAP
NOT TO SCALE
Burlington Mall Road
Burlington Mall
AMC Burlington Cinema 10
H Mart
Property Line
Existing Easement Line
Proposed Easement Line
Treeline
Wetlands Limits
Retaining Wall
Guide Rail
Fence
Proposed Conservation Restriction/Conservation Easement Area
Proposed 25' Wide Easement To The Town Of Burlington For Roadway Improvements
Proposed 50' Wide Easement For Maintenance And Repair Of Rounder Way
Handhole
Electric Meter
Utility Pole
Utility Pole w/ Light
Guy Wire
Light Pole
Gas Valve
Catch Basin
Manhole
Fire Hydrant
Water Valve
Valve- Utility Type Unknown
Sign
Monitoring Well
Deciduous Tree
State Route 128
(Public Way—300' Wide)
NO ACCESS
N/F
Patriot Power, LLC
Bk. 1389, P. 80
PID: 52-5-0
N/F
First Burlington Limited Partnership
Bk. 15724, P. 353 & 356
Total Area: 480,267 S.F. or 11.025 Acres
PID: 52-6-0 & 52-4-0
N/F
COHR Realty
Bk. 13962, P. 35
PID: 52-17-01
N/F
76/80 Burlington Group, LLC
Bk. 1264, P. 87
PID: 53-1-2
N/F
RLJ Burlington Hotel, LLC
Bk. 1340, P. 65
PID: 56-23-0
Blanchard Road
(Public Way—50' Wide)
Rounder Way A.K.A Commonwealth Executive Drive
(Private Driveway)
Wheeler Road
(Public Way—40' Wide)
PROPOSED
CONSERVATION RESTRICTION / CONSERVATION EASEMENT
AREA = 9.00 ACRES
PROPOSED
50' WIDE EASEMENT FOR MAINTENANCE AND REPAIR OF ROUNDER WAY
AREA=27,852 S.F.
PROPOSED
25' WIDE EASEMENT TO THE TOWN OF BURLINGTON FOR ROADWAY IMPROVEMENTS
AREA=28,166 S.F.
Proposed location of Outfall 1
Rights of Access, Egress and Parking Granted
Bk. 49324 P. 535
Δ=20°35'18" R=424.73' L=152.62' CH=N50°26'31"E CH Dist=151.80'
Δ=28°36'46" R=465.00' L=232.21' CHD=N8°34'34"W 229.81'
Δ=24°40'06" R=415.00' L=178.68' CHD=S7°58'59"E 177.30'
Δ=19°26'14" R=685.00' L=232.38' CHD=N45°21'42"E 231.27'
Δ=19°26'14" R=660.00' L=223.90' CH=S45°21'42"W CH DIST=222.83'
Δ=06°27'48" R=605.00' L=68.25' CHD=N58°18'44"E 68.21'
Δ=07°26'02" R=580.00' L=75.26' CHD=S58°47'51"W 75.20'
Δ=27°19'22" R=580.00' L=276.58' CHD=S76°10'33"W 273.97'
Δ=34°45'24" R=580.00' L=351.84' CH=S72°27'32"W CH DIST=346.47'
Δ=146°34'03" R=18.79' L=48.06' CH=S16°34'03"W CH DIST=35.99'
Δ=01°10'01" R=380.00' L=7.74' CH=S36°13'34"W CH DIST=7.74'
N83°48'11"E
441.80'
S82°15'08"E
197.68'
N28°56'32"E
110.81'
S28°56'32"W
95.33'
N40°08'52"E
251.34'
S40°08'52"W
246.44'
S49°51'08"E
324.26'
S56°42'08"E
447.07'
N55°04'49"E
S55°04'49"W
332.32'
N35°38'34"E
S35°38'34"W
487.19'
493.94'
N24°10'48"W
557.90'
201.02'
(Total=758.92')
303.22'
51.88'
50.00'
26.94'
28.83'
50'
25'
FIGURE 2
GRAPHIC SCALE
50 25 0 50
SCALE IN FEET

PLAN REFERENCES

A. "ALTA\NSPS LAND TITLE SURVEY, PLAN OF LAND FIRST BURLINGTON LIMITED PARTNERSHIP, WHEELER ROAD, BURLINGTON, MIDDLESEX COUNTY, MASSACHUSETTS", SCALE 1"=40', DATE 03/06/2017, REVISED 06/19/17, SHEET 1 OF 2 & 2 OF 2, AL-1, PREPARED BY BL COMPANIES, MERIDEN, CONNECTICUT.

B. "EXISTING CONDITIONS PLAN, WHEELER ROAD, BURLINGTON, MASSACHUSETTS, PREPARED FOR LINDEN ENGINEERING", SCALE 1"=40', DATE AUGUST 8, 2011, SHEET 1 & 2, PREPARED BY WSP-SELLS, NASHUA, NH.

C. PLAN BOOK 106, PLAN 41

D. PLAN BOOK 430, PLANS 13 AND 14

E. PLAN 147 OF 1960

F. PLAN 317 OF 1950

G. PLAN 500 OF 1951

H. PLAN 920 OF 2005

I. L.C. PLAN 16911D

I. L.C. PLAN 13600E

J. L.C. PLAN 36291A

K. STATE ROUTE 128, LAYOUT No. 4998

L. WHEELER ROAD, 1951 LAYOUT

GENERAL NOTES

1. NORTH ARROW AND BEARINGS REFER TO NAD 83, MASSACHUSETTS MAINLAND STATE PLANE COORDINATES, AND ARE BASED ON GPS OBSERVATIONS PERFORMED BY BL COMPANIES.

2. PARCEL IS LOCATED IN MULTIPLE FLOOD HAZARD AREAS AS DEPICTED ON F.I.R.M. COMMUNITY PANEL NO. 250185 0402 E, PANEL 402 OF 656, EFFECTIVE DATE: JUNE 4, 2010 FLOOD ELEVATION DETERMINED FROM FEMA MAPPING IS ELEVATION 140.

3. THE UNDERGROUND UTILITIES DEPICTED HAVE BEEN PLOTTED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES DEPICTED ARE IN THE EXACT LOCATION INDICATED THOUGH THEY ARE PLOTTED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY EXPOSED THE UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF EXCAVATION.

4. WETLANDS FLAGGING AND LOCATIONS WERE PERFORMED BY BL COMPANIES IN APRIL 2017 AND UPDATED JUNE 2017.

I CERTIFY THAT THE PROPERTY LINES SHOWN HEREON ARE THE LINES DIVIDING EXISTING OWNERSHIPS, AND THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED, AND THAT NO NEW LINES FOR DIVISION OF EXISTING OWNERSHIPS OR FOR NEW WAYS ARE SHOWN.

I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

DATE:________________ SIGNED:________________
JENNIFER MARKS P.L.S. #38712

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BL Companies

355 Research Parkway
Meriden, CT 06450
(203) 630-1406
(203) 630-2615 Fax

LAND OF
FIRST BURLINGTON LIMITED PARTNERSHIP
WHEELER ROAD
BURLINGTON, MIDDLESEX COUNTY, MASSACHUSETTS

REVISIONS
No. Date Desc.

Drawn	JS.
Reviewed	-
Scale	1"=50'
Project No.	16D3253
Date	06/24/2020
CAD File:	EA16D325303

Title
CONSERVATION EASEMENT PLAN

Sheet No.
EA-1

Xref (s): ; XY16D325302

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LEGEND

SITE LIMIT OF DISTURBANCE AREA

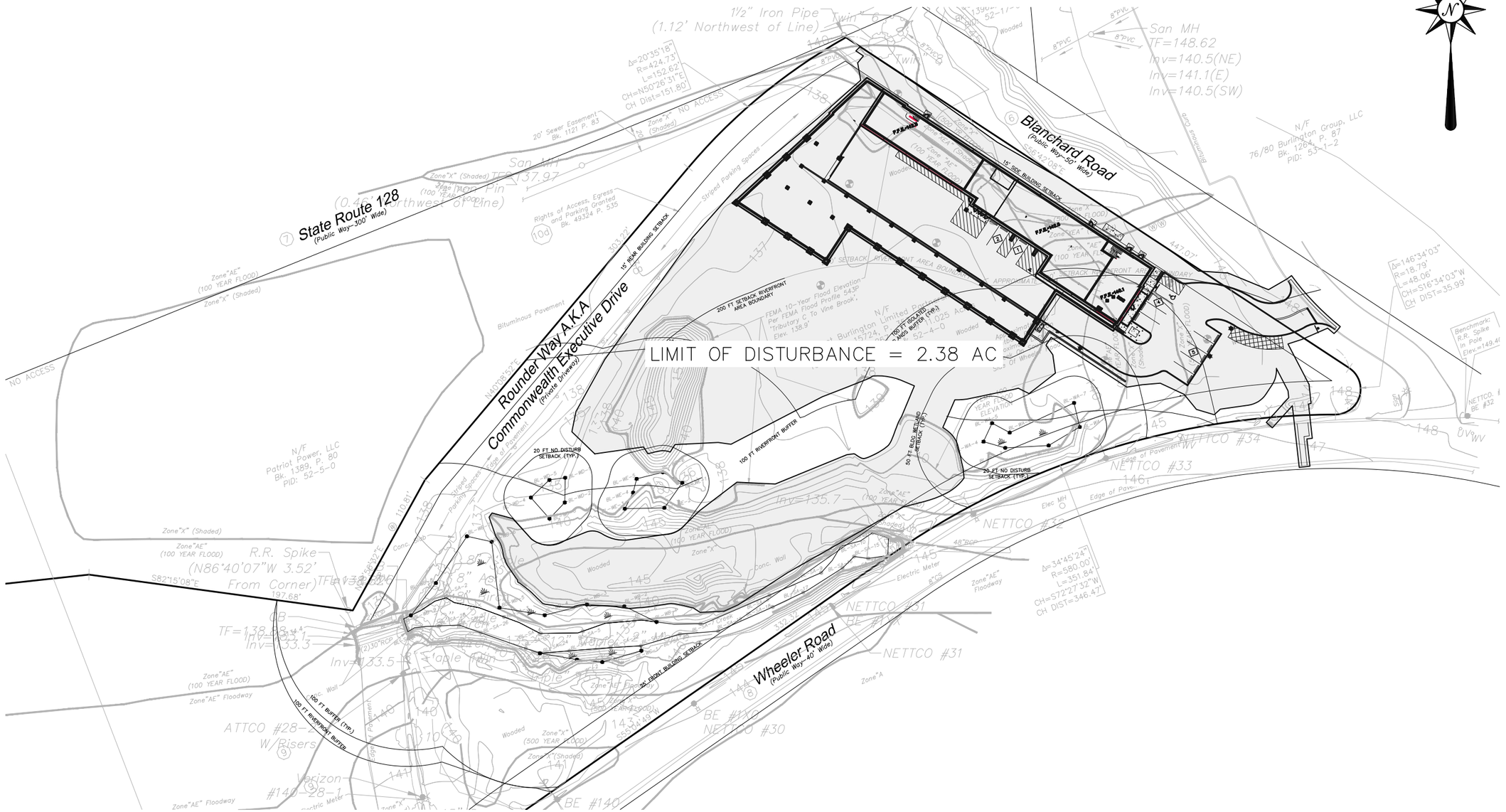

FIGURE 3

GRAPHIC SCALE
120 60 0 120
SCALE IN FEET

Drawn By:	J.E.S.	Origin:	N/A
Reviewed By:	J.E.S.	DWG. Ref:	N/A
Project No.	16D3253	Scale:	1"=80'
CAD File:	EXH16D325301-SWPPP	Date:	03/30/2020
Title:			FIGURE-2

OVERALL LIMIT OF DISTURBANCE AREA
SWPPP FOR THE MIXED USE DEVELOPMENT
WHEELER ROAD
BURLINGTON, MASSACHUSETTS

220 NORWOOD PARK SOUTH
Norwood, MA 02062
(781) 619-9500

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

BL Companies

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Mar 30, 2020 9:52am isojka G:\JOBS16\16D\16D3253\DWG\EXH16D325301-SWPPP.dwg
Layout: FIG-2 11 X 17 120SC

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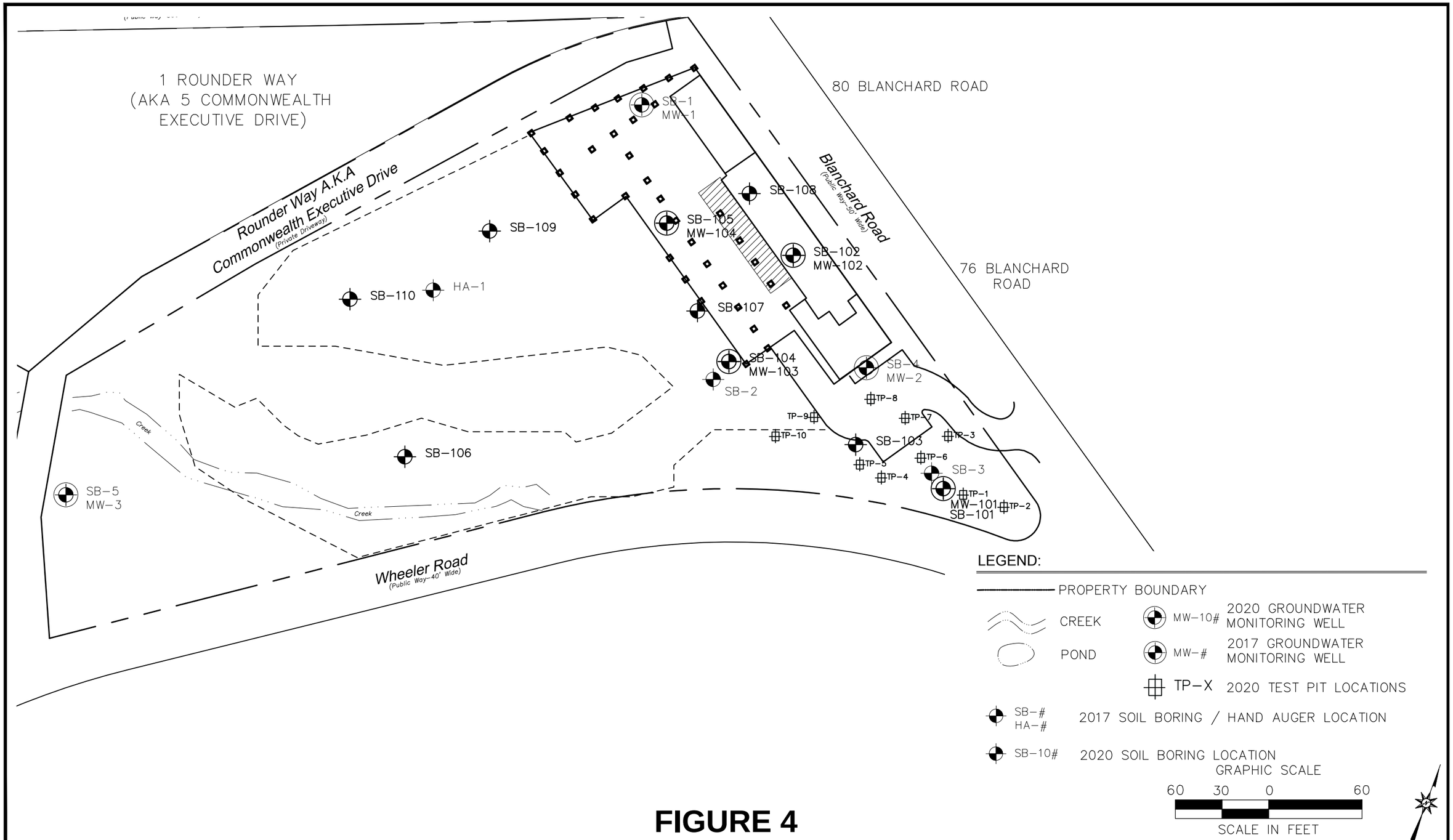

FIGURE 4

BL Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

355 Research Parkway
Meriden, CT 06450
(203) 630-1406
(203) 630-2615 Fax

ENVIRONMENTAL SITE INVESTIGATION PLAN

WHEELER ROAD
BURLINGTON, MA

Designed	W.W.J.
Drawn	M.A.G.
Checked	
Approved	
Scale	1"=60'
Project No.	16D3253
Date	REV. 05/13/2020
CAD File	EV16D325302

SI-01

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XREF (s): ; N-DAT-16D3253-GWContours ; N-DAT-16D3253-GWContours2 ; N-DAT-

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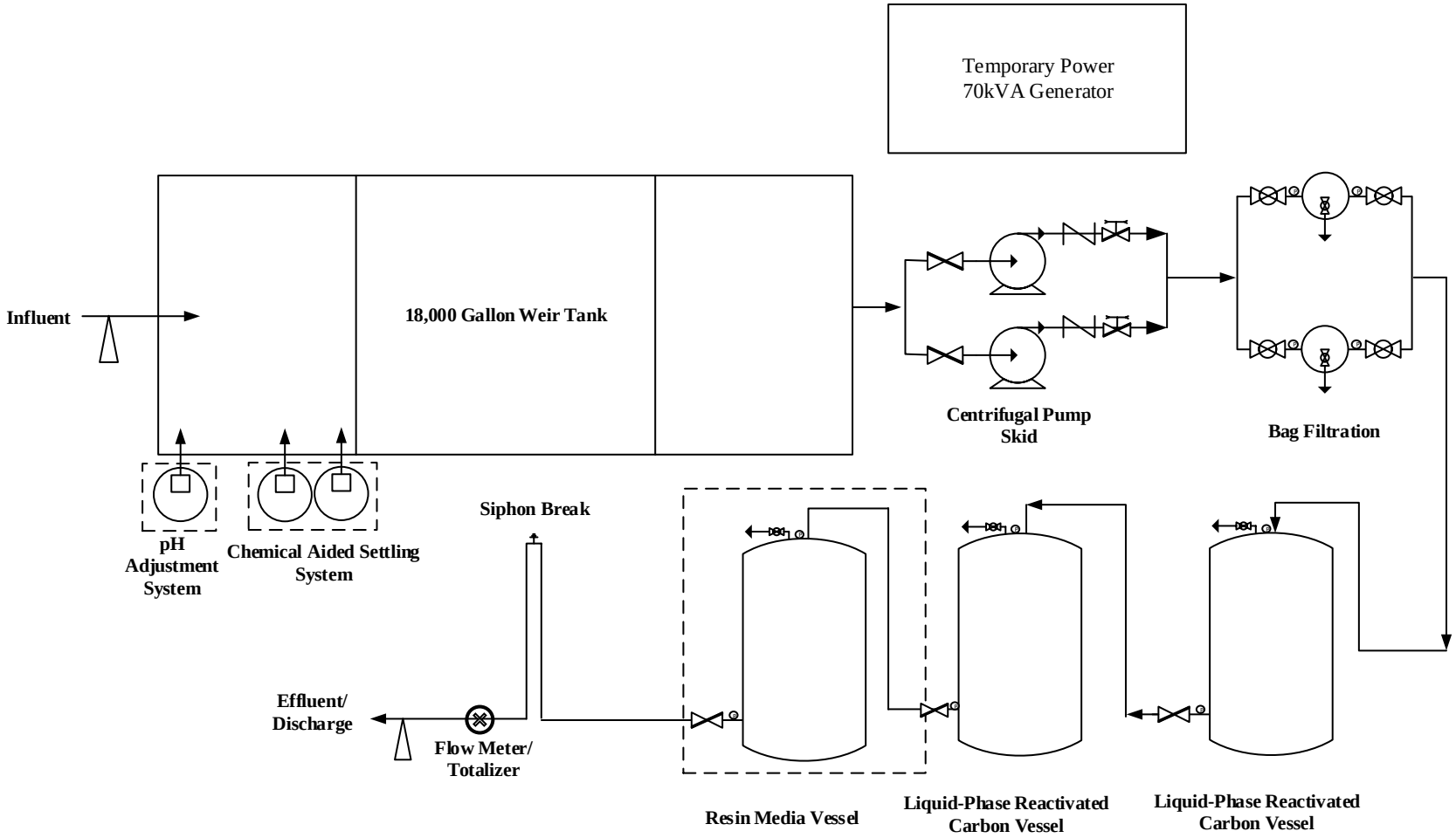

Notes:

1.) Figure is not to scale
2.) System rated for 250-300 GPM

FIGURE 5

LRT Lockwood Remediation Technologies LLC	Lockwood Remediation Technologies, LLC 89 Crawford Street Leominster, MA 01453 Office: 774-450-7177 **DESIGNED BY:** LRT **DRAWN BY:** JHJ **CHECKED BY:** **DATE:**	**Water Treatment System Schematic**	**Public Storage Building** **Wheeler Road** **Burlington, MA**	**PROJECT No.** 3224	**FIGURE No.** 1

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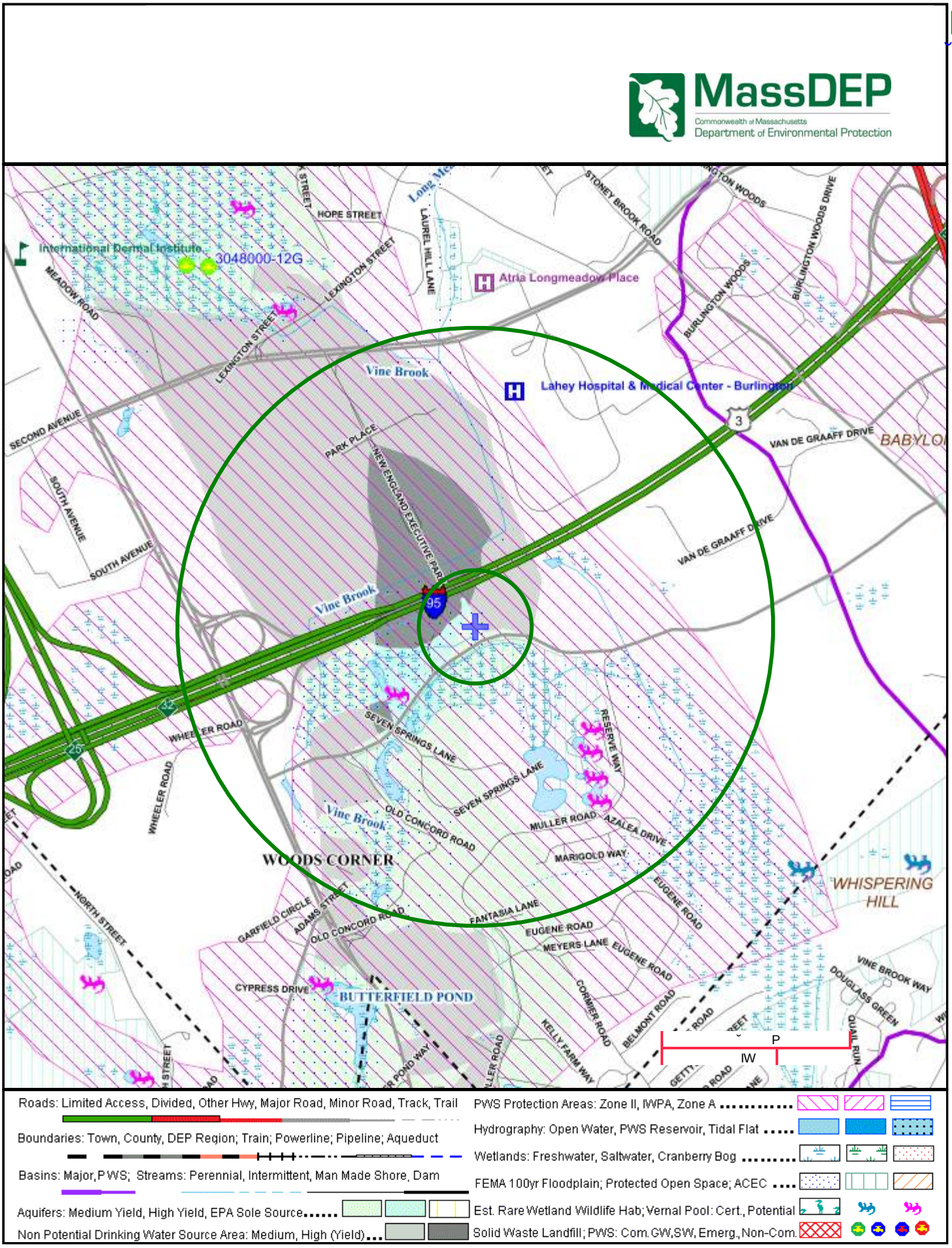


FIGURE 6

ATTACHMENT A
NOI FORM

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:
Jumbo Self Storage</td><td colspan="3">Site address: 0 Wheeler Road
Street:</td></tr>
<tr><td>City: Burlington</td><td>State: MA</td><td>Zip: 01803</td></tr>
<tr><td rowspan="4">2. Site owner
Wheeler Self Storage LLC

Owner is (check one): ☐ Federal ☐ State/Tribal ■ Private
☐ Other; if so, specify:</td><td colspan="3">Contact Person: Sam Weissman</td></tr>
<tr><td colspan="2">Telephone: 617-966-1300</td><td>Email: sweissman@jumbocapital.com</td></tr>
<tr><td colspan="3">Mailing address: 1900 Crown Colony Drive, Suite 405
Street:</td></tr>
<tr><td>City: Quincy</td><td>State: MA</td><td>Zip: 02169</td></tr>
<tr><td rowspan="4">3. Site operator, if different than owner
Same as 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:
N/A

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):
Pending
☐ NH Groundwater Management Permit or Groundwater Release Detection Permit:
☐ CERCLA
☐ 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):
Vine Brook	Segment MA83-06	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:

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. Dissolved Oxygen and Turbidity

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.	0.0183 ft^3/s
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.	1.03

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:

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: CVOCs, and Metals	
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 to Vine Brook area	Outfall location(s): (Latitude, Longitude) 42.478616, -71.208571
Discharges enter the receiving water(s) via (check any that apply): ■ Direct discharge to the receiving water ☐ Indirect discharge, if so, specify: ☐ 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): Start: August 1, 2020 End: December 1, 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="5">■ 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	✔							Report mg/L	---
Chloride	✔							Report µg/l	---
Total Residual Chlorine	✔							0.2 mg/L	
Total Suspended Solids	✔							30 mg/L	---
Antimony		✔	4	6010D		10		206 µg/L	
Arsenic		✔	1	6010D		7		104 µg/L	
Cadmium	✔							10.2 µg/L	
Chromium III		✔	2	6010D		12		323 µg/L	
Chromium VI		✔	2	6010D		12		323 µg/L	
Copper	✔							242 µg/L	
Iron	✔							5,000 µg/L	
Lead		✔	2	6010D		9		160 µg/L	
Mercury	✔							0.739 µg/L	
Nickel		✔	2	6010D		8		1,450 µg/L	
Selenium	✔							235.8 µg/L	
Silver	✔							35.1 µg/L	
Zinc		✔	5	6010D		30		420 µg/L	
Cyanide	✔							178 mg/L	
B. Non-Halogenated VOCs									
Total BTEX		✔	1	8260C		7.2		100 µg/L	---
Benzene	✔							5.0 µg/L	---
1,4 Dioxane	✔							200 µg/L	---
Acetone	✔							7.97 mg/L	---
Phenol	✔							1,080 µg/L	

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	✔							4.4 µg/L	
1,2 Dichlorobenzene	✔							600 µg/L	---
1,3 Dichlorobenzene	✔							320 µg/L	---
1,4 Dichlorobenzene	✔							5.0 µg/L	---
Total dichlorobenzene	✔							763 µg/L in NH	---
1,1 Dichloroethane		✔	1	8260C		2		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		✔	9	8260C		62		5.0 µg/L	---
Tetrachloroethylene		✔	5	8260C		18		5.0 µg/L	
cis-1,2 Dichloroethylene		✔	8	8260C		14		70 µg/L	---
Vinyl Chloride		✔	1	8260C		2		2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	✔							190 µg/L	
Diethylhexyl phthalate	✔							101 µg/L	
Total Group I PAHs	✔							1.0 µg/L	---
Benzo(a)anthracene	✔							As Total PAHs	
Benzo(a)pyrene	✔								
Benzo(b)fluoranthene	✔								
Benzo(k)fluoranthene	✔								
Chrysene	✔								
Dibenzo(a,h)anthracene	✔								
Indeno(1,2,3-cd)pyrene	✔								

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	✔							100 µg/L	---
Naphthalene		✔	1	82620C		2.7		20 µg/L	---
E. Halogenated SVOCs									
Total PCBs	✔							0.000064 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	
tert-Butyl Alcohol	✔							120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✔							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:									
C9-C12 Aliphatics		✔	1	MADEP-	100	150			

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:

Contingency CGS cation resin, contingency pH Adjustment and contingency chem feed system

2. Provide a written description of all treatment system(s) or processes that will be applied to the effluent prior to discharge.

Influent waters into an 18,000 gallon weir tank, which is equipped with pH adjustment system, and chemical aided settling system, to a centrifugal pump, through bag filtration, two GAC vessels, a Resin media vessel, through a flow meter/totalizer, to the effluent.

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: GAC, 300 GPM Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification:	
Provide the proposed maximum effluent flow in gpm.	300
Provide the average effluent flow in gpm.	200-250
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:
Nonionic Polymer

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

See Appendix G.

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 implemented prior to initiating discharge.

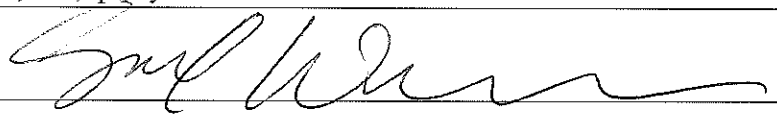
Notification provided to the appropriate State, including a copy of this NOI, if required. Check one: Yes ■ No ☐

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 ■

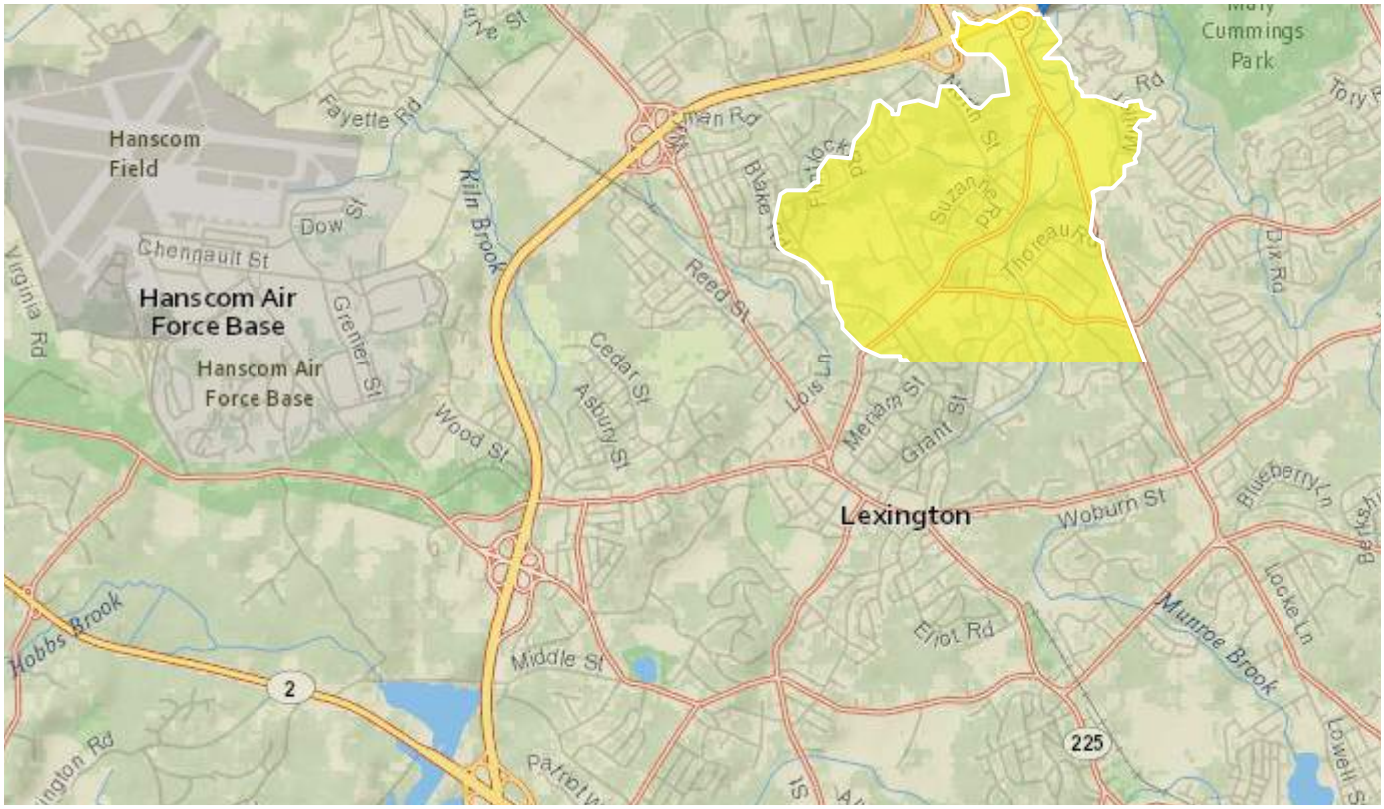
Signature:  Date: 8/13/2020

Print Name and Title: Samuel Weissman - Agent for Owner

ATTACHMENT B
STREAMSTATS
REPORT

StreamStats Report

Region ID: MA
Workspace ID: MA20200707214402183000
Clicked Point (Latitude, Longitude): 42.47786, -71.21190
Time: 2020-07-07 17:44:18 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	6.26	miles
DRNAREA	Area that drains to a point on a stream	3.63	square miles
BSLDEM250	Mean basin slope computed from 1:250K DEM	1.483	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.3	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless

Parameter Code	Parameter Description	Value	Unit
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	51.62	percent
FOREST	Percentage of area covered by forest	16.95	percent
BSLDEM10M	Mean basin slope computed from 10 m DEM	5.01	percent
ELEV	Mean Basin Elevation	218	feet
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	5.25	percent

Low-Flow Statistics Parameters[Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.63	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	1.483	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.3	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

Low-Flow Statistics Flow Report[Statewide Low Flow WRIR00 4135]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PIl	PIu	SE	SEp
7 Day 2 Year Low Flow	0.377	ft^3/s	0.13	1.05	49.5	49.5
7 Day 10 Year Low Flow	0.15	ft^3/s	0.0405	0.518	70.8	70.8

Low-Flow Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

Flow-Duration Statistics Parameters[Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.63	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	0.3	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	1.483	percent	0.32	24.6

Flow-Duration Statistics Flow Report[Statewide Low Flow WRIR00 4135]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PIl	PIu	SE	SEp
50 Percent Duration	3.56	ft^3/s	1.62	7.74	17.6	17.6
60 Percent Duration	2.64	ft^3/s	1.02	6.77	19.8	19.8
70 Percent Duration	1.74	ft^3/s	0.748	4	23.5	23.5
75 Percent Duration	1.38	ft^3/s	0.6	3.13	25.8	25.8
80 Percent Duration	1.14	ft^3/s	0.509	2.5	28.4	28.4
85 Percent Duration	0.82	ft^3/s	0.343	1.92	31.9	31.9
90 Percent Duration	0.628	ft^3/s	0.256	1.5	36.6	36.6
95 Percent Duration	0.347	ft^3/s	0.123	0.951	45.6	45.6
98 Percent Duration	0.228	ft^3/s	0.0704	0.698	60.3	60.3
99 Percent Duration	0.165	ft^3/s	0.0478	0.538	65.1	65.1

Flow-Duration Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

August Flow-Duration Statistics Parameters[Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.63	square miles	1.61	149

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
BSLDEM250	Mean Basin Slope from 250K DEM	1.483	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.3	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

August Flow-Duration Statistics Flow Report[Statewide Low Flow WRIR00 4135]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SE	SEp
August 50 Percent Duration	0.911	ft^3/s	0.37	2.2	33.2	33.2

August Flow-Duration Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

Probability Statistics Parameters[Perennial Flow Probability]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.63	square miles	0.01	1.99
PCTSNDGRV	Percent Underlain By Sand And Gravel	51.62	percent	0	100
FOREST	Percent Forest	16.95	percent	0	100
MAREGION	Massachusetts Region	0	dimensionless	0	1

Probability Statistics Disclaimers[Perennial Flow Probability]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Probability Statistics Flow Report[Perennial Flow Probability]

Statistic	Value	Unit
Probability Stream Flowing Perennially	0.986	dim

Probability Statistics Citations

Bent, G.C., and Steeves, P.A.,2006, A revised logistic regression equation and an automated procedure for mapping the probability of a stream flowing perennially in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2006–5031, 107 p. (http://pubs.usgs.gov/sir/2006/5031/pdfs/SIR_2006-5031rev.pdf)

Bankfull Statistics Parameters[Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.63	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	5.01	percent	2.2	23.9

Bankfull Statistics Flow Report[Bankfull Statewide SIR2013 5155]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
Bankfull Width	23.5	ft	21.3
Bankfull Depth	1.31	ft	19.8
Bankfull Area	30.6	ft^2	29
Bankfull Streamflow	75	ft^3/s	55

Bankfull Statistics Citations

Bent, G.C., and Waite, A.M.,2013, Equations for estimating bankfull channel geometry and discharge for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2013–5155, 62 p., (http://pubs.usgs.gov/sir/2013/5155/)

Peak-Flow Statistics Parameters[Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.63	square miles	0.16	512
ELEV	Mean Basin Elevation	218	feet	80.6	1948

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
LC06STOR	Percent Storage from NLCD2006	5.25	percent	0	32.3

Peak-Flow Statistics Flow Report[Peak Statewide 2016 5156]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SEp
2 Year Peak Flood	115	ft^3/s	58.4	224	42.3
5 Year Peak Flood	189	ft^3/s	95	375	43.4
10 Year Peak Flood	247	ft^3/s	121	503	44.7
25 Year Peak Flood	332	ft^3/s	158	699	47.1
50 Year Peak Flood	402	ft^3/s	185	875	49.4
100 Year Peak Flood	477	ft^3/s	212	1070	51.8
200 Year Peak Flood	558	ft^3/s	241	1290	54.1
500 Year Peak Flood	675	ft^3/s	279	1630	57.6

Peak-Flow Statistics Citations

Zarriello, P.J.,2017, Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2016–5156, 99 p. (https://dx.doi.org/10.3133/sir20165156)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.3.11

ATTACHMENT C
MACRIS REPORT

DocuSign Envelope ID: A312F187-F125-4CD0-AEEF-F90690E0C0FE

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Burlington; Street Name: Wheeler; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year

ATTACHMENT D
ENDANGERED AND CRITICAL SPECIES REPORT

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Middlesex County, Massachusetts

Local office

New England Ecological Services Field Office

(603) 223-2541
(603) 223-0104

70 Commercial Street, Suite 300
Concord, NH 03301-5094

http://www.fws.gov/newengland

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

NOT FOR CONSULTATION

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Northern Long-eared Bat Myotis septentrionalis Threatened
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9045

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

NOT FOR CONSULTATION

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Black-billed Cuckoo Coccyzus erythropthalmus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Buff-breasted Sandpiper Calidris subruficollis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9488	Breeds elsewhere
Canada Warbler Cardellina canadensis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10
Dunlin Calidris alpina arcticola This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere

NOT FOR CONSULTATION

Evening Grosbeak Coccothraustes vespertinus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Prairie Warbler Dendroica discolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird Euphagus carolinus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Semipalmated Sandpiper Calidris pusilla This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Short-billed Dowitcher Limnodromus griseus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Snowy Owl Bubo scandiacus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

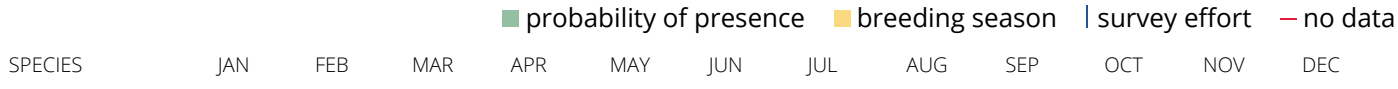
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

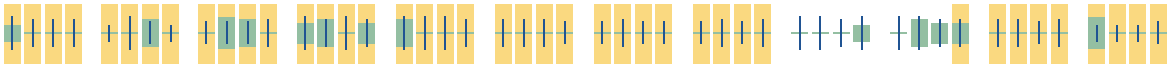
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

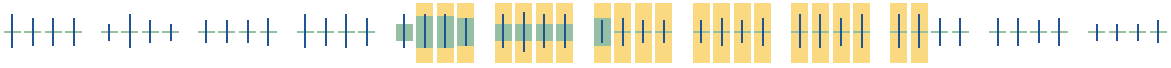
NOT FOR CONSULTATION



Bald Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



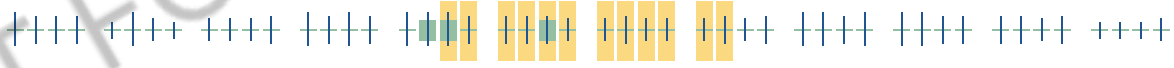
Black-billed Cuckoo
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Bobolink
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Buff-breasted Sandpiper
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Canada Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Dunlin
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Evening Grosbeak
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

NOT FOR CONSULTATION

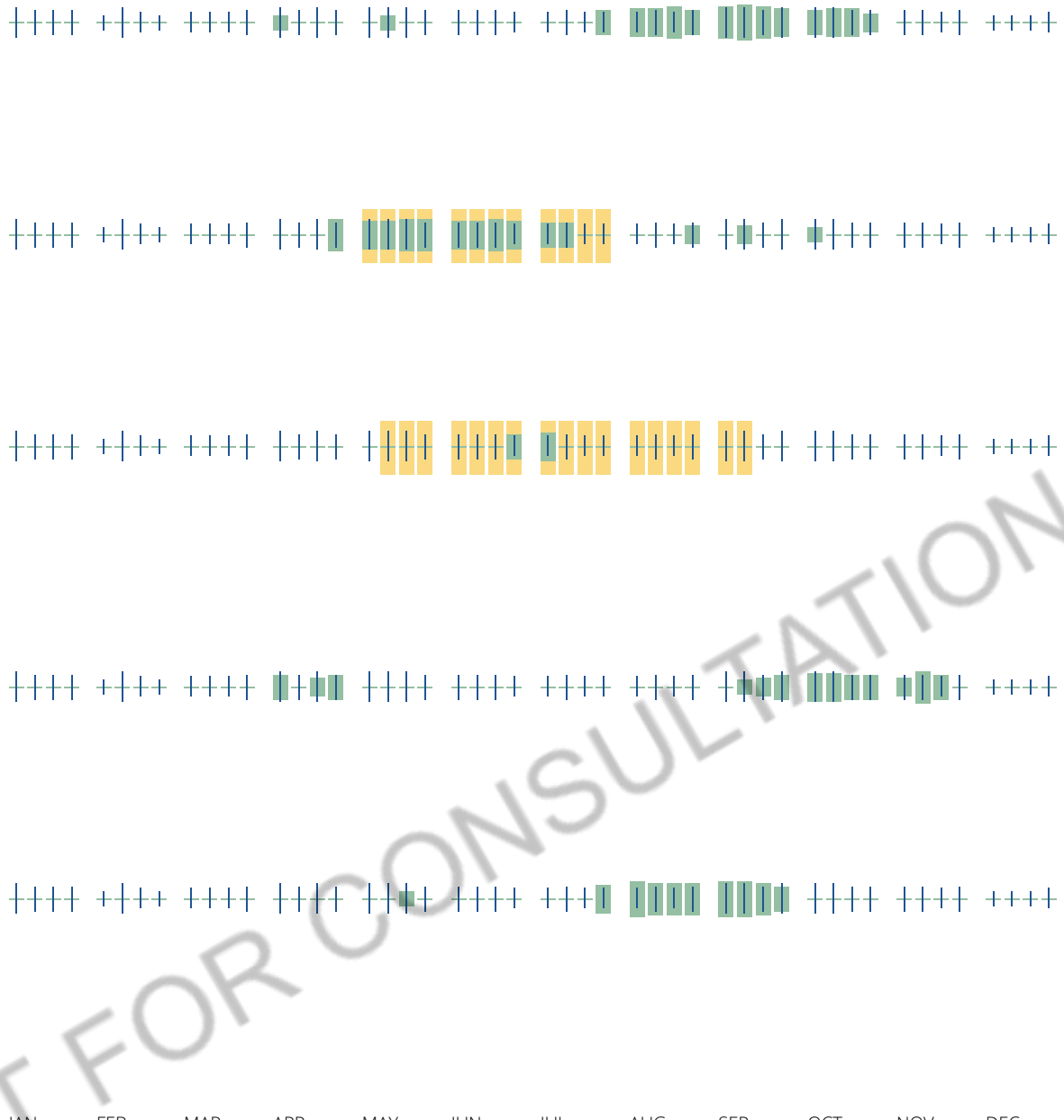
Lesser Yellowlegs
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Prairie Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Red-headed Woodpecker
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Rusty Blackbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Semipalmated Sandpiper
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

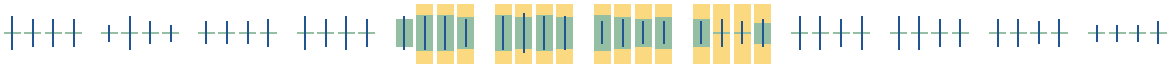


Short-billed Dowitcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Snowy Owl
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

NOT FOR CONSULTATION

Wood Thrush
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

NOT FOR CONSULTATION

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

NOT FOR CONSULTATION

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1E
- PEM1Fh

RIVERINE

- R2UBH
- R2UBHx

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

NOT FOR CONSULTATION

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

ATTACHMENT E
EFFLUENT DATA ESTIMATIONS

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PROJECT EFFLUENT CONCENTRATIONS

Water Treatment System
Wheeler Road
Burlington, MA

Influent Contaminant	Highest Influent Concentration (ug/L)	Treatment Method	Removal Efficiency [2] (%)	Estimated Effluent Concentration (ug/L)
1,2,4-Trimethylbenzene	8.4	Carbon	99	0.08
1,3,5-Trimethylbenzene	3.3	Carbon	99	0.03
Dichlorodifluoromethane	7.1	Carbon	99	0.07
o-Xylene	2.9	Carbon	99	0.03
m&p-Xylene	4.3	Carbon	99	0.04
Naphthalene	2.7	Carbon	99	0.03
Vinyl Chloride	2	Carbon	99 [3]	0.02
cis 1,2-dichloroethane	30	Carbon	99	0.3
Trichloroethene (TCE)	62	Carbon	95	3.1
Tetrachloroethene (PCE)	18	Carbon	95	0.9
Antimony	10	Settling, Filtration, Ion Exchange	45	5.5
Arsenic	7	Settling, Filtration, Ion Exchange	80	1.4
Barium	106	Settling, Filtration, Ion Exchange	85	15.9
Chromium	12	Settling, Filtration, Ion Exchange	97	0.36
Lead	9.0	Settling, Filtration, Ion Exchange	99	0.09
Nickel	8.0	Settling, Filtration, Ion Exchange	84	1.28
Vanadium	9.0	Settling, Filtration, Ion Exchange	85	1.35
Zinc	30	Settling, Filtration, Ion Exchange	82	5.4

Notes
1. Treatment system includes an 18,000-gallon weir tank, centrifugal transfer pump, duplex bag filter skid, two 6,000 lb carbon vessels in series, a 120 CF cation exchange vessel, and a flow/totalizer meter
2. Removal efficiency based on empirical data
3. Removal efficiency of vinyl chloride may readily decrease depending on loading of other CVOC and VOC contaminants

ATTACHMENT F
GROUNDWATER
DATA

TABLE 2
Ground Water and Surface Water Analytical Data
March 2017 and March 2020
Wheeler Rd., Burlington, Massachusetts
BL Companies Project No. 16D3253

Compounds	MCP Reportable Concentration for Groundwater	Concentration of Compound in Sample													
	RCGW-1	MW-1	MW-1/DUP	MW-1	MW-2	MW-2	MW-3	MW-4	MW-101	MW-102	MW-103	MW-104	SW-1	SW-2	Trip Blank
		3/27/2017	3/27/2017	3/17/2020	3/27/2017	3/17/2020	3/27/2017	3/27/2017	3/17/2020	3/17/2020	3/17/2020	3/17/2020	3/27/2017	3/27/2014	3/27/2017
MADEP-VPH (µg/L)															
Unadjusted C5-C8 Aliphatics	300	ND	ND	NA	ND	ND <100	ND	ND	ND <100	NA	ND <100	NA	ND	ND	ND
C5-C8 Aliphatic Hydrocarbons	300	ND	ND	NA	ND	ND <100	ND	ND	ND <100	NA	ND <100	NA	ND	ND	ND
Unadjusted C9-C12 Aliphatics	700	ND	ND	NA	ND	ND <100	ND	ND	150	NA	ND <100	NA	ND	ND	ND
C9-C12 Aliphatic Hydrocarbons	700	ND	ND	NA	ND	ND <100	ND	ND	ND <100	NA	ND <100	NA	ND	ND	ND
C9-C10 Aromatic Hydrocarbons	200	ND	ND	NA	ND	ND <100	ND	ND	ND <100	NA	ND <100	NA	ND	ND	ND
MADEP-EPH (µg/L)															
Unadusted C11-C22 Aromatic Hydrocarbons	200	ND	ND	NA	ND	ND <200	ND	ND	ND <200	NA	ND <200	NA	ND	ND	NA
C11-C22 Aromatic Hydrocarbons	200	ND	ND	NA	ND	ND <200	ND	ND	ND <200	NA	ND <200	NA	ND	ND	NA
C9-C18 Alphatic Hydrocarbons	700	ND	ND	NA	ND	ND <200	ND	ND	ND <200	NA	ND <200	NA	ND	ND	NA
C19-C36 Aliphatic Hydrocarbons	14,000	ND	ND	NA	ND	ND <200	ND	ND	ND <200	NA	ND <200	NA	ND	ND	NA
SVOCs (µg/L)	Varies	NA	NA	NA	NA	ND	NA	NA	ND	NA	ND	NA	NA	NA	NA
VOCs (µg/L)															
1,2,4-Trimethylbenzene	10,000	ND	ND	ND	ND	ND	ND	ND	8.1	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	100	ND	ND	ND	ND	ND	ND	ND	3.3	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	10,000	ND	ND	ND	ND	ND	ND	ND	ND	2.6	7.1	ND	ND	ND	ND
o-Xylene	6,000	ND	ND	ND	ND	ND	ND	ND	2.9	ND	ND	ND	ND	ND	ND
m&p-Xylene	4,000	ND	ND	ND	ND	ND	ND	ND	4.3	ND	ND	ND	ND	ND	ND
Total Xylene	500	ND	ND	ND	ND	ND	ND	ND	7.2	ND	ND	ND	ND	ND	ND
Naphthalene	140	ND	ND	ND	ND	ND	ND	ND	2.7	ND	ND	ND	ND	ND	ND
Vinyl Chloride	2	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	7	ND	ND	ND	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis 1,2-dichloroethane	20	2	3	1.7	14	3.7	ND	ND	6.4	5.4	30	ND	ND	ND	ND
Trichloroethene (TCE)	5	**5**	4	1.7	**62**	**20**	ND	ND	**44**	**5.8**	**34**	ND	2	ND	ND
Tetrachloroethene (PCE)	5	1	ND	ND	**18**	4.5	ND	ND	**7**	ND	**5.4**	ND	ND	ND	ND
Total MCP 14 Metals (µg/L)															
Antimony	6	**10**	ND	NA	**9**	ND < 5	**10**	**7**	ND < 5	NA	ND < 5	NA	ND	ND	NA
Arsenic	10	ND	ND	NA	ND	ND < 4	ND	ND	7	NA	ND <4	NA	ND	ND	NA
Barium	100	95	89	NA	94	**106**	ND	40	99	NA	13	NA	49	31	NA
Chromium	100	ND	ND	NA	ND	2	ND	ND	12	NA	ND <1	NA	ND	ND	NA
Lead	10	ND	ND	NA	ND	ND <2	ND	ND	9	NA	ND < 2	NA	ND	6	NA
Nickel	100	ND	ND	NA	ND	4	ND	ND	8	NA	ND <1	NA	ND	ND	NA
Vanadium	30	ND	ND	NA	ND	3	ND	ND	9	NA	ND <2	NA	ND	ND	NA
Zinc	900	20	ND	NA	30	17	ND	ND	17	NA	ND <4	NA	30	ND	NA
Dissolved MCP 14 Metals (µg/L)															
Antimony	6	ND	NA	NA	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA

NOTES:
Only compounds detected are listed
Dissolved antimony samples were collected on May 18, 2017
µg/L = micrograms per liter = parts per billion
mg/L = milligrams per liter = parts per million
ND = Not detected
NA= Not anaylzed
Bold and shaded values indicate an exceedence of the MCP RCGW-1

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Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

May 14, 2020

FOR: Attn: Matthew Gonsalves
BL Companies, Inc.
355 Research Parkway
Meriden, CT 06450

Sample Information		Custody Information		Date	Time
Matrix:	GROUND WATER	Collected by:		05/05/20	
Location Code:	BLCOMPANIES	Received by:	B	05/06/20	15:46
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF90108
Phoenix ID: CF90196

Project ID: 16D3253
Client ID: MW-1 25UM

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Arsenic	< 0.004	0.004	mg/L	1	05/07/20	TH	SW6010D
Barium	0.058	0.002	mg/L	1	05/07/20	TH	SW6010D
Beryllium	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Cadmium	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Chromium	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Mercury	< 0.0002	0.0002	mg/L	1	05/08/20	RS	SW7470A
Nickel	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Lead	< 0.002	0.002	mg/L	1	05/07/20	TH	SW6010D
Antimony	< 0.005	0.005	mg/L	1	05/07/20	TH	SW6010D
Selenium	< 0.010	0.010	mg/L	1	05/07/20	TH	SW6010D
Thallium	< 0.001	0.001	mg/L	1	05/07/20	RS	SW7010
Vanadium	< 0.002	0.002	mg/L	1	05/07/20	TH	SW6010D
Zinc	< 0.004	0.004	mg/L	1	05/07/20	TH	SW6010D
Filtration	Completed					/BF	0.45um Filter
Mercury Digestion	Completed				05/07/20	RA/RA	SW7470A
Total Metals Digestion	Completed				05/06/20	AG/BF	

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Project ID: 16D3253
Client ID: MW-1 25UM

Phoenix I.D.: CF90196

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
May 14, 2020
Reviewed and Released by: Phyllis Shiller, Laboratory Director

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Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

May 14, 2020

FOR: Attn: Matthew Gonsalves
BL Companies, Inc.
355 Research Parkway
Meriden, CT 06450

Sample Information		Custody Information		Date	Time
Matrix:	GROUND WATER	Collected by:		05/05/20	
Location Code:	BLCOMPANIES	Received by:	B	05/06/20	15:46
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF90108
Phoenix ID: CF90197

Project ID: 16D3253
Client ID: MW-2 25UM

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Arsenic	< 0.004	0.004	mg/L	1	05/07/20	TH	SW6010D
Barium	0.094	0.002	mg/L	1	05/07/20	TH	SW6010D
Beryllium	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Cadmium	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Chromium	0.009	0.001	mg/L	1	05/07/20	TH	SW6010D
Mercury	< 0.0002	0.0002	mg/L	1	05/08/20	RS	SW7470A
Nickel	0.012	0.001	mg/L	1	05/07/20	TH	SW6010D
Lead	0.005	0.002	mg/L	1	05/07/20	TH	SW6010D
Antimony	< 0.005	0.005	mg/L	1	05/07/20	TH	SW6010D
Selenium	< 0.010	0.010	mg/L	1	05/07/20	TH	SW6010D
Thallium	< 0.001	0.001	mg/L	1	05/07/20	RS	SW7010
Vanadium	0.012	0.002	mg/L	1	05/07/20	TH	SW6010D
Zinc	0.032	0.004	mg/L	1	05/07/20	TH	SW6010D
Filtration	Completed					/BF	0.45um Filter
Mercury Digestion	Completed				05/07/20	RA/RA	SW7470A
Total Metals Digestion	Completed				05/06/20	AG/BF	

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Project ID: 16D3253
Client ID: MW-2 25UM

Phoenix I.D.: CF90197

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
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Phyllis Shiller, Laboratory Director
May 14, 2020
Reviewed and Released by: Phyllis Shiller, Laboratory Director

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Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

May 14, 2020

FOR: Attn: Matthew Gonsalves
BL Companies, Inc.
355 Research Parkway
Meriden, CT 06450

Sample Information		Custody Information		Date	Time
Matrix:	GROUND WATER	Collected by:		05/05/20	
Location Code:	BLCOMPANIES	Received by:	B	05/06/20	15:46
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF90108
Phoenix ID: CF90198

Project ID: 16D3253
Client ID: MW-1 1.2UM

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Arsenic	< 0.004	0.004	mg/L	1	05/07/20	TH	SW6010D
Barium	0.054	0.002	mg/L	1	05/07/20	TH	SW6010D
Beryllium	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Cadmium	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Chromium	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Mercury	< 0.0002	0.0002	mg/L	1	05/08/20	RS	SW7470A
Nickel	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Lead	< 0.002	0.002	mg/L	1	05/07/20	TH	SW6010D
Antimony	< 0.005	0.005	mg/L	1	05/07/20	TH	SW6010D
Selenium	< 0.010	0.010	mg/L	1	05/07/20	TH	SW6010D
Thallium	< 0.001	0.001	mg/L	1	05/07/20	RS	SW7010
Vanadium	0.002	0.002	mg/L	1	05/07/20	TH	SW6010D
Zinc	< 0.004	0.004	mg/L	1	05/07/20	TH	SW6010D
Filtration	Completed					/BF	0.45um Filter
Mercury Digestion	Completed				05/07/20	RA/RA	SW7470A
Total Metals Digestion	Completed				05/06/20	AG/BF	

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Project ID: 16D3253
Client ID: MW-1 1.2UM

Phoenix I.D.: CF90198

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
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Phyllis Shiller, Laboratory Director
May 14, 2020
Reviewed and Released by: Phyllis Shiller, Laboratory Director

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Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

May 14, 2020

FOR: Attn: Matthew Gonsalves
BL Companies, Inc.
355 Research Parkway
Meriden, CT 06450

Sample Information		Custody Information		Date	Time
Matrix:	GROUND WATER	Collected by:		05/05/20	
Location Code:	BLCOMPANIES	Received by:	B	05/06/20	15:46
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF90108
Phoenix ID: CF90199

Project ID: 16D3253
Client ID: MW-2 1.2UM

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Arsenic	< 0.004	0.004	mg/L	1	05/07/20	TH	SW6010D
Barium	0.059	0.002	mg/L	1	05/07/20	TH	SW6010D
Beryllium	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Cadmium	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Chromium	< 0.001	0.001	mg/L	1	05/07/20	TH	SW6010D
Mercury	< 0.0002	0.0002	mg/L	1	05/08/20	RS	SW7470A
Nickel	0.005	0.001	mg/L	1	05/07/20	TH	SW6010D
Lead	< 0.002	0.002	mg/L	1	05/07/20	TH	SW6010D
Antimony	< 0.005	0.005	mg/L	1	05/07/20	TH	SW6010D
Selenium	< 0.010	0.010	mg/L	1	05/07/20	TH	SW6010D
Thallium	< 0.001	0.001	mg/L	1	05/07/20	RS	SW7010
Vanadium	< 0.002	0.002	mg/L	1	05/07/20	TH	SW6010D
Zinc	0.010	0.004	mg/L	1	05/07/20	TH	SW6010D
Filtration	Completed					/BF	0.45um Filter
Mercury Digestion	Completed				05/07/20	RA/RA	SW7470A
Total Metals Digestion	Completed				05/06/20	AG/BF	

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Project ID: 16D3253
Client ID: MW-2 1.2UM

Phoenix I.D.: CF90199

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
May 14, 2020
Reviewed and Released by: Phyllis Shiller, Laboratory Director

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PHOENIX
Environmental Laboratories, Inc.

Tuesday, March 24, 2020

Attn: Matthew Gonsalves
BL Companies, Inc.
355 Research Parkway
Meriden, CT 06450

Project ID: 16D3253
SDG ID: GCF51973
Sample ID#s: CF51973 - CF51979

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
UT Lab Registration #CT00007
VT Lab Registration #VT11301

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Telephone (860) 645-1102 Fax (860) 645-0823

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Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

SDG Comments

March 24, 2020

SDG I.D.: GCF51973

8260 Analysis:
1,2-Dibromoethane doesn't meet GW-1 criteria, this compound is analyzed by GC/FID to achieve this criteria.

8260 Analysis:
1,4-Dioxane doesn't meet GW-1 criteria, this compound is analyzed by 8270SIM to achieve this criteria.

Phoenix reporting levels may exceed those referenced in the CAM protocol. Please refer to criteria sheet for comparisons to requested MCP standards.

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Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Sample Id Cross Reference

March 24, 2020

SDG I.D.: GCF51973

Project ID: 16D3253

Client Id	Lab Id	Matrix
MW-1	CF51973	WATER
MW-2	CF51974	WATER
MW-101	CF51975	WATER
MW-102	CF51976	WATER
MW-103	CF51977	WATER
MW-104	CF51978	WATER
TRIP BLANK	CF51979	WATER

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Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 24, 2020

FOR: Attn: Matthew Gonsalves
BL Companies, Inc.
355 Research Parkway
Meriden, CT 06450

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		03/17/20	
Location Code:	BLCOMPANIES	Received by:	CP	03/17/20	16:16
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF51973
Phoenix ID: CF51973

Project ID: 16D3253
Client ID: MW-1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles							
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloropropene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,3-Trichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,4-Trichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dibromo-3-chloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dibromoethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichloroethane	ND	0.60	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2,2-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2-Chlorotoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2-Hexanone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
2-Isopropyltoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
4-Chlorotoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
4-Methyl-2-pentanone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C

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Project ID: 16D3253
Client ID: MW-1

Phoenix I.D.: CF51973

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Acetone	ND	25	ug/L	1	03/17/20	MH	SW8260C
Acrylonitrile	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Benzene	ND	0.70	ug/L	1	03/17/20	MH	SW8260C
Bromobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromochloromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromodichloromethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
Bromoform	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromomethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Carbon Disulfide	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Carbon tetrachloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloroform	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
cis-1,2-Dichloroethene	1.7	1.0	ug/L	1	03/17/20	MH	SW8260C
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
Dibromochloromethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
Dibromomethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Dichlorodifluoromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Hexachlorobutadiene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Methyl ethyl ketone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Methyl t-butyl ether (MTBE)	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Methylene chloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
n-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
n-Propylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
p-Isopropyltoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
sec-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Styrene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
tert-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Tetrachloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Tetrahydrofuran (THF)	ND	2.5	ug/L	1	03/17/20	MH	SW8260C
Toluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Total Xylenes	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
trans-1,2-Dichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
trans-1,4-dichloro-2-butene	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Trichloroethene	1.7	1.0	ug/L	1	03/17/20	MH	SW8260C
Trichlorofluoromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Trichlorotrifluoroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Vinyl chloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	95		%	1	03/17/20	MH	70 - 130 %
% Bromofluorobenzene	93		%	1	03/17/20	MH	70 - 130 %
% Dibromofluoromethane	84		%	1	03/17/20	MH	70 - 130 %

Ver 1

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Project ID: 16D3253
Client ID: MW-1

Phoenix I.D.: CF51973

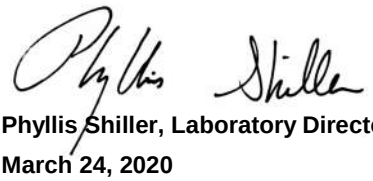
Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Toluene-d8	95		%	1	03/17/20	MH	70 - 130 %
Oxygenates & Dioxane							
1,4-Dioxane	ND	50	ug/L	1	03/17/20	MH	SW8260C (OXY)
Diethyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Di-isopropyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Ethyl tert-butyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
tert-amyl methyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

8260 Analysis:
1,4-Dioxane doesn't meet GW-1 criteria, this compound is analyzed by 8270SIM to achieve this criteria.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director
March 24, 2020
Reviewed and Released by: Rashmi Makol, Project Manager

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Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 24, 2020

FOR: Attn: Matthew Gonsalves
BL Companies, Inc.
355 Research Parkway
Meriden, CT 06450

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		03/17/20	
Location Code:	BLCOMPANIES	Received by:	CP	03/17/20	16:16
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF51973
Phoenix ID: CF51974

Project ID: 16D3253
Client ID: MW-2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.001	0.001	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Arsenic	< 0.004	0.004	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Barium	0.106	0.002	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Beryllium	< 0.001	0.001	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Cadmium	< 0.001	0.001	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Chromium	0.002	0.001	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Mercury	< 0.0002	0.0002	mg/L	1	03/18/20	RS	SW7470/E245.1
Nickel	0.004	0.001	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Lead	< 0.002	0.002	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Antimony	< 0.005	0.005	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Selenium	< 0.010	0.010	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Thallium	< 0.0005	0.0005	mg/L	5	03/19/20	CPP	SW6020B/E200.8
Vanadium	0.003	0.002	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Zinc	0.017	0.004	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Mercury Digestion	Completed				03/18/20	S/RA/LS/R	SW7470/245.1
EPH Extraction	Completed				03/18/20	SB/SB	SW3510C
MA Petroleum Hydrocarbon (EPH)	Completed				03/17/20		MADEP EPH-04
Semi-Volatile Extraction	Completed				03/17/20	P/AK	SW3520C
Total Metals Digestion	Completed				03/17/20	AG	
Total Metals Digestion MS	Completed				03/18/20	AG	
MA Petroleum Hydrocarbon (VPH)	Completed				03/18/20	RM	MADEP VPH04
Volatiles							
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C

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Project ID: 16D3253
Client ID: MW-2

Phoenix I.D.: CF51974

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,1-Dichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloropropene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,3-Trichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,4-Trichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dibromo-3-chloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dibromoethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichloroethane	ND	0.60	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2,2-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2-Chlorotoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2-Hexanone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
2-Isopropyltoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
4-Chlorotoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
4-Methyl-2-pentanone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Acetone	ND	25	ug/L	1	03/17/20	MH	SW8260C
Acrylonitrile	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Benzene	ND	0.70	ug/L	1	03/17/20	MH	SW8260C
Bromobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromochloromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromodichloromethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
Bromoform	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromomethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Carbon Disulfide	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Carbon tetrachloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloroform	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
cis-1,2-Dichloroethene	3.7	1.0	ug/L	1	03/17/20	MH	SW8260C
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
Dibromochloromethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
Dibromomethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Dichlorodifluoromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Hexachlorobutadiene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Methyl ethyl ketone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Methyl t-butyl ether (MTBE)	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Methylene chloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
n-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C

Project ID: 16D3253
Client ID: MW-2

Phoenix I.D.: CF51974

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
n-Propylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
p-Isopropyltoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
sec-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Styrene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
tert-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Tetrachloroethene	4.5	1.0	ug/L	1	03/17/20	MH	SW8260C
Tetrahydrofuran (THF)	ND	2.5	ug/L	1	03/17/20	MH	SW8260C
Toluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Total Xylenes	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
trans-1,2-Dichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
trans-1,4-dichloro-2-butene	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Trichloroethene	20	1.0	ug/L	1	03/17/20	MH	SW8260C
Trichlorofluoromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Trichlorotrifluoroethane	79	5.0	ug/L	5	03/18/20	MH	SW8260C
Vinyl chloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	97		%	1	03/17/20	MH	70 - 130 %
% Bromofluorobenzene	93		%	1	03/17/20	MH	70 - 130 %
% Dibromofluoromethane	88		%	1	03/17/20	MH	70 - 130 %
% Toluene-d8	103		%	1	03/17/20	MH	70 - 130 %
% 1,2-dichlorobenzene-d4 (5x)	95		%	5	03/18/20	MH	70 - 130 %
% Bromofluorobenzene (5x)	91		%	5	03/18/20	MH	70 - 130 %
% Dibromofluoromethane (5x)	88		%	5	03/18/20	MH	70 - 130 %
% Toluene-d8 (5x)	96		%	5	03/18/20	MH	70 - 130 %
Oxygenates & Dioxane							
1,4-Dioxane	ND	50	ug/L	1	03/17/20	MH	SW8260C (OXY)
Diethyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Di-isopropyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Ethyl tert-butyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
tert-amyl methyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Semivolatiles							
1,2,4,5-Tetrachlorobenzene	ND	3.6	ug/L	1	03/20/20	WB	SW8270D
1,2,4-Trichlorobenzene	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
1,2-Dichlorobenzene	ND	2.6	ug/L	1	03/20/20	WB	SW8270D
1,2-Diphenylhydrazine	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
1,3-Dichlorobenzene	ND	2.6	ug/L	1	03/20/20	WB	SW8270D
1,4-Dichlorobenzene	ND	2.6	ug/L	1	03/20/20	WB	SW8270D
2,4,5-Trichlorophenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
2,4,6-Trichlorophenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
2,4-Dichlorophenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
2,4-Dimethylphenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
2,4-Dinitrophenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
2,4-Dinitrotoluene	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
2,6-Dinitrotoluene	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
2-Chloronaphthalene	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
2-Chlorophenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D

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Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
2-Methylphenol (o-cresol)	ND	1.0	ug/L	1	03/20/20	WB	SW8270D	
2-Nitroaniline	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
2-Nitrophenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND	10	ug/L	1	03/20/20	WB	SW8270D	
3,3'-Dichlorobenzidine	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
3-Nitroaniline	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
4,6-Dinitro-2-methylphenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D	
4-Bromophenyl phenyl ether	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
4-Chloro-3-methylphenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D	
4-Chloroaniline	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
4-Chlorophenyl phenyl ether	ND	1.0	ug/L	1	03/20/20	WB	SW8270D	
4-Nitroaniline	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
4-Nitrophenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D	
Acetophenone	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
Aniline	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
Benzidine	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
Benzoic acid	ND	51	ug/L	1	03/20/20	WB	SW8270D	
Benzyl butyl phthalate	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
Bis(2-chloroethoxy)methane	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
Bis(2-chloroethyl)ether	ND	1.0	ug/L	1	03/20/20	WB	SW8270D	
Bis(2-chloroisopropyl)ether	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
Bis(2-ethylhexyl)phthalate	ND	1.0	ug/L	1	03/20/20	WB	SW8270D	
Carbazole	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
Dibenzofuran	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
Diethyl phthalate	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
Dimethylphthalate	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
Di-n-butylphthalate	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
Di-n-octylphthalate	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
Hexachloroethane	ND	1.0	ug/L	1	03/20/20	WB	SW8270D	
Isophorone	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
N-Nitrosodi-n-propylamine	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
N-Nitrosodiphenylamine	ND	5.1	ug/L	1	03/20/20	WB	SW8270D	
Pentachloronitrobenzene	ND	2.6	ug/L	1	03/20/20	WB	SW8270D	
Phenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D	
QA/QC Surrogates								
% 2,4,6-Tribromophenol	71		%	1	03/20/20	WB	15 - 110 %	
% 2-Fluorobiphenyl	71		%	1	03/20/20	WB	30 - 130 %	
% 2-Fluorophenol	54		%	1	03/20/20	WB	15 - 110 %	
% Nitrobenzene-d5	68		%	1	03/20/20	WB	30 - 130 %	
% Phenol-d5	11		%	1	03/20/20	WB	15 - 110 %	3
% Terphenyl-d14	47		%	1	03/20/20	WB	30 - 130 %	
Semivolatiles (SIM)								
2-Methylnaphthalene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Acenaphthene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Acenaphthylene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Anthracene	ND	0.09	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Benz(a)anthracene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Benzo(a)pyrene	ND	0.20	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Benzo(b)fluoranthene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)	

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Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Benzo(ghi)perylene	ND	0.02	ug/L	1	03/18/20	WB	SW8270D (SIM)
Benzo(k)fluoranthene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)
Chrysene	ND	0.05	ug/L	1	03/18/20	WB	SW8270D (SIM)
Dibenz(a,h)anthracene	ND	0.02	ug/L	1	03/18/20	WB	SW8270D (SIM)
Fluoranthene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Fluorene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)
Hexachlorobenzene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Hexachlorobutadiene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Hexachlorocyclopentadiene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Indeno(1,2,3-cd)pyrene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)
Naphthalene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Nitrobenzene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
N-Nitrosodimethylamine	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Pentachlorophenol	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Phenanthrene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Pyrene	ND	0.07	ug/L	1	03/18/20	WB	SW8270D (SIM)
Pyridine	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
QA/QC Surrogates							
% 2,4,6-Tribromophenol	84		%	1	03/18/20	WB	15 - 110 %
% 2-Fluorobiphenyl	76		%	1	03/18/20	WB	40 - 140 %
% 2-Fluorophenol	69		%	1	03/18/20	WB	15 - 110 %
% Nitrobenzene-d5	72		%	1	03/18/20	WB	40 - 140 %
% Phenol-d5	77		%	1	03/18/20	WB	15 - 110 %
% Terphenyl-d14	62		%	1	03/18/20	WB	40 - 140 %
MA EPH Aliphatic/Aromatic Ranges							
C11-C22 Aromatic Hydrocarbons 1,2*	ND	200	ug/L	1	03/18/20	AW	MAEPH 5/2004
C11-C22 Aromatic Hydrocarbons Unadj	ND	200	ug/L	1	03/18/20	AW	MAEPH 5/2004
C19-C36 Aliphatic Hydrocarbons 1*	ND	200	ug/L	1	03/18/20	AW	MAEPH 5/2004
C9-C18 Aliphatic Hydrocarbons 1*	ND	200	ug/L	1	03/18/20	AW	MAEPH 5/2004
Total TPH 1,2*	ND	200	ug/L	1	03/18/20	AW	MAEPH 5/2004
QA/QC Surrogates							
% 1-chlorooctadecane (aliphatic)	58		%	1	03/18/20	AW	40 - 140 %
% 2-Bromonaphthalene (Fractionation)	112		%	1	03/18/20	AW	40 - 140 %
% 2-Fluorobiphenyl (Fractionation)	109		%	1	03/18/20	AW	40 - 140 %
% o-terphenyl (aromatic)	88		%	1	03/18/20	AW	40 - 140 %
MA Volatile Petroleum Hydrocarbons (VPH)							
Unadjusted C5-C8 Aliphatics (*1)	ND	100	ug/L	1	03/18/20	RM	MA VPH 5/2004
Unadjusted C9-C12 Aliphatics (*1)	ND	100	ug/L	1	03/18/20	RM	MA VPH 5/2004
C5-C8 Aliphatic Hydrocarbons *1,2	ND	100	ug/L	1	03/18/20	RM	MA VPH 5/2004
C9-C12 Aliphatic Hydrocarbons *1,3	ND	100	ug/L	1	03/18/20	RM	MA VPH 5/2004
C9-C10 Aromatic Hydrocarbons *1	ND	100	ug/L	1	03/18/20	RM	MA VPH 5/2004
Benzene	ND	1.0	ug/L	1	03/18/20	RM	MA VPH 5/2004
Ethyl Benzene	ND	1.0	ug/L	1	03/18/20	RM	MA VPH 5/2004
MTBE	ND	1.0	ug/L	1	03/18/20	RM	MA VPH 5/2004
Naphthalene	ND	5.0	ug/L	1	03/18/20	RM	MA VPH 5/2004
Toluene	ND	1.0	ug/L	1	03/18/20	RM	MA VPH 5/2004
m,p-Xylenes	ND	2.0	ug/L	1	03/18/20	RM	MA VPH 5/2004
o-Xylene	ND	1.0	ug/L	1	03/18/20	RM	MA VPH 5/2004

Ver 1

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Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates							
% 2,5-Dibromotoluene (FID)	95		%	1	03/18/20	RM	70 - 130 %
% 2,5-Dibromotoluene (PID)	92		%	1	03/18/20	RM	70 - 130 %

3 = This parameter exceeds laboratory specified limits.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

MAEPH:
1* Hydrocarbon range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.
2* C11-C12 Aromatic Hydrocarbons exclude the concentration of Target PAH analytes eluting in that range.

VPH:
*1 Range data exclude conc.s of any surrogate(s) and/or Int. std.s eluting in that range.
*2 C5-C8 and C9-C12 Aliphatic exclude the conc. of Target Analytes in that range.
*3 C9-C12 Aliphatic also exclude C9-C10 Aromatic Hydrocarbon

8260 Analysis:
1,4-Dioxane doesn't meet GW-1 criteria, this compound is analyzed by 8270SIM to achieve this criteria.

Semi-Volatile Comment:
Poor surrogate recovery was observed for one acid and/or one base surrogate. The other surrogates associated with this sample were within QA/QC criteria. No significant bias suspected.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
March 24, 2020
Reviewed and Released by: Rashmi Makol, Project Manager

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Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 24, 2020

FOR: Attn: Matthew Gonsalves
BL Companies, Inc.
355 Research Parkway
Meriden, CT 06450

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		03/17/20	
Location Code:	BLCOMPANIES	Received by:	CP	03/17/20	16:16
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF51973
Phoenix ID: CF51975

Project ID: 16D3253
Client ID: MW-101

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.001	0.001	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Arsenic	0.007	0.004	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Barium	0.099	0.002	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Beryllium	< 0.001	0.001	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Cadmium	< 0.001	0.001	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Chromium	0.012	0.001	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Mercury	< 0.0002	0.0002	mg/L	1	03/18/20	RS	SW7470/E245.1
Nickel	0.008	0.001	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Lead	0.009	0.002	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Antimony	< 0.005	0.005	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Selenium	< 0.010	0.010	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Thallium	< 0.0005	0.0005	mg/L	5	03/19/20	CPP	SW6020B/E200.8
Vanadium	0.009	0.002	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Zinc	0.017	0.004	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Mercury Digestion	Completed				03/18/20	S/RA/LS/R	SW7470/245.1
EPH Extraction	Completed				03/18/20	SB/SB	SW3510C
MA Petroleum Hydrocarbon (EPH)	Completed				03/17/20		MADEP EPH-04
Semi-Volatile Extraction	Completed				03/17/20	P/AK	SW3520C
Total Metals Digestion	Completed				03/17/20	AG	
Total Metals Digestion MS	Completed				03/18/20	AG	
MA Petroleum Hydrocarbon (VPH)	Completed				03/18/20	RM	MADEP VPH04
Volatiles							
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C

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Client ID: MW-101

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Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,1-Dichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloropropene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,3-Trichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,4-Trichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,4-Trimethylbenzene	8.1	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dibromo-3-chloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dibromoethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichloroethane	ND	0.60	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3,5-Trimethylbenzene	3.3	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2,2-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2-Chlorotoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2-Hexanone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
2-Isopropyltoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
4-Chlorotoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
4-Methyl-2-pentanone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Acetone	ND	25	ug/L	1	03/17/20	MH	SW8260C
Acrylonitrile	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Benzene	ND	0.70	ug/L	1	03/17/20	MH	SW8260C
Bromobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromochloromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromodichloromethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
Bromoform	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromomethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Carbon Disulfide	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Carbon tetrachloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloroform	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
cis-1,2-Dichloroethene	6.4	1.0	ug/L	1	03/17/20	MH	SW8260C
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
Dibromochloromethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
Dibromomethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Dichlorodifluoromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Hexachlorobutadiene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
m&p-Xylene	4.3	1.0	ug/L	1	03/17/20	MH	SW8260C
Methyl ethyl ketone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Methyl t-butyl ether (MTBE)	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Methylene chloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Naphthalene	2.7	1.0	ug/L	1	03/17/20	MH	SW8260C
n-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C

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Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
n-Propylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
o-Xylene	2.9	1.0	ug/L	1	03/17/20	MH	SW8260C
p-Isopropyltoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
sec-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Styrene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
tert-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Tetrachloroethene	7.0	1.0	ug/L	1	03/17/20	MH	SW8260C
Tetrahydrofuran (THF)	ND	2.5	ug/L	1	03/17/20	MH	SW8260C
Toluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Total Xylenes	7.2	1.0	ug/L	1	03/17/20	MH	SW8260C
trans-1,2-Dichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
trans-1,4-dichloro-2-butene	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Trichloroethene	44	5.0	ug/L	5	03/18/20	MH	SW8260C
Trichlorofluoromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Trichlorotrifluoroethane	170	20	ug/L	20	03/19/20	MH	SW8260C
Vinyl chloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	96		%	1	03/17/20	MH	70 - 130 %
% Bromofluorobenzene	94		%	1	03/17/20	MH	70 - 130 %
% Dibromofluoromethane	85		%	1	03/17/20	MH	70 - 130 %
% Toluene-d8	107		%	1	03/17/20	MH	70 - 130 %
% 1,2-dichlorobenzene-d4 (5x)	96		%	5	03/18/20	MH	70 - 130 %
% Bromofluorobenzene (5x)	93		%	5	03/18/20	MH	70 - 130 %
% Dibromofluoromethane (5x)	89		%	5	03/18/20	MH	70 - 130 %
% Toluene-d8 (5x)	98		%	5	03/18/20	MH	70 - 130 %
% 1,2-dichlorobenzene-d4 (20x)	101		%	20	03/19/20	MH	70 - 130 %
% Bromofluorobenzene (20x)	93		%	20	03/19/20	MH	70 - 130 %
% Dibromofluoromethane (20x)	101		%	20	03/19/20	MH	70 - 130 %
% Toluene-d8 (20x)	99		%	20	03/19/20	MH	70 - 130 %
Oxygenates & Dioxane							
1,4-Dioxane	ND	50	ug/L	1	03/17/20	MH	SW8260C (OXY)
Diethyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Di-isopropyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Ethyl tert-butyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
tert-amyl methyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Semivolatiles							
1,2,4,5-Tetrachlorobenzene	ND	3.6	ug/L	1	03/20/20	WB	SW8270D
1,2,4-Trichlorobenzene	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
1,2-Dichlorobenzene	ND	2.6	ug/L	1	03/20/20	WB	SW8270D
1,2-Diphenylhydrazine	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
1,3-Dichlorobenzene	ND	2.6	ug/L	1	03/20/20	WB	SW8270D
1,4-Dichlorobenzene	ND	2.6	ug/L	1	03/20/20	WB	SW8270D
2,4,5-Trichlorophenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
2,4,6-Trichlorophenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
2,4-Dichlorophenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
2,4-Dimethylphenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
2,4-Dinitrophenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D

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Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
2,4-Dinitrotoluene	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
2,6-Dinitrotoluene	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
2-Chloronaphthalene	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
2-Chlorophenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
2-Methylphenol (o-cresol)	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
2-Nitroaniline	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
2-Nitrophenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
3&4-Methylphenol (m&p-cresol)	ND	10	ug/L	1	03/20/20	WB	SW8270D
3,3'-Dichlorobenzidine	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
3-Nitroaniline	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
4,6-Dinitro-2-methylphenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
4-Bromophenyl phenyl ether	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
4-Chloro-3-methylphenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
4-Chloroaniline	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
4-Chlorophenyl phenyl ether	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
4-Nitroaniline	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
4-Nitrophenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
Acetophenone	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
Aniline	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
Benzidine	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
Benzoic acid	ND	51	ug/L	1	03/20/20	WB	SW8270D
Benzyl butyl phthalate	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
Bis(2-chloroethoxy)methane	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
Bis(2-chloroethyl)ether	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
Bis(2-chloroisopropyl)ether	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
Bis(2-ethylhexyl)phthalate	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
Carbazole	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
Dibenzofuran	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
Diethyl phthalate	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
Dimethylphthalate	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
Di-n-butylphthalate	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
Di-n-octylphthalate	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
Hexachloroethane	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
Isophorone	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
N-Nitrosodi-n-propylamine	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
N-Nitrosodiphenylamine	ND	5.1	ug/L	1	03/20/20	WB	SW8270D
Pentachloronitrobenzene	ND	2.6	ug/L	1	03/20/20	WB	SW8270D
Phenol	ND	1.0	ug/L	1	03/20/20	WB	SW8270D
QA/QC Surrogates							
% 2,4,6-Tribromophenol	68		%	1	03/20/20	WB	15 - 110 %
% 2-Fluorobiphenyl	69		%	1	03/20/20	WB	30 - 130 %
% 2-Fluorophenol	49		%	1	03/20/20	WB	15 - 110 %
% Nitrobenzene-d5	73		%	1	03/20/20	WB	30 - 130 %
% Phenol-d5	40		%	1	03/20/20	WB	15 - 110 %
% Terphenyl-d14	42		%	1	03/20/20	WB	30 - 130 %
Semivolatiles (SIM)							
2-Methylnaphthalene	1.2	0.52	ug/L	1	03/18/20	WB	SW8270D (SIM)
Acenaphthene	ND	0.52	ug/L	1	03/18/20	WB	SW8270D (SIM)
Acenaphthylene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)

Ver 1

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Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
Anthracene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Benz(a)anthracene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Benzo(a)pyrene	ND	0.21	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Benzo(b)fluoranthene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Benzo(ghi)perylene	ND	0.02	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Benzo(k)fluoranthene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Chrysene	ND	0.05	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Dibenz(a,h)anthracene	ND	0.02	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Fluoranthene	ND	0.52	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Fluorene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Hexachlorobenzene	ND	0.52	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Hexachlorobutadiene	ND	0.52	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Hexachlorocyclopentadiene	ND	0.52	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Indeno(1,2,3-cd)pyrene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Naphthalene	1.6	0.52	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Nitrobenzene	ND	0.52	ug/L	1	03/18/20	WB	SW8270D (SIM)	
N-Nitrosodimethylamine	ND	0.52	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Pentachlorophenol	ND	0.52	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Phenanthrene	ND	0.52	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Pyrene	0.12	0.07	ug/L	1	03/18/20	WB	SW8270D (SIM)	
Pyridine	ND	0.52	ug/L	1	03/18/20	WB	SW8270D (SIM)	
QA/QC Surrogates								
% 2,4,6-Tribromophenol	85		%	1	03/18/20	WB	15 - 110 %	
% 2-Fluorobiphenyl	64		%	1	03/18/20	WB	40 - 140 %	
% 2-Fluorophenol	45		%	1	03/18/20	WB	15 - 110 %	
% Nitrobenzene-d5	67		%	1	03/18/20	WB	40 - 140 %	
% Phenol-d5	57		%	1	03/18/20	WB	15 - 110 %	
% Terphenyl-d14	20		%	1	03/18/20	WB	40 - 140 %	3

MA EPH Aliphatic/Aromatic Ranges

C11-C22 Aromatic Hydrocarbons 1,2*	ND	200	ug/L	1	03/20/20	AW	MAEPH 5/2004	
C11-C22 Aromatic Hydrocarbons Unadj	ND	200	ug/L	1	03/20/20	AW	MAEPH 5/2004	
C19-C36 Aliphatic Hydrocarbons 1*	ND	200	ug/L	1	03/20/20	AW	MAEPH 5/2004	
C9-C18 Aliphatic Hydrocarbons 1*	ND	200	ug/L	1	03/20/20	AW	MAEPH 5/2004	
Total TPH 1,2*	ND	200	ug/L	1	03/20/20	AW	MAEPH 5/2004	
QA/QC Surrogates								
% 1-chlorooctadecane (aliphatic)	62		%	1	03/20/20	AW	40 - 140 %	
% 2-Bromonaphthalene (Fractionation)	106		%	1	03/20/20	AW	40 - 140 %	
% 2-Fluorobiphenyl (Fractionation)	87		%	1	03/20/20	AW	40 - 140 %	
% o-terphenyl (aromatic)	66		%	1	03/20/20	AW	40 - 140 %	

MA Volatile Petroleum Hydrocarbons (VPH)

Unadjusted C5-C8 Aliphatics (*1)	ND	100	ug/L	1	03/18/20	RM	MA VPH 5/2004	
Unadjusted C9-C12 Aliphatics (*1)	150	100	ug/L	1	03/18/20	RM	MA VPH 5/2004	
C5-C8 Aliphatic Hydrocarbons *1,2	ND	100	ug/L	1	03/18/20	RM	MA VPH 5/2004	
C9-C12 Aliphatic Hydrocarbons *1,3	ND	100	ug/L	1	03/18/20	RM	MA VPH 5/2004	
C9-C10 Aromatic Hydrocarbons *1	ND	100	ug/L	1	03/18/20	RM	MA VPH 5/2004	
Benzene	ND	1.0	ug/L	1	03/18/20	RM	MA VPH 5/2004	
Ethyl Benzene	ND	1.0	ug/L	1	03/18/20	RM	MA VPH 5/2004	
MTBE	ND	1.0	ug/L	1	03/18/20	RM	MA VPH 5/2004	

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Project ID: 16D3253
Client ID: MW-101

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Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Naphthalene	ND	5.0	ug/L	1	03/18/20	RM	MA VPH 5/2004
Toluene	ND	1.0	ug/L	1	03/18/20	RM	MA VPH 5/2004
m,p-Xylenes	4.1	2.0	ug/L	1	03/18/20	RM	MA VPH 5/2004
o-Xylene	3.1	1.0	ug/L	1	03/18/20	RM	MA VPH 5/2004
QA/QC Surrogates							
% 2,5-Dibromotoluene (FID)	99		%	1	03/18/20	RM	70 - 130 %
% 2,5-Dibromotoluene (PID)	93		%	1	03/18/20	RM	70 - 130 %

3 = This parameter exceeds laboratory specified limits.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

MAEPH:
1* Hydrocarbon range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.
2* C11-C12 Aromatic Hydrocarbons exclude the concentration of Target PAH analytes eluting in that range.

VPH:
*1 Range data exclude conc.s of any surrogate(s) and/or Int. std.s eluting in that range.
*2 C5-C8 and C9-C12 Aliphatic exclude the conc. of Target Analytes in that range.
*3 C9-C12 Aliphatic also exclude C9-C10 Aromatic Hydrocarbon

8260 Analysis:
1,4-Dioxane doesn't meet GW-1 criteria, this compound is analyzed by 8270SIM to achieve this criteria.

Semi-Volatile Comment:
Poor surrogate recovery was observed for one acid and/or one base surrogate. The other surrogates associated with this sample were within QA/QC criteria. No significant bias suspected.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
March 24, 2020
Reviewed and Released by: Rashmi Makol, Project Manager

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Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 24, 2020

FOR: Attn: Matthew Gonsalves
BL Companies, Inc.
355 Research Parkway
Meriden, CT 06450

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		03/17/20	
Location Code:	BLCOMPANIES	Received by:	CP	03/17/20	16:16
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF51973
Phoenix ID: CF51976

Project ID: 16D3253
Client ID: MW-102

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles							
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloropropene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,3-Trichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,4-Trichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dibromo-3-chloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dibromoethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichloroethane	ND	0.60	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2,2-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2-Chlorotoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2-Hexanone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
2-Isopropyltoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
4-Chlorotoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
4-Methyl-2-pentanone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C

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Project ID: 16D3253
Client ID: MW-102

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Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Acetone	ND	25	ug/L	1	03/17/20	MH	SW8260C
Acrylonitrile	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Benzene	ND	0.70	ug/L	1	03/17/20	MH	SW8260C
Bromobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromochloromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromodichloromethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
Bromoform	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromomethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Carbon Disulfide	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Carbon tetrachloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloroform	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
cis-1,2-Dichloroethene	5.4	1.0	ug/L	1	03/17/20	MH	SW8260C
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
Dibromochloromethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
Dibromomethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Dichlorodifluoromethane	2.6	1.0	ug/L	1	03/17/20	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Hexachlorobutadiene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Methyl ethyl ketone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Methyl t-butyl ether (MTBE)	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Methylene chloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
n-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
n-Propylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
p-Isopropyltoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
sec-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Styrene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
tert-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Tetrachloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Tetrahydrofuran (THF)	ND	2.5	ug/L	1	03/17/20	MH	SW8260C
Toluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Total Xylenes	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
trans-1,2-Dichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
trans-1,4-dichloro-2-butene	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Trichloroethene	5.8	1.0	ug/L	1	03/17/20	MH	SW8260C
Trichlorofluoromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Trichlorotrifluoroethane	2.4	1.0	ug/L	1	03/17/20	MH	SW8260C
Vinyl chloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	96		%	1	03/17/20	MH	70 - 130 %
% Bromofluorobenzene	93		%	1	03/17/20	MH	70 - 130 %
% Dibromofluoromethane	86		%	1	03/17/20	MH	70 - 130 %

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Project ID: 16D3253
Client ID: MW-102

Phoenix I.D.: CF51976

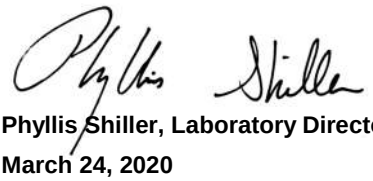
Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Toluene-d8	98		%	1	03/17/20	MH	70 - 130 %
Oxygenates & Dioxane							
1,4-Dioxane	ND	50	ug/L	1	03/17/20	MH	SW8260C (OXY)
Diethyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Di-isopropyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Ethyl tert-butyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
tert-amyl methyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

8260 Analysis:
1,4-Dioxane doesn't meet GW-1 criteria, this compound is analyzed by 8270SIM to achieve this criteria.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director
March 24, 2020
Reviewed and Released by: Rashmi Makol, Project Manager

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Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 24, 2020

FOR: Attn: Matthew Gonsalves
BL Companies, Inc.
355 Research Parkway
Meriden, CT 06450

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		03/17/20	
Location Code:	BLCOMPANIES	Received by:	CP	03/17/20	16:16
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF51973
Phoenix ID: CF51977

Project ID: 16D3253
Client ID: MW-103

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.001	0.001	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Arsenic	< 0.004	0.004	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Barium	0.130	0.002	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Beryllium	< 0.001	0.001	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Cadmium	< 0.001	0.001	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Chromium	< 0.001	0.001	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Mercury	< 0.0002	0.0002	mg/L	1	03/18/20	RS	SW7470/E245.1
Nickel	< 0.001	0.001	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Lead	< 0.002	0.002	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Antimony	< 0.005	0.005	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Selenium	< 0.010	0.010	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Thallium	< 0.0005	0.0005	mg/L	5	03/19/20	CPP	SW6020B/E200.8
Vanadium	< 0.002	0.002	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Zinc	< 0.004	0.004	mg/L	1	03/18/20	CPP	SW6010D/E200.7
Mercury Digestion	Completed				03/18/20	S/RA/LS/R	SW7470/245.1
EPH Extraction	Completed				03/18/20	SB/SB	SW3510C
MA Petroleum Hydrocarbon (EPH)	Completed				03/17/20		MADEP EPH-04
Semi-Volatile Extraction	Completed				03/17/20	P/AK	SW3520C
Total Metals Digestion	Completed				03/17/20	AG	
Total Metals Digestion MS	Completed				03/18/20	AG	
MA Petroleum Hydrocarbon (VPH)	Completed				03/18/20	RM	MADEP VPH04
Volatiles							
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C

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Project ID: 16D3253
Client ID: MW-103

Phoenix I.D.: CF51977

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,1-Dichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloropropene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,3-Trichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,4-Trichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dibromo-3-chloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dibromoethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichloroethane	ND	0.60	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2,2-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2-Chlorotoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2-Hexanone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
2-Isopropyltoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
4-Chlorotoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
4-Methyl-2-pentanone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Acetone	ND	25	ug/L	1	03/17/20	MH	SW8260C
Acrylonitrile	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Benzene	ND	0.70	ug/L	1	03/17/20	MH	SW8260C
Bromobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromochloromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromodichloromethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
Bromoform	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromomethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Carbon Disulfide	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Carbon tetrachloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloroform	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
cis-1,2-Dichloroethene	30	1.0	ug/L	1	03/17/20	MH	SW8260C
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
Dibromochloromethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
Dibromomethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Dichlorodifluoromethane	7.1	1.0	ug/L	1	03/17/20	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Hexachlorobutadiene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Methyl ethyl ketone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Methyl t-butyl ether (MTBE)	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Methylene chloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
n-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C

Project ID: 16D3253
Client ID: MW-103

Phoenix I.D.: CF51977

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
n-Propylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
p-Isopropyltoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
sec-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Styrene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
tert-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Tetrachloroethene	5.4	1.0	ug/L	1	03/17/20	MH	SW8260C
Tetrahydrofuran (THF)	ND	2.5	ug/L	1	03/17/20	MH	SW8260C
Toluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Total Xylenes	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
trans-1,2-Dichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
trans-1,4-dichloro-2-butene	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Trichloroethene	34	5.0	ug/L	5	03/18/20	MH	SW8260C
Trichlorofluoromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Trichlorotrifluoroethane	84	5.0	ug/L	5	03/18/20	MH	SW8260C
Vinyl chloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	97		%	1	03/17/20	MH	70 - 130 %
% Bromofluorobenzene	94		%	1	03/17/20	MH	70 - 130 %
% Dibromofluoromethane	85		%	1	03/17/20	MH	70 - 130 %
% Toluene-d8	107		%	1	03/17/20	MH	70 - 130 %
% 1,2-dichlorobenzene-d4 (5x)	99		%	5	03/18/20	MH	70 - 130 %
% Bromofluorobenzene (5x)	93		%	5	03/18/20	MH	70 - 130 %
% Dibromofluoromethane (5x)	100		%	5	03/18/20	MH	70 - 130 %
% Toluene-d8 (5x)	97		%	5	03/18/20	MH	70 - 130 %
Oxygenates & Dioxane							
1,4-Dioxane	ND	50	ug/L	1	03/17/20	MH	SW8260C (OXY)
Diethyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Di-isopropyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Ethyl tert-butyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
tert-amyl methyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Semivolatiles							
1,2,4,5-Tetrachlorobenzene	ND	3.9	ug/L	1	03/20/20	WB	SW8270D
1,2,4-Trichlorobenzene	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
1,2-Dichlorobenzene	ND	2.8	ug/L	1	03/20/20	WB	SW8270D
1,2-Diphenylhydrazine	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
1,3-Dichlorobenzene	ND	2.8	ug/L	1	03/20/20	WB	SW8270D
1,4-Dichlorobenzene	ND	2.8	ug/L	1	03/20/20	WB	SW8270D
2,4,5-Trichlorophenol	ND	1.1	ug/L	1	03/20/20	WB	SW8270D
2,4,6-Trichlorophenol	ND	1.1	ug/L	1	03/20/20	WB	SW8270D
2,4-Dichlorophenol	ND	1.1	ug/L	1	03/20/20	WB	SW8270D
2,4-Dimethylphenol	ND	1.1	ug/L	1	03/20/20	WB	SW8270D
2,4-Dinitrophenol	ND	1.1	ug/L	1	03/20/20	WB	SW8270D
2,4-Dinitrotoluene	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
2,6-Dinitrotoluene	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
2-Chloronaphthalene	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
2-Chlorophenol	ND	1.1	ug/L	1	03/20/20	WB	SW8270D

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Project ID: 16D3253
Client ID: MW-103

Phoenix I.D.: CF51977

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
2-Methylphenol (o-cresol)	ND	1.1	ug/L	1	03/20/20	WB	SW8270D
2-Nitroaniline	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
2-Nitrophenol	ND	1.1	ug/L	1	03/20/20	WB	SW8270D
3&4-Methylphenol (m&p-cresol)	ND	11	ug/L	1	03/20/20	WB	SW8270D
3,3'-Dichlorobenzidine	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
3-Nitroaniline	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
4,6-Dinitro-2-methylphenol	ND	1.1	ug/L	1	03/20/20	WB	SW8270D
4-Bromophenyl phenyl ether	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
4-Chloro-3-methylphenol	ND	1.1	ug/L	1	03/20/20	WB	SW8270D
4-Chloroaniline	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
4-Chlorophenyl phenyl ether	ND	1.1	ug/L	1	03/20/20	WB	SW8270D
4-Nitroaniline	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
4-Nitrophenol	ND	1.1	ug/L	1	03/20/20	WB	SW8270D
Acetophenone	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
Aniline	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
Benzidine	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
Benzoic acid	ND	55	ug/L	1	03/20/20	WB	SW8270D
Benzyl butyl phthalate	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
Bis(2-chloroethoxy)methane	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
Bis(2-chloroethyl)ether	ND	1.1	ug/L	1	03/20/20	WB	SW8270D
Bis(2-chloroisopropyl)ether	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
Bis(2-ethylhexyl)phthalate	ND	1.1	ug/L	1	03/20/20	WB	SW8270D
Carbazole	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
Dibenzofuran	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
Diethyl phthalate	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
Dimethylphthalate	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
Di-n-butylphthalate	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
Di-n-octylphthalate	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
Hexachloroethane	ND	1.1	ug/L	1	03/20/20	WB	SW8270D
Isophorone	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
N-Nitrosodi-n-propylamine	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
N-Nitrosodiphenylamine	ND	5.5	ug/L	1	03/20/20	WB	SW8270D
Pentachloronitrobenzene	ND	2.8	ug/L	1	03/20/20	WB	SW8270D
Phenol	ND	1.1	ug/L	1	03/20/20	WB	SW8270D
QA/QC Surrogates							
% 2,4,6-Tribromophenol	85		%	1	03/20/20	WB	15 - 110 %
% 2-Fluorobiphenyl	76		%	1	03/20/20	WB	30 - 130 %
% 2-Fluorophenol	51		%	1	03/20/20	WB	15 - 110 %
% Nitrobenzene-d5	72		%	1	03/20/20	WB	30 - 130 %
% Phenol-d5	33		%	1	03/20/20	WB	15 - 110 %
% Terphenyl-d14	81		%	1	03/20/20	WB	30 - 130 %
Semivolatiles (SIM)							
2-Methylnaphthalene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Acenaphthene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Acenaphthylene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)
Anthracene	ND	0.09	ug/L	1	03/18/20	WB	SW8270D (SIM)
Benz(a)anthracene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)
Benzo(a)pyrene	ND	0.19	ug/L	1	03/18/20	WB	SW8270D (SIM)
Benzo(b)fluoranthene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)

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Project ID: 16D3253
Client ID: MW-103

Phoenix I.D.: CF51977

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Benzo(ghi)perylene	ND	0.02	ug/L	1	03/18/20	WB	SW8270D (SIM)
Benzo(k)fluoranthene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)
Chrysene	ND	0.05	ug/L	1	03/18/20	WB	SW8270D (SIM)
Dibenz(a,h)anthracene	ND	0.02	ug/L	1	03/18/20	WB	SW8270D (SIM)
Fluoranthene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Fluorene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)
Hexachlorobenzene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Hexachlorobutadiene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Hexachlorocyclopentadiene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Indeno(1,2,3-cd)pyrene	ND	0.10	ug/L	1	03/18/20	WB	SW8270D (SIM)
Naphthalene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Nitrobenzene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
N-Nitrosodimethylamine	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Pentachlorophenol	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Phenanthrene	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
Pyrene	ND	0.07	ug/L	1	03/18/20	WB	SW8270D (SIM)
Pyridine	ND	0.49	ug/L	1	03/18/20	WB	SW8270D (SIM)
QA/QC Surrogates							
% 2,4,6-Tribromophenol	85		%	1	03/18/20	WB	15 - 110 %
% 2-Fluorobiphenyl	73		%	1	03/18/20	WB	40 - 140 %
% 2-Fluorophenol	59		%	1	03/18/20	WB	15 - 110 %
% Nitrobenzene-d5	66		%	1	03/18/20	WB	40 - 140 %
% Phenol-d5	70		%	1	03/18/20	WB	15 - 110 %
% Terphenyl-d14	67		%	1	03/18/20	WB	40 - 140 %
MA EPH Aliphatic/Aromatic Ranges							
C11-C22 Aromatic Hydrocarbons 1,2*	ND	200	ug/L	1	03/18/20	AW	MAEPH 5/2004
C11-C22 Aromatic Hydrocarbons Unadj	ND	200	ug/L	1	03/18/20	AW	MAEPH 5/2004
C19-C36 Aliphatic Hydrocarbons 1*	ND	200	ug/L	1	03/18/20	AW	MAEPH 5/2004
C9-C18 Aliphatic Hydrocarbons 1*	ND	200	ug/L	1	03/18/20	AW	MAEPH 5/2004
Total TPH 1,2*	ND	200	ug/L	1	03/18/20	AW	MAEPH 5/2004
QA/QC Surrogates							
% 1-chlorooctadecane (aliphatic)	64		%	1	03/18/20	AW	40 - 140 %
% 2-Bromonaphthalene (Fractionation)	111		%	1	03/18/20	AW	40 - 140 %
% 2-Fluorobiphenyl (Fractionation)	108		%	1	03/18/20	AW	40 - 140 %
% o-terphenyl (aromatic)	86		%	1	03/18/20	AW	40 - 140 %
MA Volatile Petroleum Hydrocarbons (VPH)							
Unadjusted C5-C8 Aliphatics (*1)	ND	100	ug/L	1	03/18/20	RM	MA VPH 5/2004
Unadjusted C9-C12 Aliphatics (*1)	ND	100	ug/L	1	03/18/20	RM	MA VPH 5/2004
C5-C8 Aliphatic Hydrocarbons *1,2	ND	100	ug/L	1	03/18/20	RM	MA VPH 5/2004
C9-C12 Aliphatic Hydrocarbons *1,3	ND	100	ug/L	1	03/18/20	RM	MA VPH 5/2004
C9-C10 Aromatic Hydrocarbons *1	ND	100	ug/L	1	03/18/20	RM	MA VPH 5/2004
Benzene	ND	1.0	ug/L	1	03/18/20	RM	MA VPH 5/2004
Ethyl Benzene	ND	1.0	ug/L	1	03/18/20	RM	MA VPH 5/2004
MTBE	ND	1.0	ug/L	1	03/18/20	RM	MA VPH 5/2004
Naphthalene	ND	5.0	ug/L	1	03/18/20	RM	MA VPH 5/2004
Toluene	ND	1.0	ug/L	1	03/18/20	RM	MA VPH 5/2004
m,p-Xylenes	ND	2.0	ug/L	1	03/18/20	RM	MA VPH 5/2004
o-Xylene	ND	1.0	ug/L	1	03/18/20	RM	MA VPH 5/2004

Ver 1

DocuSign Envelope ID: A312F187-F125-4CD0-AEEF-F90690E0C0FE

Project ID: 16D3253
Client ID: MW-103

Phoenix I.D.: CF51977

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates							
% 2,5-Dibromotoluene (FID)	90		%	1	03/18/20	RM	70 - 130 %
% 2,5-Dibromotoluene (PID)	88		%	1	03/18/20	RM	70 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

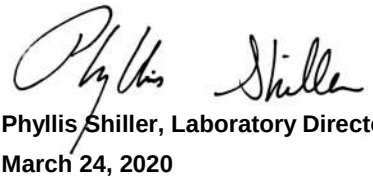
Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

MAEPH:
1* Hydrocarbon range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.
2* C11-C12 Aromatic Hydrocarbons exclude the concentration of Target PAH analytes eluting in that range.

VPH:
*1 Range data exclude conc.s of any surrogate(s) and/or Int. std.s eluting in that range.
*2 C5-C8 and C9-C12 Aliphatic exclude the conc. of Target Analytes in that range.
*3 C9-C12 Aliphatic also exclude C9-C10 Aromatic Hydrocarbon

8260 Analysis:
1,4-Dioxane doesn't meet GW-1 criteria, this compound is analyzed by 8270SIM to achieve this criteria.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director
March 24, 2020
Reviewed and Released by: Rashmi Makol, Project Manager

DocuSign Envelope ID: A312F187-F125-4CD0-AEEF-F90690E0C0FE

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 24, 2020

FOR: Attn: Matthew Gonsalves
BL Companies, Inc.
355 Research Parkway
Meriden, CT 06450

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		03/17/20	
Location Code:	BLCOMPANIES	Received by:	CP	03/17/20	16:16
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF51973
Phoenix ID: CF51978

Project ID: 16D3253
Client ID: MW-104

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles							
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloropropene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,3-Trichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,4-Trichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dibromo-3-chloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dibromoethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichloroethane	ND	0.60	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2,2-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2-Chlorotoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2-Hexanone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
2-Isopropyltoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
4-Chlorotoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
4-Methyl-2-pentanone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C

DocuSign Envelope ID: A312F187-F125-4CD0-AEEF-F90690E0C0FE

Project ID: 16D3253
Client ID: MW-104

Phoenix I.D.: CF51978

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Acetone	ND	25	ug/L	1	03/17/20	MH	SW8260C
Acrylonitrile	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Benzene	ND	0.70	ug/L	1	03/17/20	MH	SW8260C
Bromobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromochloromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromodichloromethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
Bromoform	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromomethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Carbon Disulfide	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Carbon tetrachloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloroform	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
cis-1,2-Dichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
Dibromochloromethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
Dibromomethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Dichlorodifluoromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Hexachlorobutadiene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Methyl ethyl ketone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Methyl t-butyl ether (MTBE)	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Methylene chloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
n-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
n-Propylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
p-Isopropyltoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
sec-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Styrene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
tert-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Tetrachloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Tetrahydrofuran (THF)	ND	2.5	ug/L	1	03/17/20	MH	SW8260C
Toluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Total Xylenes	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
trans-1,2-Dichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
trans-1,4-dichloro-2-butene	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Trichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Trichlorofluoromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Trichlorotrifluoroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Vinyl chloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	95		%	1	03/17/20	MH	70 - 130 %
% Bromofluorobenzene	92		%	1	03/17/20	MH	70 - 130 %
% Dibromofluoromethane	87		%	1	03/17/20	MH	70 - 130 %

Ver 1

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Project ID: 16D3253
Client ID: MW-104

Phoenix I.D.: CF51978

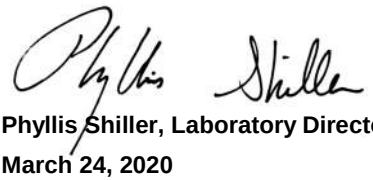
Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Toluene-d8	93		%	1	03/17/20	MH	70 - 130 %
Oxygenates & Dioxane							
1,4-Dioxane	ND	50	ug/L	1	03/17/20	MH	SW8260C (OXY)
Diethyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Di-isopropyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Ethyl tert-butyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
tert-amyl methyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

8260 Analysis:
1,4-Dioxane doesn't meet GW-1 criteria, this compound is analyzed by 8270SIM to achieve this criteria.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director
March 24, 2020
Reviewed and Released by: Rashmi Makol, Project Manager

DocuSign Envelope ID: A312F187-F125-4CD0-AEEF-F90690E0C0FE

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 24, 2020

FOR: Attn: Matthew Gonsalves
BL Companies, Inc.
355 Research Parkway
Meriden, CT 06450

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		03/17/20	
Location Code:	BLCOMPANIES	Received by:	CP	03/17/20	16:16
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF51973
Phoenix ID: CF51979

Project ID: 16D3253
Client ID: TRIP BLANK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles							
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,1-Dichloropropene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,3-Trichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,4-Trichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dibromo-3-chloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dibromoethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichloroethane	ND	0.60	ug/L	1	03/17/20	MH	SW8260C
1,2-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,3-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2,2-Dichloropropane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2-Chlorotoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
2-Hexanone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
2-Isopropyltoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
4-Chlorotoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
4-Methyl-2-pentanone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C

DocuSign Envelope ID: A312F187-F125-4CD0-AEEF-F90690E0C0FE

Project ID: 16D3253
Client ID: TRIP BLANK

Phoenix I.D.: CF51979

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Acetone	ND	25	ug/L	1	03/17/20	MH	SW8260C
Acrylonitrile	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Benzene	ND	0.70	ug/L	1	03/17/20	MH	SW8260C
Bromobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromochloromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromodichloromethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
Bromoform	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Bromomethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Carbon Disulfide	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Carbon tetrachloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chlorobenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloroform	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Chloromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
cis-1,2-Dichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
Dibromochloromethane	ND	0.50	ug/L	1	03/17/20	MH	SW8260C
Dibromomethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Dichlorodifluoromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Hexachlorobutadiene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Methyl ethyl ketone	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Methyl t-butyl ether (MTBE)	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Methylene chloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
n-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
n-Propylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
p-Isopropyltoluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
sec-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Styrene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
tert-Butylbenzene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Tetrachloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Tetrahydrofuran (THF)	ND	2.5	ug/L	1	03/17/20	MH	SW8260C
Toluene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Total Xylenes	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
trans-1,2-Dichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	03/17/20	MH	SW8260C
trans-1,4-dichloro-2-butene	ND	5.0	ug/L	1	03/17/20	MH	SW8260C
Trichloroethene	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Trichlorofluoromethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Trichlorotrifluoroethane	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
Vinyl chloride	ND	1.0	ug/L	1	03/17/20	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	97		%	1	03/17/20	MH	70 - 130 %
% Bromofluorobenzene	93		%	1	03/17/20	MH	70 - 130 %
% Dibromofluoromethane	96		%	1	03/17/20	MH	70 - 130 %

Ver 1

DocuSign Envelope ID: A312F187-F125-4CD0-AEEF-F90690E0C0FE

Project ID: 16D3253
Client ID: TRIP BLANK

Phoenix I.D.: CF51979

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Toluene-d8	93		%	1	03/17/20	MH	70 - 130 %
Oxygenates & Dioxane							
1,4-Dioxane	ND	50	ug/L	1	03/17/20	MH	SW8260C (OXY)
Diethyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Di-isopropyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
Ethyl tert-butyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)
tert-amyl methyl ether	ND	1.0	ug/L	1	03/17/20	MH	SW8260C (OXY)

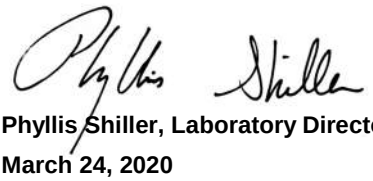
RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

TRIP BLANK INCLUDED.

8260 Analysis:
1,4-Dioxane doesn't meet GW-1 criteria, this compound is analyzed by 8270SIM to achieve this criteria.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director
March 24, 2020
Reviewed and Released by: Rashmi Makol, Project Manager

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Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

March 24, 2020

QA/QC Data

SDG I.D.: GCF51973

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 522893 (mg/L), QC Sample No: CF51552 (CF51974, CF51975, CF51977)													
Mercury - Water	BRL	0.0002	<0.0002	<0.0002	NC	114			110			75 - 125	30
Comment:													
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%													
QA/QC Batch 522830 (mg/L), QC Sample No: CF50556 (CF51974, CF51975, CF51977)													
ICP Metals - Aqueous													
Antimony	BRL	0.005	<0.005	<0.005	NC	110	110	0.0	111			80 - 120	20
Arsenic	BRL	0.004	<0.004	<0.004	NC	104	104	0.0	106			80 - 120	20
Barium	BRL	0.002	0.032	0.033	3.10	104	103	1.0	104			80 - 120	20
Beryllium	BRL	0.001	<0.001	<0.001	NC	108	107	0.9	108			80 - 120	20
Cadmium	BRL	0.001	<0.001	<0.001	NC	108	107	0.9	107			80 - 120	20
Chromium	BRL	0.001	<0.001	<0.001	NC	104	103	1.0	104			80 - 120	20
Lead	BRL	0.002	<0.002	<0.002	NC	101	101	0.0	101			80 - 120	20
Nickel	BRL	0.001	<0.001	<0.001	NC	104	103	1.0	104			80 - 120	20
Selenium	BRL	0.010	<0.010	<0.010	NC	101	100	1.0	101			80 - 120	20
Silver	BRL	0.001	<0.001	<0.001	NC	99.9	98.8	1.1	100			80 - 120	20
Vanadium	BRL	0.002	<0.002	<0.002	NC	102	101	1.0	103			80 - 120	20
Zinc	BRL	0.004	<0.004	<0.004	NC	104	103	1.0	104			80 - 120	20
Comment:													
Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.													
QA/QC Batch 522992 (mg/L), QC Sample No: CF52453 5X (CF51974, CF51975, CF51977)													
ICP MS Metals - Aqueous													
Thallium	BRL	0.0005	<0.0005	<0.0005	NC	103	104	1.0	104			80 - 120	20
Comment:													
Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.													

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Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 522886 (ug/L), QC Sample No: CF51974 (CF51974, CF51975, CF51977)										
MAEPH - Water										
C9-C18 Aliphatic Hydrocarbons 1*	ND	100	62	63	1.6				40 - 140	25
C19-C36 Aliphatic Hydrocarbons 1*	ND	100	79	82	3.7				40 - 140	25
C11-C22 Aromatic Hydrocarbons 1	ND	100	60	71	16.8				40 - 140	25
C11-C22 Aromatic Hydrocarbons U	ND	100							40 - 140	25
Total TPH 1,2*	ND	100	71	74	4.1				40 - 140	25
C9 - Nonane	ND	10	38	36	5.4				40 - 140	25
C-10 Decane	ND	10	50	48	4.1				40 - 140	25
C12 - Dodecane	ND	10	56	55	1.8				40 - 140	25
C14 - Tetradecane	ND	10	64	67	4.6				40 - 140	25
C16 - Hexadecane	ND	10	74	78	5.3				40 - 140	25
C18 - Octadecane	11	10	89	93	4.4				40 - 140	25
C19 - Nonadecane	ND	10	83	86	3.6				40 - 140	25
C20 - Eicosane	ND	10	84	87	3.5				40 - 140	25
C22 - Docosane	ND	10	85	88	3.5				40 - 140	25
C24 - Tetracosane	ND	10	86	90	4.5				40 - 140	25
C26 - Hexacosane	ND	10	85	89	4.6				40 - 140	25
C28 - Octacosane	ND	10	84	88	4.7				40 - 140	25
C30 - Tricotane	ND	10	82	85	3.6				40 - 140	25
C36 - Hexatriacontane	ND	10	41	45	9.3				40 - 140	25
% 1-chlorooctadecane (aliphatic)	56	%	74	78	5.3				40 - 140	25
% o-terphenyl (aromatic)	85	%	73	89	19.8				40 - 140	25
% 2-Fluorobiphenyl (Fractionation)	110	%	90	104	14.4				40 - 140	25
% 2-Bromonaphthalene (Fractionati	101	%	87	102	15.9				40 - 140	25
% 2-Methylnaphthalene BT		%	0	0	NC				0 - 5	
% Naphthalene BT		%	0	0	NC				0 - 5	
Comment:										
Additional EPH fractionation criteria: Breakthrough criteria (BT) is 0 to 5%										
QA/QC Batch 522813 (ug/L), QC Sample No: CF51012 (CF51974, CF51975, CF51977)										
Semivolatiles - Water										
1,2,4,5-Tetrachlorobenzene	ND	3.5	75	80	6.5				40 - 140	20
1,2,4-Trichlorobenzene	ND	3.5	74	83	11.5				40 - 140	20
1,2-Dichlorobenzene	ND	1.0	74	79	6.5				40 - 140	20
1,2-Diphenylhydrazine	ND	1.6	93	96	3.2				40 - 140	20
1,3-Dichlorobenzene	ND	1.0	74	80	7.8				40 - 140	20
1,4-Dichlorobenzene	ND	1.0	74	79	6.5				40 - 140	20
2,4,5-Trichlorophenol	ND	1.0	92	98	6.3				30 - 130	20
2,4,6-Trichlorophenol	ND	1.0	91	98	7.4				30 - 130	20
2,4-Dichlorophenol	ND	1.0	85	91	6.8				30 - 130	20
2,4-Dimethylphenol	ND	1.0	83	88	5.8				30 - 130	20
2,4-Dinitrophenol	ND	1.0	92	102	10.3				30 - 130	20

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Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
2,4-Dinitrotoluene	ND	3.5	96	105	9.0				40 - 140	20
2,6-Dinitrotoluene	ND	3.5	99	101	2.0				40 - 140	20
2-Chloronaphthalene	ND	3.5	82	88	7.1				40 - 140	20
2-Chlorophenol	ND	1.0	78	87	10.9				30 - 130	20
2-Methylphenol (o-cresol)	ND	1.0	78	89	13.2				30 - 130	20
2-Nitroaniline	ND	3.5	133	147	10.0				40 - 140	20
2-Nitrophenol	ND	1.0	83	102	20.5				30 - 130	20
3&4-Methylphenol (m&p-cresol)	ND	1.0	83	97	15.6				30 - 130	20
3,3'-Dichlorobenzidine	ND	5.0	44	48	8.7				40 - 140	20
3-Nitroaniline	ND	5.0	102	105	2.9				40 - 140	20
4,6-Dinitro-2-methylphenol	ND	1.0	92	101	9.3				30 - 130	20
4-Bromophenyl phenyl ether	ND	3.5	91	96	5.3				40 - 140	20
4-Chloro-3-methylphenol	ND	1.0	94	102	8.2				30 - 130	20
4-Chloroaniline	ND	3.5	78	82	5.0				40 - 140	20
4-Chlorophenyl phenyl ether	ND	1.0	86	88	2.3				40 - 140	20
4-Nitroaniline	ND	5.0	94	103	9.1				40 - 140	20
4-Nitrophenol	ND	1.0	100	112	11.3				30 - 130	20
Acetophenone	ND	3.5	77	84	8.7				40 - 140	20
Aniline	ND	3.5	84	94	11.2				40 - 140	20
Benzidine	ND	4.5	92	104	12.2				40 - 140	20
Benzoic acid	ND	10	57	57	0.0				30 - 130	20
Benzyl butyl phthalate	ND	1.5	94	104	10.1				40 - 140	20
Bis(2-chloroethoxy)methane	ND	3.5	82	87	5.9				40 - 140	20
Bis(2-chloroethyl)ether	ND	1.0	72	81	11.8				40 - 140	20
Bis(2-chloroisopropyl)ether	ND	1.0	72	80	10.5				40 - 140	20
Bis(2-ethylhexyl)phthalate	ND	1.5	96	104	8.0				40 - 140	20
Carbazole	ND	5.0	91	96	5.3				40 - 140	20
Dibenzofuran	ND	3.5	85	89	4.6				40 - 140	20
Diethyl phthalate	ND	1.5	95	100	5.1				40 - 140	20
Dimethylphthalate	ND	1.5	90	96	6.5				40 - 140	20
Di-n-butylphthalate	ND	1.5	93	99	6.3				40 - 140	20
Di-n-octylphthalate	ND	1.5	100	107	6.8				40 - 140	20
Hexachloroethane	ND	3.5	75	83	10.1				40 - 140	20
Isophorone	ND	3.5	83	86	3.6				40 - 140	20
N-Nitrosodi-n-propylamine	ND	3.5	83	93	11.4				40 - 140	20
N-Nitrosodiphenylamine	ND	3.5	81	84	3.6				40 - 140	20
Pentachloronitrobenzene	ND	5.0	94	100	6.2				40 - 140	20
Phenol	ND	1.0	77	82	6.3				30 - 130	20
% 2,4,6-Tribromophenol	68	%	96	108	11.8				15 - 110	20
% 2-Fluorobiphenyl	75	%	75	77	2.6				30 - 130	20
% 2-Fluorophenol	62	%	66	78	16.7				15 - 110	20
% Nitrobenzene-d5	65	%	76	82	7.6				30 - 130	20
% Phenol-d5	65	%	71	83	15.6				15 - 110	20
% Terphenyl-d14	75	%	81	84	3.6				30 - 130	20

Comment:

Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

QA/QC Batch 522813 (ug/L), QC Sample No: CF51012 (CF51974, CF51975, CF51977)

Semivolatiles (SIM) - Water

2-Methylnaphthalene	ND	0.50	84	85	1.2				40 - 140	20
Acenaphthene	ND	0.50	108	109	0.9				40 - 140	20
Acenaphthylene	ND	0.50	103	106	2.9				40 - 140	20

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Anthracene	ND	0.50	102	105	2.9				40 - 140	20	
Benz(a)anthracene	ND	0.50	105	105	0.0				40 - 140	20	
Benzo(a)pyrene	ND	0.50	98	100	2.0				40 - 140	20	
Benzo(b)fluoranthene	ND	0.50	102	106	3.8				40 - 140	20	
Benzo(ghi)perylene	ND	0.50	108	110	1.8				40 - 140	20	
Benzo(k)fluoranthene	ND	0.50	98	99	1.0				40 - 140	20	
Chrysene	ND	0.50	105	107	1.9				40 - 140	20	
Dibenz(a,h)anthracene	ND	0.50	109	111	1.8				40 - 140	20	
Fluoranthene	ND	0.50	101	104	2.9				40 - 140	20	
Fluorene	ND	0.50	106	109	2.8				40 - 140	20	
Hexachlorobenzene	ND	0.50	90	95	5.4				40 - 140	20	
Hexachlorobutadiene	ND	0.50	72	76	5.4				40 - 140	20	
Hexachlorocyclopentadiene	ND	0.50	39	41	5.0				40 - 140	20	l
Indeno(1,2,3-cd)pyrene	ND	0.50	100	101	1.0				40 - 140	20	
Naphthalene	ND	0.50	78	79	1.3				40 - 140	20	
Nitrobenzene	ND	0.50	91	98	7.4				40 - 140	20	
N-Nitrosodimethylamine	ND	0.05	98	106	7.8				40 - 140	20	
Pentachlorophenol	ND	0.50	61	55	10.3				40 - 140	20	
Phenanthrene	ND	0.50	89	91	2.2				40 - 140	20	
Pyrene	ND	0.50	108	112	3.6				40 - 140	20	
Pyridine	ND	0.50	73	91	22.0				40 - 140	20	r
% 2,4,6-Tribromophenol	67	%	98	96	2.1				15 - 110	20	
% 2-Fluorobiphenyl	70	%	89	89	0.0				40 - 140	20	
% 2-Fluorophenol	65	%	78	81	3.8				15 - 110	20	
% Nitrobenzene-d5	64	%	90	88	2.2				40 - 140	20	
% Phenol-d5	71	%	91	94	3.2				15 - 110	20	
% Terphenyl-d14	72	%	90	92	2.2				40 - 140	20	

Comment:

Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

QA/QC Batch 522853 (ug/L), QC Sample No: CF52086 (CF51974, CF51975, CF51977)

Semivolatiles by SIM, PAH - Water

2-Methylnaphthalene	ND	0.50	66	29	77.9				40 - 140	20	l,r
Acenaphthene	ND	0.50	170	72	81.0				40 - 140	20	l,r
Acenaphthylene	ND	0.10	166	71	80.2				40 - 140	20	l,r
Anthracene	ND	0.10	158	67	80.9				40 - 140	20	l,r
Benz(a)anthracene	ND	0.02	175	73	82.3				40 - 140	20	l,r
Benzo(a)pyrene	ND	0.02	163	69	81.0				40 - 140	20	l,r
Benzo(b)fluoranthene	ND	0.02	159	69	78.9				40 - 140	20	l,r
Benzo(ghi)perylene	ND	0.02	185	81	78.2				40 - 140	20	l,r
Benzo(k)fluoranthene	ND	0.02	149	63	81.1				40 - 140	20	l,r
Chrysene	ND	0.02	165	70	80.9				40 - 140	20	l,r
Dibenz(a,h)anthracene	ND	0.02	171	73	80.3				40 - 140	20	l,r
Fluoranthene	ND	0.50	155	64	83.1				40 - 140	20	l,r
Fluorene	ND	0.10	165	72	78.5				40 - 140	20	l,r
Indeno(1,2,3-cd)pyrene	ND	0.02	168	71	81.2				40 - 140	20	l,r
Naphthalene	ND	0.50	94	41	78.5				40 - 140	20	r
Phenanthrene	ND	0.50	151	63	82.2				40 - 140	20	l,r
Pyrene	ND	0.07	163	67	83.5				40 - 140	20	l,r
% 2-Fluorobiphenyl	77	%	72	77	6.7				40 - 140	20	
% Nitrobenzene-d5	75	%	63	70	10.5				40 - 140	20	
% Terphenyl-d14	67	%	65	65	0.0				40 - 140	20	

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Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
Comment:										
Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)										
QA/QC Batch 522985 (ug/L), QC Sample No: CF51399 (CF51973, CF51974, CF51975, CF51976, CF51977, CF51978, CF51979)										
Volatiles - Water										
1,1,1,2-Tetrachloroethane	ND	1.0	92	96	4.3	94	94	0.0	70 - 130	30
1,1,1-Trichloroethane	ND	1.0	86	89	3.4	87	87	0.0	70 - 130	30
1,1,2,2-Tetrachloroethane	ND	0.50	96	107	10.8	101	106	4.8	70 - 130	30
1,1,2-Trichloroethane	ND	1.0	88	98	10.8	95	97	2.1	70 - 130	30
1,1-Dichloroethane	ND	1.0	91	92	1.1	87	89	2.3	70 - 130	30
1,1-Dichloroethene	ND	1.0	93	97	4.2	91	94	3.2	70 - 130	30
1,1-Dichloropropene	ND	1.0	83	86	3.6	89	90	1.1	70 - 130	30
1,2,3-Trichlorobenzene	ND	1.0	92	101	9.3	86	100	15.1	70 - 130	30
1,2,3-Trichloropropane	ND	1.0	80	88	9.5	85	89	4.6	70 - 130	30
1,2,4-Trichlorobenzene	ND	1.0	91	100	9.4	89	99	10.6	70 - 130	30
1,2,4-Trimethylbenzene	ND	1.0	97	98	1.0	97	98	1.0	70 - 130	30
1,2-Dibromo-3-chloropropane	ND	1.0	95	107	11.9	91	98	7.4	70 - 130	30
1,2-Dibromoethane	ND	1.0	88	95	7.7	88	91	3.4	70 - 130	30
1,2-Dichlorobenzene	ND	1.0	93	99	6.3	95	98	3.1	70 - 130	30
1,2-Dichloroethane	ND	1.0	84	92	9.1	87	89	2.3	70 - 130	30
1,2-Dichloropropane	ND	1.0	93	99	6.3	98	99	1.0	70 - 130	30
1,3,5-Trimethylbenzene	ND	1.0	97	98	1.0	98	99	1.0	70 - 130	30
1,3-Dichlorobenzene	ND	1.0	94	98	4.2	95	96	1.0	70 - 130	30
1,3-Dichloropropane	ND	1.0	88	95	7.7	91	94	3.2	70 - 130	30
1,4-Dichlorobenzene	ND	1.0	92	97	5.3	94	96	2.1	70 - 130	30
1,4-dioxane	ND	100	89	90	1.1	69	71	2.9	40 - 160	30
2,2-Dichloropropane	ND	1.0	87	87	0.0	79	79	0.0	70 - 130	30
2-Chlorotoluene	ND	1.0	99	102	3.0	101	101	0.0	70 - 130	30
2-Hexanone	ND	5.0	77	92	17.8	76	85	11.2	40 - 160	30
2-Isopropyltoluene	ND	1.0	105	105	0.0	106	106	0.0	70 - 130	30
4-Chlorotoluene	ND	1.0	96	97	1.0	97	98	1.0	70 - 130	30
4-Methyl-2-pentanone	ND	5.0	81	94	14.9	88	93	5.5	40 - 160	30
Acetone	ND	5.0	83	86	3.6	81	89	9.4	40 - 160	30
Acrylonitrile	ND	5.0	85	98	14.2	85	92	7.9	70 - 130	30
Benzene	ND	0.70	91	94	3.2	111	110	0.9	70 - 130	30
Bromobenzene	ND	1.0	94	100	6.2	95	97	2.1	70 - 130	30
Bromochloromethane	ND	1.0	85	92	7.9	84	85	1.2	70 - 130	30
Bromodichloromethane	ND	0.50	91	98	7.4	96	97	1.0	70 - 130	30
Bromoform	ND	1.0	92	105	13.2	94	99	5.2	70 - 130	30
Bromomethane	ND	1.0	106	109	2.8	74	93	22.8	40 - 160	30
Carbon Disulfide	ND	1.0	95	94	1.1	89	93	4.4	70 - 130	30
Carbon tetrachloride	ND	1.0	100	102	2.0	104	103	1.0	70 - 130	30
Chlorobenzene	ND	1.0	93	97	4.2	97	97	0.0	70 - 130	30
Chloroethane	ND	1.0	91	88	3.4	80	84	4.9	70 - 130	30
Chloroform	ND	1.0	91	86	5.6	89	83	7.0	70 - 130	30
Chloromethane	ND	1.0	90	92	2.2	75	80	6.5	40 - 160	30
cis-1,2-Dichloroethene	ND	1.0	89	92	3.3	85	89	4.6	70 - 130	30
cis-1,3-Dichloropropene	ND	0.40	91	100	9.4	95	99	4.1	70 - 130	30
Dibromochloromethane	ND	0.50	95	104	9.0	97	99	2.0	70 - 130	30
Dibromomethane	ND	1.0	88	94	6.6	92	95	3.2	70 - 130	30
Dichlorodifluoromethane	ND	1.0	81	81	0.0	63	64	1.6	40 - 160	30
Ethyl ether	ND	1.0	93	103	10.2	92	96	4.3	70 - 130	30

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Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Ethylbenzene	ND	1.0	98	99	1.0	101	101	0.0	70 - 130	30	
Hexachlorobutadiene	ND	0.40	109	100	8.6	99	101	2.0	70 - 130	30	
Isopropylbenzene	ND	1.0	98	100	2.0	102	102	0.0	70 - 130	30	
m&p-Xylene	ND	1.0	95	97	2.1	98	99	1.0	70 - 130	30	
Methyl ethyl ketone	ND	5.0	77	90	15.6	74	88	17.3	40 - 160	30	
Methyl t-butyl ether (MTBE)	ND	1.0	84	94	11.2	79	86	8.5	70 - 130	30	
Methylene chloride	ND	1.0	88	91	3.4	82	86	4.8	70 - 130	30	
Naphthalene	ND	1.0	90	104	14.4	86	104	18.9	70 - 130	30	
n-Butylbenzene	ND	1.0	104	105	1.0	106	108	1.9	70 - 130	30	
n-Propylbenzene	ND	1.0	98	99	1.0	100	102	2.0	70 - 130	30	
o-Xylene	ND	1.0	98	101	3.0	101	101	0.0	70 - 130	30	
p-Isopropyltoluene	ND	1.0	101	100	1.0	102	103	1.0	70 - 130	30	
sec-Butylbenzene	ND	1.0	105	106	0.9	110	110	0.0	70 - 130	30	
Styrene	ND	1.0	95	99	4.1	98	100	2.0	70 - 130	30	
tert-Butylbenzene	ND	1.0	98	99	1.0	101	101	0.0	70 - 130	30	
Tetrachloroethene	ND	1.0	87	93	6.7	96	97	1.0	70 - 130	30	
Tetrahydrofuran (THF)	ND	2.5	78	95	19.7	76	84	10.0	70 - 130	30	
Toluene	ND	1.0	98	102	4.0	105	106	0.9	70 - 130	30	
trans-1,2-Dichloroethene	ND	1.0	92	94	2.2	88	92	4.4	70 - 130	30	
trans-1,3-Dichloropropene	ND	0.40	87	97	10.9	90	94	4.3	70 - 130	30	
trans-1,4-dichloro-2-butene	ND	5.0	149	165	10.2	145	160	9.8	70 - 130	30	l,m
Trichloroethene	ND	1.0	89	92	3.3	95	95	0.0	70 - 130	30	
Trichlorofluoromethane	ND	1.0	92	94	2.2	89	91	2.2	70 - 130	30	
Trichlorotrifluoroethane	ND	1.0	101	105	3.9	94	96	2.1	70 - 130	30	
Vinyl chloride	ND	1.0	99	100	1.0	86	91	5.6	70 - 130	30	
% 1,2-dichlorobenzene-d4	95	%	100	102	2.0	102	102	0.0	70 - 130	30	
% Bromofluorobenzene	91	%	98	99	1.0	98	101	3.0	70 - 130	30	
% Dibromofluoromethane	92	%	90	93	3.3	83	87	4.7	70 - 130	30	
% Toluene-d8	93	%	100	100	0.0	102	102	0.0	70 - 130	30	

Comment:

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

QA/QC Batch 523354 (ug/L), QC Sample No: CF52176 (CF51975 (20X))

Volatiles - Water

Trichlorotrifluoroethane	ND	1.0	62	83	29.0				70 - 130	30	l
% 1,2-dichlorobenzene-d4	102	%	100	101	1.0				70 - 130	30	
% Bromofluorobenzene	96	%	99	99	0.0				70 - 130	30	
% Dibromofluoromethane	103	%	100	101	1.0				70 - 130	30	
% Toluene-d8	101	%	99	99	0.0				70 - 130	30	

Comment:

A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

QA/QC Batch 523171 (ug/L), QC Sample No: CF52205 (CF51974 (5X) , CF51975 (5X) , CF51977 (5X))

Volatiles - Water

Trichloroethene	ND	1.0	93	91	2.2				70 - 130	30	
Trichlorotrifluoroethane	ND	1.0	102	104	1.9				70 - 130	30	
% 1,2-dichlorobenzene-d4	96	%	102	101	1.0				70 - 130	30	
% Bromofluorobenzene	92	%	98	99	1.0				70 - 130	30	
% Dibromofluoromethane	89	%	86	89	3.4				70 - 130	30	
% Toluene-d8	92	%	102	101	1.0				70 - 130	30	

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QA/QC Data

SDG I.D.: GCF51973

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
Comment:										
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.										
Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.										
QA/QC Batch 523130 (ug/L), QC Sample No: CF51974 (CF51974, CF51975, CF51977)										
Volatile Petroleum Hydrocarbons - Water										
Unadjusted C5-C8 Aliphatics (*1)	ND	100	104	105	1.0	NC	NC	NC	70 - 130	20
Unadjusted C9-C12 Aliphatics (*1)	ND	100	95	97	2.1	NC	NC	NC	70 - 130	20
C5-C8 Aliphatic Hydrocarbons *1,2	ND	100	104	105	1.0	NC	NC	NC	70 - 130	20
C9-C12 Aliphatic Hydrocarbons *1,	ND	100	95	97	2.1	NC	NC	NC	70 - 130	20
C9-C10 Aromatic Hydrocarbons *1	ND	100	90	92	2.2	NC	NC	NC	70 - 130	20
Benzene	ND	1.0	92	92	0.0	95	95	0.0	70 - 130	20
Ethyl Benzene	ND	1.0	90	92	2.2	94	94	0.0	70 - 130	20
MTBE	ND	1.0	89	90	1.1	92	94	2.2	70 - 130	20
Naphthalene	ND	5.0	86	86	0.0	89	89	0.0	70 - 130	20
Toluene	ND	1.0	90	92	2.2	95	94	1.1	70 - 130	20
m,p-Xylenes	ND	2.0	91	92	1.1	95	96	1.0	70 - 130	20
o-Xylene	ND	1.0	89	91	2.2	92	93	1.1	70 - 130	20
% 2,5-Dibromotoluene (PID)	91	%	90	86	4.5	85	86	1.2	70 - 130	20
Comment:										
A blank MS/MSD was analyzed with this batch.										

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.
m = This parameter is outside laboratory MS/MSD specified recovery limits.
r = This parameter is outside laboratory RPD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
March 24, 2020

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Tuesday, March 24, 2020

Criteria: MA: CAM, GW1

State: MA

Sample Criteria Exceedances Report

GCF51973 - BLCOMPANIES

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CF51973	$8260GWR	Acetone	MA / CAM Protocol / VOA AQ RL	ND	25		10	ug/L
CF51973	$8260GWR	Carbon Disulfide	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CF51973	$8260GWR	Tetrahydrofuran (THF)	MA / CAM Protocol / VOA AQ RL	ND	2.5		2	ug/L
CF51973	$8260GWR	trans-1,4-dichloro-2-butene	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CF51973	$8260GWR	1,2-Dibromoethane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	0.50	0.02	0.02	ug/L
CF51973	$8260GWR	1,2-Dibromoethane	MA / GROUNDWATER STANDARDS / GW-1	ND	0.50	0.02	0.02	ug/L
CF51973	$MCPADD-WM	1,4-Dioxane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	50	3	3	ug/L
CF51973	$MCPADD-WM	1,4-Dioxane	MA / GROUNDWATER STANDARDS / GW-1	ND	50	0.3	0.3	ug/L
CF51974	$8260GWR	Acetone	MA / CAM Protocol / VOA AQ RL	ND	25		10	ug/L
CF51974	$8260GWR	trans-1,4-dichloro-2-butene	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CF51974	$8260GWR	Carbon Disulfide	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CF51974	$8260GWR	Tetrahydrofuran (THF)	MA / CAM Protocol / VOA AQ RL	ND	2.5		2	ug/L
CF51974	$8260GWR	Trichloroethene	MA / CMR 310.40.1600 / GW-1 (mg/l)	20	1.0	5	5	ug/L
CF51974	$8260GWR	1,2-Dibromoethane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	0.50	0.02	0.02	ug/L
CF51974	$8260GWR	Trichloroethene	MA / GROUNDWATER STANDARDS / GW-1	20	1.0	5	5	ug/L
CF51974	$8260GWR	1,2-Dibromoethane	MA / GROUNDWATER STANDARDS / GW-1	ND	0.50	0.02	0.02	ug/L
CF51974	$8270-SIMFSR	Benzoic acid	MA / CAM Protocol / SVOA AQ RL	ND	51		10	ug/L
CF51974	$MCPADD-WM	1,4-Dioxane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	50	3	3	ug/L
CF51974	$MCPADD-WM	1,4-Dioxane	MA / GROUNDWATER STANDARDS / GW-1	ND	50	0.3	0.3	ug/L
CF51975	$8260GWR	trans-1,4-dichloro-2-butene	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CF51975	$8260GWR	Acetone	MA / CAM Protocol / VOA AQ RL	ND	25		10	ug/L
CF51975	$8260GWR	Carbon Disulfide	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CF51975	$8260GWR	Tetrahydrofuran (THF)	MA / CAM Protocol / VOA AQ RL	ND	2.5		2	ug/L
CF51975	$8260GWR	1,2-Dibromoethane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	0.50	0.02	0.02	ug/L
CF51975	$8260GWR	Trichloroethene	MA / CMR 310.40.1600 / GW-1 (mg/l)	44	5.0	5	5	ug/L
CF51975	$8260GWR	Tetrachloroethene	MA / CMR 310.40.1600 / GW-1 (mg/l)	7.0	1.0	5	5	ug/L
CF51975	$8260GWR	Tetrachloroethene	MA / GROUNDWATER STANDARDS / GW-1	7.0	1.0	5	5	ug/L
CF51975	$8260GWR	1,2-Dibromoethane	MA / GROUNDWATER STANDARDS / GW-1	ND	0.50	0.02	0.02	ug/L
CF51975	$8260GWR	Trichloroethene	MA / GROUNDWATER STANDARDS / GW-1	44	5.0	5	5	ug/L
CF51975	$8270-SIMFSR	Benzoic acid	MA / CAM Protocol / SVOA AQ RL	ND	51		10	ug/L
CF51975	$8270-SIMR	Benzo(a)pyrene	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	0.21	0.2	0.2	ug/L
CF51975	$8270-SIMR	Benzo(a)pyrene	MA / GROUNDWATER STANDARDS / GW-1	ND	0.21	0.2	0.2	ug/L
CF51975	$MCPADD-WM	1,4-Dioxane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	50	3	3	ug/L
CF51975	$MCPADD-WM	1,4-Dioxane	MA / GROUNDWATER STANDARDS / GW-1	ND	50	0.3	0.3	ug/L
CF51976	$8260GWR	Carbon Disulfide	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CF51976	$8260GWR	Tetrahydrofuran (THF)	MA / CAM Protocol / VOA AQ RL	ND	2.5		2	ug/L
CF51976	$8260GWR	trans-1,4-dichloro-2-butene	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CF51976	$8260GWR	Acetone	MA / CAM Protocol / VOA AQ RL	ND	25		10	ug/L
CF51976	$8260GWR	Trichloroethene	MA / CMR 310.40.1600 / GW-1 (mg/l)	5.8	1.0	5	5	ug/L
CF51976	$8260GWR	1,2-Dibromoethane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	0.50	0.02	0.02	ug/L

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Tuesday, March 24, 2020

Criteria: MA: CAM, GW1

State: MA

Sample Criteria Exceedances Report

GCF51973 - BLCOMPANIES

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CF51976	$8260GWR	1,2-Dibromoethane	MA / GROUNDWATER STANDARDS / GW-1	ND	0.50	0.02	0.02	ug/L
CF51976	$8260GWR	Trichloroethene	MA / GROUNDWATER STANDARDS / GW-1	5.8	1.0	5	5	ug/L
CF51976	$MCPADD-WM	1,4-Dioxane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	50	3	3	ug/L
CF51976	$MCPADD-WM	1,4-Dioxane	MA / GROUNDWATER STANDARDS / GW-1	ND	50	0.3	0.3	ug/L
CF51977	$8260GWR	Acetone	MA / CAM Protocol / VOA AQ RL	ND	25		10	ug/L
CF51977	$8260GWR	trans-1,4-dichloro-2-butene	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CF51977	$8260GWR	Carbon Disulfide	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CF51977	$8260GWR	Tetrahydrofuran (THF)	MA / CAM Protocol / VOA AQ RL	ND	2.5		2	ug/L
CF51977	$8260GWR	Trichloroethene	MA / CMR 310.40.1600 / GW-1 (mg/l)	34	5.0	5	5	ug/L
CF51977	$8260GWR	Tetrachloroethene	MA / CMR 310.40.1600 / GW-1 (mg/l)	5.4	1.0	5	5	ug/L
CF51977	$8260GWR	cis-1,2-Dichloroethene	MA / CMR 310.40.1600 / GW-1 (mg/l)	30	1.0	20	20	ug/L
CF51977	$8260GWR	1,2-Dibromoethane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	0.50	0.02	0.02	ug/L
CF51977	$8260GWR	Tetrachloroethene	MA / GROUNDWATER STANDARDS / GW-1	5.4	1.0	5	5	ug/L
CF51977	$8260GWR	Trichloroethene	MA / GROUNDWATER STANDARDS / GW-1	34	5.0	5	5	ug/L
CF51977	$8260GWR	1,2-Dibromoethane	MA / GROUNDWATER STANDARDS / GW-1	ND	0.50	0.02	0.02	ug/L
CF51977	$8270-SIMFSR	Benzoic acid	MA / CAM Protocol / SVOA AQ RL	ND	55		10	ug/L
CF51977	$8270-SIMFSR	3&4-Methylphenol (m&p-cresol)	MA / CAM Protocol / SVOA AQ RL	ND	11		10	ug/L
CF51977	$MCPADD-WM	1,4-Dioxane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	50	3	3	ug/L
CF51977	$MCPADD-WM	1,4-Dioxane	MA / GROUNDWATER STANDARDS / GW-1	ND	50	0.3	0.3	ug/L
CF51978	$8260GWR	trans-1,4-dichloro-2-butene	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CF51978	$8260GWR	Acetone	MA / CAM Protocol / VOA AQ RL	ND	25		10	ug/L
CF51978	$8260GWR	Carbon Disulfide	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CF51978	$8260GWR	Tetrahydrofuran (THF)	MA / CAM Protocol / VOA AQ RL	ND	2.5		2	ug/L
CF51978	$8260GWR	1,2-Dibromoethane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	0.50	0.02	0.02	ug/L
CF51978	$8260GWR	1,2-Dibromoethane	MA / GROUNDWATER STANDARDS / GW-1	ND	0.50	0.02	0.02	ug/L
CF51978	$MCPADD-WM	1,4-Dioxane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	50	3	3	ug/L
CF51978	$MCPADD-WM	1,4-Dioxane	MA / GROUNDWATER STANDARDS / GW-1	ND	50	0.3	0.3	ug/L
CF51979	$8260GWR	Acetone	MA / CAM Protocol / VOA AQ RL	ND	25		10	ug/L
CF51979	$8260GWR	Carbon Disulfide	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CF51979	$8260GWR	Tetrahydrofuran (THF)	MA / CAM Protocol / VOA AQ RL	ND	2.5		2	ug/L
CF51979	$8260GWR	trans-1,4-dichloro-2-butene	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CF51979	$8260GWR	1,2-Dibromoethane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	0.50	0.02	0.02	ug/L
CF51979	$8260GWR	1,2-Dibromoethane	MA / GROUNDWATER STANDARDS / GW-1	ND	0.50	0.02	0.02	ug/L
CF51979	$MCPADD-WM	1,4-Dioxane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	50	3	3	ug/L
CF51979	$MCPADD-WM	1,4-Dioxane	MA / GROUNDWATER STANDARDS / GW-1	ND	50	0.3	0.3	ug/L

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

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MassDEP Analytical Protocol Certification Form

Laboratory Name: Phoenix Environmental Laboratories, Inc. **Project #:**

Project Location: 16D3253 **RTN:**

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

CF51973, CF51974, CF51975, CF51976, CF51977, CF51978, CF51979

Matrices: ☐ Groundwater/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☑ Other: WATER

CAM Protocol (check all that apply below)

8260 VOC CAM II A ☑	7470/7471 Hg CAM III B ☑	MassDEP VPH CAM IV A ☑	8081 Pesticides CAM V B ☐	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
8270 SVOC CAM II B ☑	7010 Metals CAM III C ☐	MassDEP EPH CAM IV B ☑	8151 Herbicides CAM V C ☐	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐
6010 Metals CAM III A ☑	6020 Metals CAM III D ☐	8082 PCB CAM V A ☐	9012 Total Cyanide/PAC CAM V1 A ☐	6860 Perchlorate CAM VIII B ☐	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature*) in the field or laboratory, and prepared/analyzed with method holding times? (* see narrative)	☐ Yes ☑ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements speified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☑ Yes ☐ No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 methods only: Was the complete analyte list reported for each method?	☑ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☑ Yes ☐ No

Responses to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☐ Yes ☑ No

Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056(2)(k) and WSC-07-350

H	Were all QC performance standards specified in the CAM protocol(s) achieved? See Sections: EPH, SVOA, SVOASIM, VOA Narrations .	☐ Yes ☑ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☑ Yes ☐ No

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Authorized Signature: Rashmi Makol

Date: Tuesday, March 24, 2020

Printed Name: Rashmi Makol

Position: Project Manager

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Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

MCP Certification Report

March 24, 2020

SDG I.D.: GCF51973

SDG Comments

8260 Analysis:
1,2-Dibromoethane doesn't meet GW-1 criteria, this compound is analyzed by GC/FID to achieve this criteria.

1,4-Dioxane doesn't meet GW-1 criteria, this compound is analyzed by 8270SIM to achieve this criteria.

Phoenix reporting levels may exceed those referenced in the CAM protocol. Please refer to criteria sheet for comparisons to requested MCP standards

Temperature above 6C:
The samples were received in a cooler with ice packs. No significant bias is suspected.

EPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 522886 (Samples: CF51974, CF51975, CF51977): -----

A trace amount of an analyte was found in blank but were not reported in the sample(s), therefore no bias is suspected. (C18 - Octadecane)

One or more analytes is below the method criteria. A low bias for these analytes is possible. (C9 - Nonane)

Instrument:

AU-FID3 03/20/20-1 Adam Werner, Chemist 03/20/20

CF51975 (1X)

No significant modifications were made to the EPH method, as specified in Section 11.3 of the method.

The initial calibration (AR0102BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 25% except for the following compounds:None.

AU-FID4 03/17/20-1 Adam Werner, Chemist 03/17/20

CF51974 (1X), CF51977 (1X)

The initial calibration (AL0219BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 25% except for the following compounds:None.

AU-FID4 03/20/20-1 Adam Werner, Chemist 03/20/20

CF51975 (1X)

The initial calibration (AL0219BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 25% except for the following compounds:None.

QC (Batch Specific):

Batch 522886 (CF51974)

CF51974, CF51975, CF51977

All LCS recoveries were within 40 - 140 with the following exceptions: C9 - Nonane(38%)
All LCSD recoveries were within 40 - 140 with the following exceptions: C9 - Nonane(36%)
All LCS/LCSD RPDs were less than 25% with the following exceptions: None.
Additional EPH fractionation criteria: Breakthrough criteria (BT) is 0 to 5%

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587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

MCP Certification Report

March 24, 2020

SDG I.D.: GCF51973

EPH Narration

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Mercury Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

MERLIN 03/18/20 08:00 Rick Schweitzer, Chemist 03/18/20

CF51974, CF51975, CF51977

The method preparation blank, ICB, and CCBs contain all of the acids and reagents as the samples.
The initial calibration met all criteria including a standard run at or below the reporting level.
All calibration verification standards (ICV, CCV) met criteria.
All calibration blank verification standards (ICB, CCB) met criteria.
The matrix spike sample is used to identify spectral interference for each batch of samples, if within 85-115%, no interference is observed and no further action is taken.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 522893 (CF51552)

CF51974, CF51975, CF51977

All LCS recoveries were within 75 - 125 with the following exceptions: None.
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%

ICP Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

BLUE 03/18/20 08:26 Cindy Pearce, Chemist 03/18/20

CF51974, CF51975, CF51977

The initial calibration met criteria.
The continuing calibration standards met criteria for all the elements reported. The linear range is defined daily by the calibration range.
The continuing calibration blanks were less than the reporting level for the elements reported.
The ICSA and ICSAB were analyzed at the beginning and end of the run and were within criteria.The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 522830 (CF50556)

CF51974, CF51975, CF51977

All LCS recoveries were within 80 - 120 with the following exceptions: None.

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Certification Report

March 24, 2020

SDG I.D.: GCF51973

ICP Metals Narration

All LCSD recoveries were within 80 - 120 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.

ICPMS Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

ICPMS 03/19/20 14:53 Cindy Pearce, Chemist 03/19/20

CF51974, CF51975, CF51977

The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following samples did not meet internal standard criteria: None.

QC (Batch Specific):

Batch 522992 (CF52453)

CF51974, CF51975, CF51977

All LCS recoveries were within 80 - 120 with the following exceptions: None.
All LCSD recoveries were within 80 - 120 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.

SVOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 522813 (Samples: CF51974, CF51975, CF51977): -----

The LCS and/or the LCSD recovery is above the upper range for one or more analytes that were not reported in the sample(s), therefore no significant bias is suspected. (2-Nitroaniline)

Instrument:

CHEM07 03/19/20-1 Wes Bryon, Chemist 03/19/20

CF51974 (1X), CF51975 (1X), CF51977 (1X)

For 8270 full list, the DDT breakdown and pentachlorophenol & benzidine peak tailing were evaluated in the DFTPP tune and were found to be in control.
For 8270 BN list, benzidine peak tailing was evaluated in the DFTPP tune and was found to be in control.

Initial Calibration Evaluation (CHEM07/7_SPLIT_0304):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: 2-Nitrophenol 0.078 (0.1)
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM07/0319_06-7_SPLIT_0304) (MCP Compliance):

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March 24, 2020

SDG I.D.: GCF51973

SVOA Narration

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: 2-Nitrophenol 0.093 (0.1)
The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 522813 (CF51012)

CF51974, CF51975, CF51977

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: 2-Nitroaniline(147%)
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

SVOASIM Narration

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SDG I.D.: GCF51973

SVOASIM Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 522813 (Samples: CF51974, CF51975, CF51977): -----

The LCS and/or the LCSD recovery is below the method criteria. All of the other QC is acceptable, therefore no significant bias is suspected. (Hexachlorocyclopentadiene)

The LCS/LCSD RPD exceeds the method criteria for one or more analytes, but these analytes were not reported in the sample(s) so no variability is suspected. (Pyridine)

QC Batch 522853 (Samples: CF51974, CF51975, CF51977): -----

The LCS and/or the LCSD recovery is above the upper range for one or more analytes that were not reported in the sample(s), therefore no significant bias is suspected. (Acenaphthene, Acenaphthylene, Anthracene, Benz(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Phenanthrene)

The LCS and/or the LCSD recovery is above the upper range, therefore a slight high bias is possible. (Pyrene)

The LCS and/or the LCSD recovery is below the method criteria. All of the other QC is acceptable, therefore no significant bias is suspected. (2-Methylnaphthalene)

The LCS/LCSD RPD exceeds the method criteria for one or more analytes, but these analytes were not reported in the sample(s) so no variability is suspected. (Acenaphthene, Acenaphthylene, Anthracene, Benz(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Phenanthrene)

The LCS/LCSD RPD exceeds the method criteria for one or more analytes, therefore there may be variability in the reported result. (2-Methylnaphthalene, Naphthalene, Pyrene)

Instrument:

CHEM27 03/18/20-1 Wes Bryon, Chemist 03/18/20

CF51974 (1X), CF51975 (1X), CF51977 (1X)

For 8270 BN list, benzidine peak tailing was evaluated in the DFTPP tune and was found to be in control.

Initial Calibration Evaluation (CHEM27/27_SIM18_0311):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM27/0318_03-27_SIM18_0311) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
97% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.

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SDG I.D.: GCF51973

SVOASIM Narration

The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 522813 (CF51012)

CF51974, CF51975, CF51977

All LCS recoveries were within 40 - 140 with the following exceptions: Hexachlorocyclopentadiene(39%)
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: Pyridine(22.0%)
Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

Batch 522853 (CF52086)

CF51974, CF51975, CF51977

All LCS recoveries were within 40 - 140 with the following exceptions: Acenaphthene(170%), Acenaphthylene(166%), Anthracene(158%), Benz(a)anthracene(175%), Benzo(a)pyrene(163%), Benzo(b)fluoranthene(159%), Benzo(ghi)perylene(185%), Benzo(k)fluoranthene(149%), Chrysene(165%), Dibenz(a,h)anthracene(171%), Fluoranthene(155%), Fluorene(165%), Indeno(1,2,3-cd)pyrene(168%), Phenanthrene(151%), Pyrene(163%)
All LCSD recoveries were within 40 - 140 with the following exceptions: 2-Methylnaphthalene(29%)
All LCS/LCSD RPDs were less than 20% with the following exceptions: 2-Methylnaphthalene(77.9%), Acenaphthene(81.0%), Acenaphthylene(80.2%), Anthracene(80.9%), Benz(a)anthracene(82.3%), Benzo(a)pyrene(81.0%), Benzo(b)fluoranthene(78.9%), Benzo(ghi)perylene(78.2%), Benzo(k)fluoranthene(81.1%), Chrysene(80.9%), Dibenz(a,h)anthracene(80.3%), Fluoranthene(83.1%), Fluorene(78.5%), Indeno(1,2,3-cd)pyrene(81.2%), Naphthalene(78.5%), Phenanthrene(82.2%), Pyrene(83.5%)
Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

VOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 522985 (Samples: CF51973, CF51974, CF51975, CF51976, CF51977, CF51978, CF51979): -----

The QC recovery for one or more analytes is above the upper range but were not reported in the sample(s), therefore no significant bias is suspected. (trans-1,4-dichloro-2-butene)

QC Batch 523354 (Samples: CF51975): -----

The LCS and/or the LCSD recovery is below the method criteria. All of the other QC is acceptable, therefore no significant bias is suspected. (Trichlorotrifluoroethane)

Instrument:

CHEM02 03/19/20-1 Michael Hahn, Chemist 03/19/20

CF51975 (20X)

Chem02 is a 25ml purge instrument. The laboratory minimum response factor is set at 0.01 instead of 0.05 for the 25ml purge

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March 24, 2020

SDG I.D.: GCF51973

VOA Narration

instruments.
EPA method 8260D Table 4 supports this approach.

Initial Calibration Evaluation (CHEM02/VT-P031720):
98% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet Table 4 recommended minimum response factors: None.
The following compounds did not meet the minimum response factor of 0.05: None.

Continuing Calibration Verification (CHEM02/0319_02-VT-P031720) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
98% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet Table 4 recommended minimum response factors: None.
The following compounds did not meet the minimum MCP response factor of 0.05: None.

CHEM17 03/17/20-2 Michael Hahn, Chemist 03/17/20

CF51973 (1X), CF51974 (1X), CF51975 (1X), CF51976 (1X), CF51977 (1X), CF51978 (1X), CF51979 (1X)

Chem 17 is a 25ml purge instrument. The laboratory minimum response factor is set at 0.01 instead of 0.05 for the 25ml purge instruments.
EPA method 8260D Table 4 supports this approach.

Initial Calibration Evaluation (CHEM17/VT-S031520):
94% of target compounds met criteria.
The following compounds had %RSDs >20%: 1,2-Dibromo-3-chloropropane 22% (20%), 1,4-Dioxane 28% (20%), Bromomethane 24% (20%), Tetrahydrofuran (THF) 25% (20%)
The following compounds did not meet Table 4 recommended minimum response factors: 1,2-Dibromo-3-chloropropane 0.042 (0.05), Acetone 0.054 (0.1), Bromoform 0.085 (0.1), Methyl ethyl ketone 0.087 (0.1), Tetrahydrofuran (THF) 0.049 (0.05)
The following compounds did not meet the minimum response factor of 0.05: 1,2-Dibromo-3-chloropropane 0.042 (0.05), Tetrahydrofuran (THF) 0.049 (0.05)

Continuing Calibration Verification (CHEM17/0317_24-VT-S031520) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
98% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet Table 4 recommended minimum response factors: 1,2-Dibromo-3-chloropropane 0.047 (0.05), Acetone 0.049 (0.1), Methyl ethyl ketone 0.081 (0.1), Tetrahydrofuran (THF) 0.042 (0.05)
The following compounds did not meet the minimum MCP response factor of 0.05: 1,2-Dibromo-3-chloropropane 0.042 (0.05), Acetone 0.054 (0.05), Tetrahydrofuran (THF) 0.049 (0.05)

CHEM17 03/18/20-1 Michael Hahn, Chemist 03/18/20

CF51974 (5X), CF51975 (5X), CF51977 (5X)

Chem 17 is a 25ml purge instrument. The laboratory minimum response factor is set at 0.01 instead of 0.05 for the 25ml purge instruments.
EPA method 8260D Table 4 supports this approach.

Initial Calibration Evaluation (CHEM17/VT-S031520):
94% of target compounds met criteria.

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March 24, 2020

SDG I.D.: GCF51973

VOA Narration

The following compounds had %RSDs >20%: None.
The following compounds did not meet Table 4 recommended minimum response factors: None.
The following compounds did not meet the minimum response factor of 0.05: None.

Continuing Calibration Verification (CHEM17/0318_02-VT-S031520) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
96% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet Table 4 recommended minimum response factors: None.
The following compounds did not meet the minimum MCP response factor of 0.05: None.

QC (Batch Specific):

Batch 522985 (CF51399) CHEM17 3/17/2020-2

CF51973(1X), CF51974(1X), CF51975(1X), CF51976(1X), CF51977(1X), CF51978(1X), CF51979(1X)

All LCS recoveries were within 70 - 130 with the following exceptions: trans-1,4-dichloro-2-butene(149%)
All LCSD recoveries were within 70 - 130 with the following exceptions: trans-1,4-dichloro-2-butene(165%)
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

Batch 523171 (CF52205) CHEM17 3/18/2020-1

CF51974(5X), CF51975(5X), CF51977(5X)

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.
Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

Batch 523354 (CF52176) CHEM02 3/19/2020-1

CF51975(20X)

All LCS recoveries were within 70 - 130 with the following exceptions: Trichlorotrifluoroethane(62%)
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.
Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

We attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

VPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

PIDFID 03/18/20-1 Raman Makol, Chemist 03/18/20

CF51974 (1X), CF51975 (1X), CF51977 (1X)

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MCP Certification Report

March 24, 2020

SDG I.D.: GCF51973

VPH Narration

QC (Batch Specific):

Batch 523130 (CF51974)

CF51974(1X), CF51975(1X), CF51977(1X)

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
A blank MS/MSD was analyzed with this batch.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Cooler: Yes [X] No [ ]
Coolant: IPK [ ] ICE [X] No [ ]

CHAIN OF CUSTODY RECORD

Temp 7.9° C Pg of

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Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Data Delivery/Contact Options:
[ ] Fax:
[ ] Phone:
[ ] Email:

Customer: BL Companies
Address: 355 Research Pkwy
Meriden CT

Project: 16D3253
Report to: nsalves@BLCompanies.com
Invoice to: projectap@BLcompanies.com
QUOTE #

Project P.O:

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature: Matt G. Date: 3/17

Matrix Code:
DW=Drinking Water **GW**=Ground Water **SW**=Surface Water **WW**=Waste Water
RW=Raw Water **SE**=Sediment **SL**=Sludge **S**=Soil **SD**=Solid **W**=Wipe **OIL**=Oil
B=Bulk **L**=Liquid **X** = _____(Other)

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	VOCs	EPH	VPH	sVOCs	MCP 14 Metals	GL Amber 8 oz. w/H3PO4	Soil VOA Vials [ ] methanol [ ] H2O	GL Soil container [ ] methanol [ ] H2O	GL Soil container ( )oz	40 ml VOA Vials	GL Amber 1000ml	PL As is [ ] HCl	PL As is [ ] H2SO4	PL As is [ ] 250ml [ ] 500ml [ ] 1000ml	PL H2SO4 [ ] 250ml [ ] 500ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle w/thio	Bacteria Bottle as is
51973	MW-1	W	3/17		X									3									
51974	MW-2				X	X	X	X						5	4			X					
51975	MW-101					X	X	X	X					5	4			X					
51976	MW-102													3									
51977	MW-103					X	X	X	X					5	4			X					
51978	MW-104													3									
51979	Trip Blank				X									2									

Relinquished by:	Accepted by:	Date:	Time:
		3/17	16:16

Comments, Special Requirements or Regulations:

Turnaround Time:
[ ] 1 Day*
[ ] 2 Days*
[ ] 3 Days*
[ ] Standard
[ ] Other
* SURCHARGE APPLIES

RI
[ ] (Residential) Direct Exposure
[ ] (Comm/Industrial) Direct Exposure
[ ] GA Leachability
[ ] GB Leachability
[ ] GA-GW Objectives
[ ] GB-GW Objectives

CT
[ ] RCP Cert
[ ] GW Protection
[ ] SW Protection
[ ] GA Mobility
[ ] GB Mobility
[ ] Residential DEC
[ ] I/C DEC
[ ] Other

MA
[X] MCP Certification
[X] GW-1 [ ] MWRA eSMART
[ ] GW-2
[ ] GW-3
[ ] S-1 GW-1 [ ] S-1 GW-2 [ ] S-1 GW-3
[ ] S-2 GW-1 [ ] S-2 GW-2 [ ] S-2 GW-3
[ ] S-3 GW-1 [ ] S-3 GW-2 [ ] S-3 GW-3
[ ] SW Protection

State where samples were collected: MA

Data Format
[X] Excel
[X] PDF
[ ] GIS/Key
[ ] EQuIS
[ ] Other

Data Package
[ ] Tier II Checklist
[ ] Full Data Package*
[ ] Phoenix Std Report
[ ] Other
* SURCHARGE APPLIES

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Analysis Report

August 25, 2020

FOR: Attn: Mr. Matt Gonsalves
BL Companies, Inc.
355 Research Parkway
Meriden, CT 06450

Sample Information		Custody Information		Date	Time
Matrix:	SURFACE WATER	Collected by:	MG	08/21/20	11:30
Location Code:	BLCOMPANIES	Received by:	LB	08/21/20	13:36
Rush Request:	24 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCG59046
Phoenix ID: CG59046

Project ID: 16D3253
Client ID: RW-1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.001	0.001	mg/L	1	08/22/20	CPP	SW6010D
Arsenic	< 0.004	0.004	mg/L	1	08/22/20	CPP	SW6010D
Cadmium	< 0.001	0.001	mg/L	1	08/22/20	CPP	SW6010D
Chromium	< 0.001	0.001	mg/L	1	08/22/20	EK	SW6010D
Copper	< 0.005	0.005	mg/L	1	08/22/20	CPP	SW6010D
Iron	1.80	0.010	mg/L	1	08/22/20	CPP	E200.7
Hardness (CaCO3)	185	0.1	mg/L	1	08/25/20		E200.7
Mercury	< 0.0002	0.0002	mg/L	1	08/24/20	RS	SW7470A
Nickel	0.001	0.001	mg/L	1	08/22/20	CPP	SW6010D
Lead	< 0.002	0.002	mg/L	1	08/22/20	CPP	SW6010D
Antimony	< 0.005	0.005	mg/L	1	08/22/20	CPP	SW6010D
Selenium	< 0.010	0.010	mg/L	1	08/22/20	CPP	SW6010D
Trivalent Chromium	< 0.001	0.001	mg/L	1	08/25/20		Calculation
Zinc	0.004	0.004	mg/L	1	08/22/20	CPP	SW6010D
Chromium, Hexavalent	< 0.01	0.01	mg/L	1	08/24/20 18:19	O	SM3500CRB-11
Ammonia as Nitrogen	0.24	0.05	mg/L	1	08/23/20	ARG	E350.1
pH	7.31	1.00	pH Units	1	08/21/20 23:01	AP/EG	SM4500-H B-11
Salinity	0.5	0.5	ppt	1	08/21/20	AP	SM2520B-10
Mercury Digestion	Completed				08/24/20	VT/VT	SW7470A
Total Metals Digestion	Completed				08/21/20	AG	

Project ID: 16D3253
Client ID: RW-1

Phoenix I.D.: CG59046

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
August 25, 2020
Official Report Release To Follow

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Analysis Report

August 25, 2020

FOR: Attn: Mr. Matt Gonsalves
BL Companies, Inc.
355 Research Parkway
Meriden, CT 06450

Sample Information		Custody Information		Date	Time
Matrix:	SURFACE WATER	Collected by:	MG	08/21/20	11:45
Location Code:	BLCOMPANIES	Received by:	LB	08/21/20	13:36
Rush Request:	24 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCG59046
Phoenix ID: CG59047

Project ID: 16D3253
Client ID: MW-2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Chromium	< 0.001	0.001	mg/L	1	08/25/20	EK	SW6010D
Trivalent Chromium	< 0.001	0.001	mg/L	1	08/25/20		Calculation
Chlorine Residual	< 0.02	0.02	mg/L	1	08/21/20 18:51	O	SM4500Cl-G-00
Chromium, Hexavalent	< 0.01	0.01	mg/L	1	08/21/20 18:13	O	SM3500CRB-11
Ammonia as Nitrogen	0.27	0.05	mg/L	1	08/23/20	ARG	E350.1
Total Metals Digestion	Completed				08/24/20	AG	

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for Chlorine is immediately. This Chlorine was performed in the laboratory and may be considered outside of hold-time.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
August 25, 2020
Official Report Release To Follow

Sample Criteria Exceedances Report

GCG59046 - BLCOMPANIES

Criteria: MA: CAM, GW1

State: MA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

Cooler: Yes [X] No [ ]
Coolant: IPK [X] ICE [ ] No [ ]
Temp 19.4 °C Pg of

CHAIN OF CUSTODY RECORD

PHOENIX Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Data Delivery/Contact Options:
[ ] Fax:
[ ] Phone:
[ ] Email:

Customer: BL Companies
Address: 355 Research Pkwy
Meriden CT

Project: 160 3253
Report to: mgonsalves@BLcompanies.com
Invoice to: project ap@BLcompanies.com
QUOTE #

Project P.O:

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature: Matt G. Date: 8/21

Matrix Code:
DW=Drinking Water **GW**=Ground Water **SW**=Surface Water **WW**=Waste Water
RW=Raw Water **SE**=Sediment **SL**=Sludge **S**=Soil **SD**=Solid **W**=Wipe **OIL**=Oil
B=Bulk **L**=Liquid **X** = _____(Other)

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Metals* & Total	pH	Hardness	Salinity	Dissolved Metals+	Chromium III	Chromium VI	Ammonia	Total Residual Chlorine	GL Amber 8 oz. w/H3PO4	Soil VOA Vials [ ] methanol [ ] H2O	GL Soil container ( ) oz	GL Soil container ( ) oz	40 ml VOA Vial [ ] As is [ ] HCl	GL Amber 1000ml [ ] As is [ ] H2SO4	PL As is	PL H2SO4 [ ] 250ml [ ] 500ml [ ] 1000ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle w/thio	Bacteria Bottle as is	100ml @ As is
590460	RW-1	SW	8/21	1130	X	X	X	X				X						3	1	2				2		
590467	MW-2	GW	8/21	1145					X	X		X	X					3	1							

Relinquished by:	Accepted by:	Date:	Time:
		8/21	13:30

Comments, Special Requirements or Regulations:
*: Antimony, Arsenic, Cadmium, Chromium III, Chromium VI, Copper, Iron, Lead, Mercury, Nickel, Selenium, Silver, Zinc
+: Hold for future analysis

Turnaround Time:
[X] 1 Day*
[ ] 2 Days*
[ ] 3 Days*
[ ] Standard
[ ] Other
* SURCHARGE APPLIES

RI
[ ] (Residential) Direct Exposure
[ ] (Comm/Industrial) Direct Exposure
[ ] GA Leachability
[ ] GB Leachability
[ ] GA-GW Objectives
[ ] GB-GW Objectives

CT
[ ] RCP Cert
[ ] GW Protection
[ ] SW Protection
[ ] GA Mobility
[ ] GB Mobility
[ ] Residential DEC
[ ] I/C DEC
[ ] Other

MA
[X] MCP Certification
[X] GW-1 [ ] MWRA eSMART
[ ] GW-2
[ ] GW-3
[ ] S-1 GW-1 [ ] S-1 GW-2 [ ] S-1 GW-3
[ ] S-2 GW-1 [ ] S-2 GW-2 [ ] S-2 GW-3
[ ] S-3 GW-1 [ ] S-3 GW-2 [ ] S-3 GW-3
[ ] SW Protection

State where samples were collected: MA

Data Format
[X] Excel
[X] PDF
[ ] GIS/Key
[ ] EQuIS
[ ] Other

Data Package
[ ] Tier II Checklist
[ ] Full Data Package*
[ ] Phoenix Std Report
[ ] Other
* SURCHARGE APPLIES

GCG 59046

Shannon Wilhelm

Subject: FW: 16D3253

From: Gonsalves, Matthew [mailto:mgonsalves@Blcompanies.com]
Sent: Monday, August 24, 2020 12:31 PM
To: Christine Paradise
Subject: Re: 16D3253

Yes please proceed with running them as soon as possible.

Get Outlook for Android

From: Christine Paradise <christine@phoenixlabs.com>
Sent: Monday, August 24, 2020 12:11:42 PM
To: Gonsalves, Matthew <mgonsalves@Blcompanies.com>
Subject: 16D3253

Good Afternoon,

We received these samples on Friday, however the HexCr and TriCr was not logged into the first sample due to our error. Would you like to proceed with testing past holding time or is this something you would need to resample? Please let me know.

I'm sorry for any inconvenience.

Christine Paradise

Phoenix Environmental Laboratories
587 East Middle Turnpike
Manchester, CT 06040
Phone: 860-645-1102
Fax: 860-645-0823

ATTACHMENT G
TREATMENT
SYSTEM
SPECIFICATIONS
AND DATA SHEETS

DocuSign Envelope ID: A312F187-F125-4CD0-AEEF-F90690E0C0FE

RESINTECH INC
INNOVATIONS IN ION EXCHANGE

CGS

CATION EXCHANGE RESIN
SOFTENING GRADE
Na FORM

RESINTECH CGS is a sodium form standard crosslinked gel strong acid cation resin. *CGS* is optimized for residential applications that require good regeneration efficiency and high capacity. *RESINTECH CGS* is intended for use in all residential and commercial softening applications that do not have significant amounts of chlorine in the feedwater. *CGS* is supplied in the sodium form.

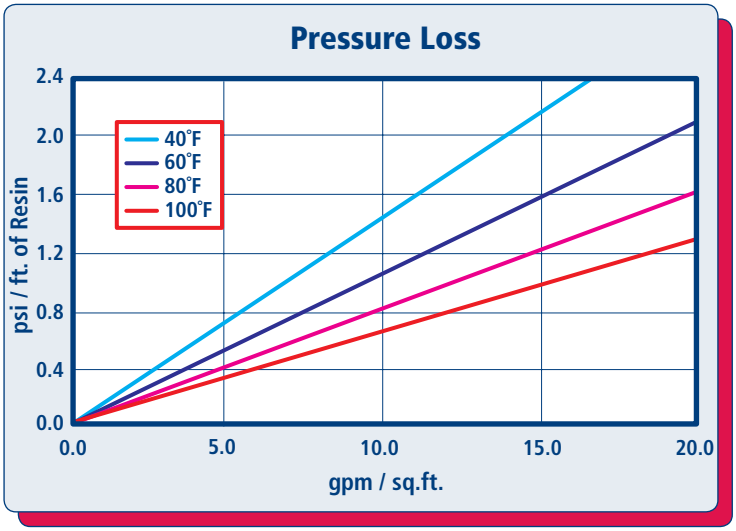
NSF/ANSI 44-61 CERTIFIED FOR MATERIAL SAFETY

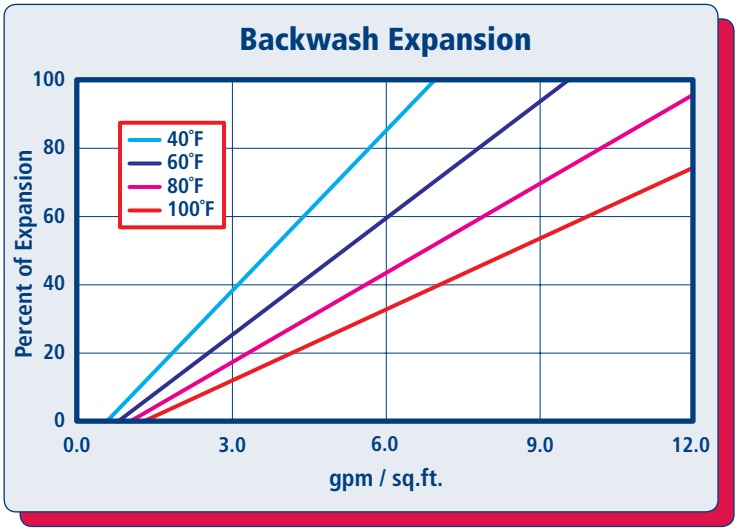
FEATURES & BENEFITS

- **RESIDENTIAL SOFTENING APPLICATIONS**
  Resin parameters are optimized for residential softeners
- **LOW COLOR THROW**
- **SUPERIOR PHYSICAL STABILITY**
  93% plus sphericity and high crush strengths together with carefully controlled particle distribution provides long life and low pressure drop
- **COMPLIES WITH US FDA REGULATIONS**
  Conforms to paragraph 21CFR173.25 of the Food Additives Regulations of the US FDA

Prior to first use for potable water, resin should be backwashed for a minimum of 20 minutes, followed by 10 bed volumes of downflow rinse.

HYDRAULIC PROPERTIES





PRESSURE LOSS

The graph above shows the expected pressure loss of *ResinTech CGS* per foot of bed depth as a function of flow rate at various temperatures.

BACKWASH

The graph above shows the expansion characteristics of *ResinTech CGS* as a function of flow rate at various temperatures.

160 Cooper Road • West Berlin, NJ 08091 USA • p: 856.768.9600 • f: 856.768.9601 • e: ixresin@resintech.com • w: resintech.com

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RESINTECH® CGS

PHYSICAL PROPERTIES

Polymer Structure	Styrene/DVB
Polymer Type	Gel
Functional Group	Sulfonic Acid
Physical Form	Spherical beads
Ionic Form as shipped	Sodium
Total Capacity	
Sodium form	>1.8 meq/mL
Water Retention	
Sodium form	40 to 52 percent
Approximate Shipping Weight	
Sodium form	50 lbs./cu.ft.
Screen Size Distribution (U.S. mesh)	16 to 50
Maximum Fines Content (<50 mesh)	1 percent
Minimum Sphericity	90 percent
Uniformity Coefficient	1.6 approx.
Resin Color	Amber

Note: Physical properties can be certified on a per lot basis, available upon request

SUGGESTED OPERATING CONDITIONS

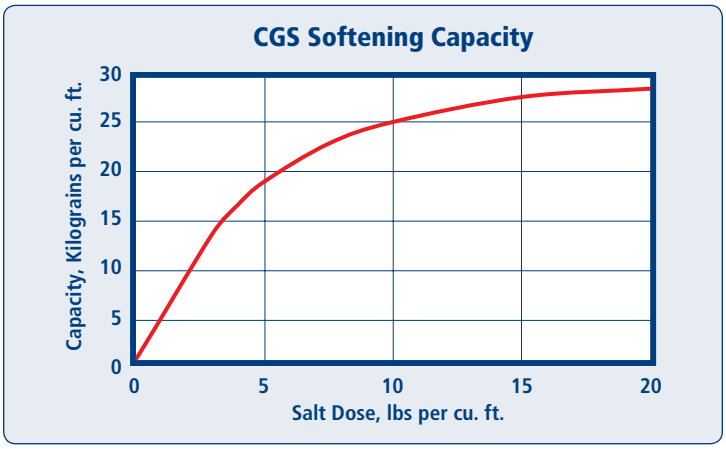
Maximum continuous temperature	
Sodium form	250˚F
Minimum bed depth	24 inches
Backwash expansion	25 to 50 percent
Maximum pressure loss	25 psi
Operating pH range	0 to 14 SU
Regenerant Concentration	
Salt cycle	10 to 15 percent NaCl
Regenerant level	4 to 15 lbs./cu.ft.
Regenerant flow rate.	0.5 to 1.5 gpm/cu.ft.
Regenerant contact time	>20 minutes
Displacement flow rate	Same as dilution water
Displacement volume	10 to 15 gallons/cu.ft.
Rinse flow rate	Same as service flow
Rinse volume	35 to 60 gallons/cu.ft.
Service flow rate	1 to 10 gpm/cu.ft.

Note: These guidelines describe average low risk operating conditions. They are not intended to be absolute minimums or maximums.
For operation outside these guidelines, contact ResinTech Technical Support

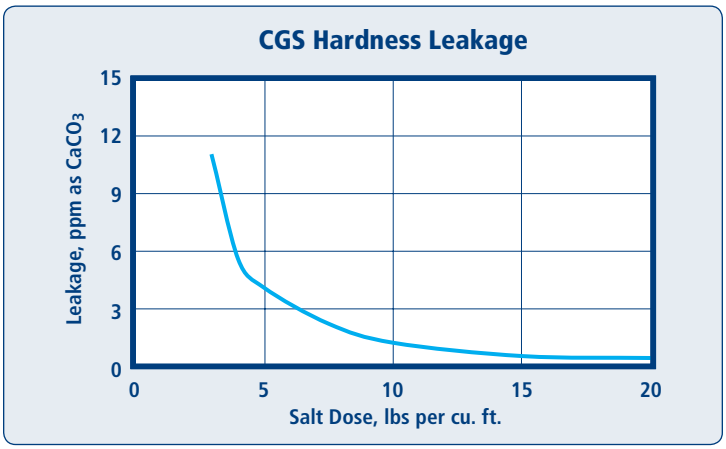
APPLICATIONS

SOFTENING

ResinTech CGS is a standard crosslinked cation resin optimized for residential and commercial applications. This type of resin is easier to regenerate than the higher crosslinked resins. CGS has marginal resistance to chlorine and other oxidants and is not ideal for high temperature and other high stress applications.



Capacity and leakage data are based on the following: 2:1 Ca:Mg ratio, 500 ppm TDS as CaCO3, 0.2% hardness in the salt and 10% brine concentration applied co-currently through the resin over 30 minutes. No engineering downgrade has been applied.



ResinTech Inc
INNOVATIONS IN ION EXCHANGE
East Coast - West Berlin, NJ p:856.768.9600 • Midwest - Chicago, IL p:708.777.1167 • West Coast - Los Angeles, CA p:323.262.1600

CAUTION: DO NOT MIX ION EXCHANGE RESIN WITH STRONG OXIDIZING AGENTS. Nitric acid and other strong oxidizing agents can cause explosive reactions when mixed with organic materials, such as ion exchange resins.
MATERIAL SAFETY DATA SHEETS (MSDS) are available for all ResinTech Inc. products. To obtain a copy, contact your local ResinTech sales representative or our corporate headquarters. They contain important health and safety information. That information may be needed to protect your employees and customers from any known health and safety hazards associated with our products. We recommend that you secure and study the pertinent MSDS for our products and any other products being used. These suggestions and data are based on information we believe to be reliable. They are offered in good faith. However we do not make any guarantee or warranty. We caution against using these products in an unsafe manner or in violation of any patents; further we assume no liability for the consequences of any such actions.
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89 Crawford Street
Leominster, Massachusetts 01453
Tel: 774.450.7177
Fax: 888.835.0617
www.lrt-llc.net

FILTRATION MEDIA :
8x30 RE-ACTIVATED CARBON
4x10 RE-ACTIVATED CARBON

GENERAL DESCRIPTION

Select Re-Activated carbon from domestic sources is quality screened during our purchasing process for activity, density and fines. The use of re-activated carbon is recommended as a lower cost alternative for most sites where drinking water quality is not necessary. In many cases our re-activated carbon meets and exceeds imported virgin carbon. In addition all carbon either sold by itself or installed in our filtration units traced by lot number to the installation or sale.

8x30 (Liquid Phase) Standard Specifications:	Standard	Value
Iodine Number	ASTM D-4607	800 Minimum
Moisture Content	ASTM D-2867	5% Maximum (as packed)
Particle Size	ASTM D-2862	8x30 US Mesh
Ash		10% Maximum
Total Surface Area (N2BET)		1050 Minimum
Pore Volume (cc/g)		0.75

4*10 (Vapor Phase) Standard Specifications:	Standard	Value
Carbon Tetrachloride Activity Level	ASTM D-3467	40 Minimum
Moisture Content	ASTM D-2867	5% Maximum (as packed)
Particle Size	ASTM D-2862	4x10 US Mesh
Ash		10% Maximum
Total Surface Area (N2BET)		1050 Minimum
Pore Volume (cc/g)		0.75

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The Pulsatron Series HV designed for high viscosity applications for precise and accurate metering control. The Series HV offers manual control over stroke length and stroke rate as standard with the option to choose between 4-20mA and external pace inputs for automatic control.

Five distinct models are available, having pressure capabilities to 150 PSIG (10 BAR) @ 12 GPD (1.9 lph), and flow capacities to 240 GPD (37.9 lph) @ 80 PSIG (5.6 BAR), with a turndown ratio of 100:1. Metering performance is reproducible to within ± 2% of maximum capacity.

Features

- Automatic Control, available with 4-20mADC direct or external pacing, with stop function.
- Manual Control by on-line adjustable stroke rate and stroke length.
- Auto-Off-Manual switch.
- Highly Reliable timing circuit.
- Circuit Protection against voltage and current upsets.
- Panel Mounted Fuse.
- Solenoid Protection by thermal overload with auto-reset.
- Water Resistant, for outdoor and indoor applications.
- Indicator Lights, panel mounted.
- Guided Ball Check Valve Systems, to reduce back flow and enhance outstanding priming characteristics.
- Viscosities to 20,000 CPS.

Operating Benefits

- Reliable metering performance.
- Rated "hot" for continuous duty.
- High viscosity capability.
- Leak-free, sealless, liquid end.

Controls

Manual Stroke Rate

- Turn-Down Ratio 10:1

Manual Stroke Length

- Turn-Down Ratio 10:1

4-20mA or 20-4mA Input

- Automatic Control

Aftermarket

- KOPkits
- Gauges
- Dampeners
- Pressure Relief Valves
- Tanks
- Pre-Engineered Systems
- Process Controllers (PULSAblue, MicroVision)

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Series HV

Specifications and Model Selection

MODEL		LVB3	LVF4	LVG4	LVG5	LVH7
Capacity	GPH	0.50	1.00	2.00	4.00	10.00
nominal	GPD	12	24	48	96	240
(max.)	LPH	1.9	3.8	7.6	15.1	37.9
Pressure	PSIG	150	150	110	110	80
(max.)	BAR	10	10	7	7	5.6
Connections:	Tubing	(S) .50" I.D. X .75" O.D. .38" I.D. X .50" OD (LVB3 & F4 only) (S & D) .50" I.D. X .75" O.D. (LVG4,G5 & H7 only)				

Engineering Data

Pump Head Materials Available:	GFPPL
	PVC
	PVDF
	316 SS
Diaphragm:	PTFE-faced CSPE-backed
Check Valves Materials Available:	
Seats/O-Rings:	PTFE
	CSPE
	Viton
Balls:	Ceramic
	PTFE
	316 SS
	Alloy C
Fittings Materials Available:	GFPPL
	PVC
	PVDF
Bleed Valve:	Same as fitting and check valve selected, except 316SS
Injection Valve & Foot Valve Assy:	Same as fitting and check valve selected
Tubing:	Clear PVC
	White PE

Important: Material Code - GFPPL=Glass-filled Polypropylene, PVC=Polyvinyl Chloride, PE=Polyethylene, PVDF=Polyvinylidene Fluoride, CSPE=Generic formulation of Hypalon, a registered trademark of E.I. DuPont Company. Viton is a registered trademark of E.I. DuPont Company. PVC wetted end recommended for sodium hypochlorite.

Engineering Data

Reproducibility:	+/- 2% at maximum capacity
Viscosity Max CPS:	20,000 CPS
Stroke Frequency Max SPM:	125
Stroke Frequency Turn-Down Ratio:	10:1
Stroke Length Turn-Down Ratio:	10:1
Power Input:	115 VAC/50-60 HZ/1 ph
	230 VAC/50-60 HZ/1 ph
Average Current Draw:	
@ 115 VAC; Amps:	1.0 Amps
@ 230 VAC; Amps:	0.5 Amps @ 230 VAC
Peak Input Power:	300 Watts
Average Input Power @ Max SPM:	130 Watts

Custom Engineered Designs – Pre-Engineered Systems

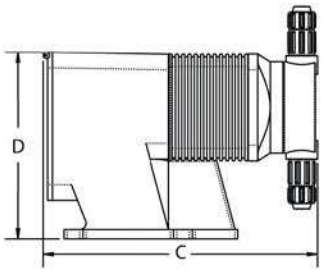
Pre-Engineered Systems

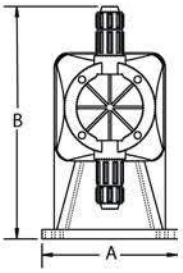
Pulsafeeder's Pre-Engineered Systems are designed to provide complete chemical feed solutions for all electronic metering applications. From stand alone simplex pH control applications to full-featured, redundant sodium hypochlorite disinfection metering, these rugged fabricated assemblies offer turn-key simplicity and industrial-grade durability. The UV-stabilized, high-grade HDPE frame offers maximum chemical compatibility and structural rigidity. Each system is factory assembled and hydrostatically tested prior to shipment.

Dimensions

Series HV Dimensions (inches)					
Model No.	A	B	C	D	Shipping Weight
LVB3	5.4	9.3	9.5	7.5	13
LVF4	5.4	10.8	10.8	7.5	18
LVG4	5.4	9.5	10.6	7.5	18
LVG5	5.4	10.8	10.8	7.5	18
LVH7	6.1	11.5	11	8.2	25

NOTE: Inches X 2.54 = cm





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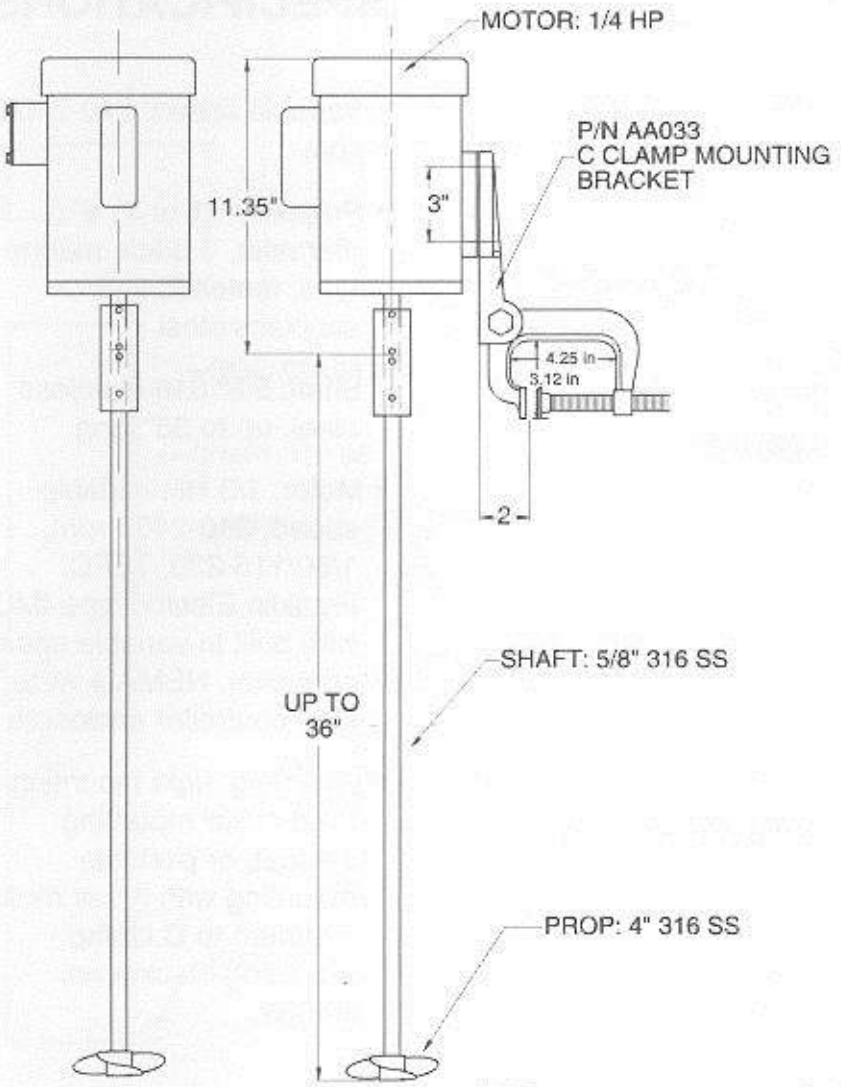
MIXER MODEL NO. AA102A



AA102A

SPECIFICATIONS

- Speed: 1,725 rpm
- Propeller: (1 or 2) 4" diameter, 3 blade marine type, material: 316 stainless steel
- Shaft: 5/8" 316 stainless steel, up to 36" long
- Motor: 1/4 HP, 1,725 rpm, 1/60/115-230, capacitor start, or 3/60/230-460, TEFC
- Mounting: rigid mounting to fixed mixer mounting bracket, or portable mounting with mixer motor mounted to C clamp mounting bracket no. AA033.

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Revision date 2019-15-4

SAFETY DATA SHEET

Revision number 1

SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

Product Name:	Redux E50
Product Use:	Water and Wastewater Treatment Coagulant/Flocculant
Revision Date:	Apr 15, 2019
Supersedes Date:	Mar 5, 2015
Manufacturer's Name:	Azure Water Services
Address:	280 Callegari Dr. West Haven CT, 06516
Emergency Phone:	Chemtrec, (1) 800-424-9300, in US and Canada only

SECTION 2) HAZARDS IDENTIFICATION

Classification

Corrosive to metals - Category 1

Eye Irritation - Category 2

Skin Irritation - Category 2

Pictograms

Signal Word

Warning

Hazardous Statements - Health

Causes serious eye irritation

Causes skin irritation

Hazardous Statements - Physical

May be corrosive to metals

Precautionary Statements - General

If medical advice is needed, have product container or label at hand.

Keep out of reach of children.

Read label before use.

Precautionary Statements - Prevention

Keep only in original packaging.

Wash thoroughly after handling.

Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary Statements - Response

Absorb spillage to prevent material damage.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

IF ON SKIN: Wash with plenty of water.

Specific treatment (see first-aid on this SDS).

If skin irritation occurs: Get medical advice/attention.

Take off contaminated clothing. And wash it before reuse.

Precautionary Statements - Storage

Store in a corrosive resistant container with a resistant inner liner.

Precautionary Statements - Disposal

No precautionary statement available.

Hazards Not Otherwise Classified (HNOC)

None.

SECTION 3) COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Chemical Name	% By Weight
PROPRIETARY	Trade Secret Ingredient	45 - 55%

Specific chemical identity and/or exact percentage (concentration) of the composition has been withheld to protect confidentiality.

SECTION 4) FIRST-AID MEASURES

Inhalation

Remove source of exposure or move person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor/. If breathing has stopped, trained personnel should begin rescue breathing or, if the heart has stopped, immediately start cardiopulmonary resuscitation (CPR) or automated external defibrillation (AED).

Eye Contact

Remove source of exposure or move person to fresh air. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for a flushing duration of 30 minutes. Take care not to rinse contaminated water into the unaffected eye or onto the face. Immediately call a POISON CENTER/doctor.

Skin Contact

Take off immediately all contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Rinse skin with lukewarm, gently flowing water/shower for a duration of 30 minutes or until medical aid is available. Immediately call a POISON CENTER/doctor. Wash contaminated clothing before re-use or discard.

Ingestion

Rinse mouth with water. Do NOT induce vomiting. Give 1 to 2 cups of milk or water to drink. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, lie on your side, in the recovery position. Immediately call a POISON CENTER/doctor.

Most Important Symptoms and Effects, Both acute and Delayed

No data available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

SECTION 5) FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Dry chemical, foam, carbon dioxide. Sand or earth may be used for small fires only.

Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media

Do not use direct water stream since this may cause fire to spread.

Specific Hazards in Case of Fire

In case of fire, hazardous decomposition products may include sulphur oxides.

Fire-Fighting Procedures

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Water may be ineffective but can be used to cool containers exposed to heat or flame. Caution should be exercised when using water or foam as frothing may occur, especially if sprayed into containers of hot, burning liquid. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

Special Protective Actions

Wear protective pressure self-contained breathing apparatus (SCBA) and full turnout gear.

SECTION 6) ACCIDENTAL RELEASE MEASURES

Emergency Procedure

Isolate hazard area and keep unnecessary people away. Remove all possible sources of ignition in the surrounding area. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.

Absorb spill with absorbent material or vacuum spill into polyethylene lined steel or plastic drums.

Do not touch or walk through spilled material.

If spilled material is cleaned up using a regulated solvent, the resulting waste mixture may be regulated.

Recommended Equipment

Positive pressure, full-facepiece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved).

Personal Precautions

Avoid breathing vapor or mist. Avoid contact with skin, eye or clothing. Ensure adequate ventilation. Do not touch damaged containers or spilled materials unless wearing appropriate protective clothing.

Environmental Precautions

Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems and natural waterways by using sand, earth, or other appropriate barriers.

Methods and Materials for Containment and Cleaning Up

Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Contaminated absorbent material may pose the same hazard as the spilled product.

SECTION 7) HANDLING AND STORAGE

General

Wash hands after use.
Do not get in eyes, on skin or on clothing.
Do not breathe vapors or mists.
Use good personal hygiene practices.
Eating, drinking and smoking in work areas is prohibited.
Remove contaminated clothing and protective equipment before entering eating areas.
Eyewash stations and showers should be available in areas where this material is used and stored.

Ventilation Requirements

Use only with adequate ventilation to control air contaminants to their exposure limits. The use of local ventilation is recommended to control emissions near the source.

Storage Room Requirements

Keep container(s) tightly closed and properly labeled. Store in cool, dry, well-ventilated areas away from heat, direct sunlight and strong oxidizers. Store in approved containers and protect against physical damage. Keep containers securely sealed when not in use. Indoor storage should meet OSHA standards and appropriate fire codes. Containers that have been opened must be carefully resealed to prevent leakage. Empty containers retain residue and may be dangerous.

Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas where this product is used and stored.

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SECTION 8) EXPOSURE CONTROLS, PERSONAL PROTECTION

Eye Protection

Wear eye protection with side shields or goggles. Wear indirect-vent, impact and splash resistant goggles when working with liquids. If additional protection is needed for entire face, use in combination with a face shield.

Skin Protection

Use of gloves approved to relevant standards made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Use of an apron and over-boots of chemically impervious materials such as neoprene or nitrile rubber is recommended to avoid skin sensitization. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Launder soiled clothes or properly disposed of contaminated material, which cannot be decontaminated.

Respiratory Protection

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker, a respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed. Check with respiratory protective equipment suppliers.

Appropriate Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Density	11.10 lb/gal
Specific Gravity	1.33 - 1.35
Appearance	Colorless to yellow liquid
pH	3 - 4
Odor Threshold	N/A
Odor Description	N/A
Water Solubility	complete
Viscosity	< 100cps @20C
Vapor Pressure	Similar to water
Vapor Density	N/A
Freezing Point	<19 °F
Boiling Point	>212 °F
Evaporation Rate	N/A
Flammability	Will not burn

SECTION 10) STABILITY AND REACTIVITY

Stability

Stable under normal storage and handling conditions.

Conditions To Avoid

Avoid heat, sparks, flame, high temperature and contact with incompatible materials.

Hazardous Reactions/Polymerization

Hazardous polymerization will not occur.

Incompatible Materials

Strong bases, acids, oxidizing and reducing agents.

Hazardous Decomposition Products

May produce carbon monoxide, carbon dioxide.

SECTION 11) TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Inhalation LC50 : Not Available
Oral LD50 : Not Available
Dermal LD50 : Not Available

Acute Toxicity

Component	weight-%	Oral LD50	Dermal LD50	Inhalation LC50
Trade Secret Ingredient	45 - 55%	= 9187 mg/kg (Rat)	> 2000 mg/k (Rat)	--

Aspiration Hazard

No Data Available

Respiratory/Skin Sensitization

No Data Available

Serious Eye Damage/Irritation

Causes serious eye irritation

Skin Corrosion/Irritation

Causes skin irritation

Specific Target Organ Toxicity - Repeated Exposure

No Data Available

Specific Target Organ Toxicity - Single Exposure

No Data Available

SECTION 12) ECOLOGICAL INFORMATION

Ecotoxicity

Acute aquatic toxicity - Product Information

Fish
LC 50 (96 hour, static) 776.4 mg/L *Pimephales promelas* (Fathead Minnow) [1]
EC 50 (96 hour, static) 265.5 mg/L *Pimephales promelas* (Fathead Minnow) [1]

Crustacea
LC 50 (48 hour, static) 803.8 mg/L *Ceriodaphnia dubia* (Water Flea) [1]
EC 50 (48 hour, static) 33.2 mg/L *Ceriodaphnia dubia* (Water Flea) [1]

Algae/aquatic plants
No information available

Acute aquatic toxicity - Component Information

Component	weight-%	Algae/aquatic plants	Fish	Toxicity to daphnia and other aquatic invertebrates
Trade Secret Ingredient	45 - 55%	--	LC50 (96 h static) 100 - 500 mg/L (Brachydanio rerio)	--

Mobility in Soil

No data available.

Bio-accumulative Potential

No data available.

Persistence and Degradability

No data available.

Other Adverse Effect

No data available.

SECTION 13) DISPOSAL CONSIDERATIONS

Waste Disposal

Under RCRA it is the responsibility of the user of the product to determine at the time of disposal whether the product meets RCRA criteria for hazardous waste. Waste management should be in full compliance with federal, state and local laws.
Empty Containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld or use for any other purposes. Return drums to reclamation centers for proper cleaning and reuse.

SECTION 14) TRANSPORT INFORMATION

U.S. DOT Information

NOT REGULATED FOR TRANSPORTATION

This product is excepted from DOT regulations under 49 CFR 173.154(d) when shipped by road or railway. The product exception is referenced in 49 CFR 172.101 Table. Packaging material must not be aluminum, steel or be degraded by this product

SECTION 15) REGULATORY INFORMATION

CAS	Chemical Name	% By Weight	Regulation List
No applicable CAS	No applicable chemical	-	-

SECTION 16) OTHER INFORMATION

Glossary

ACGIH- American Conference of Governmental Industrial Hygienists; ANSI- American National Standards Institute; Canadian TDGCanadian Transportation of Dangerous Goods; CAS- Chemical Abstract Service; Chemtrec- Chemical Transportation Emergency Center(US); CHIP- Chemical Hazard Information and Packaging; DSL- Domestic Substances List; EC- Equivalent Concentration; EH40 (UK)- HSE Guidance Note EH40 Occupational Exposure Limits; EPCRA- Emergency Planning and Community Right-To-Know Act; ESL Effects screening levels; HMIS- Hazardous Material Information Service; LC- Lethal Concentration; LD- Lethal Dose; NFPA- National Fire Protection Association; OEL- Occupational Exposure Limits; OSHA- Occupational Safety and Health Administration, US Department of Labor; PEL- Permissible Exposure Limit; SARA (Title III)- Superfund Amendments and Reauthorization Act; SARA 313- Superfund Amendments and Reauthorization Act, Section 313; SCBA- Self Contained Breathing Apparatus; STEL-Short Term Exposure Limit; TCEQ Texas Commission on Environmental Quality; TLV- Threshold Limit Value; TSCA- Toxic Substances Control Act Public Law 94-469; TWA Time Weighted Value; US DOT- US Department of Transportation; WHMIS- Workplace Hazardous Materials Information System.

Additional Information

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

Version 1.0:

Revision Date: Apr 15,2019

First Edition.

DISCLAIMER

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist. The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

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Revision date 2019-15-4

SAFETY DATA SHEET

Revision number 1

SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

Product ID:	Redux-823
Product Name:	Processing aid for industrial applications
Revision Date:	Apr 15, 2019
Supersedes Date:	Jan 25, 2018
Manufacturer's Name:	Azure Water Services
Address:	280 Callegari Drive West Haven, CT, US, 06516
Emergency Phone:	Chemtrec 800-424-9300, in US and Canada only

SECTION 2) HAZARDS IDENTIFICATION

Classification of the substance or mixture

Not a hazardous substance or mixture according to United States Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified (HNOC)

None.

SECTION 3) COMPOSITION / INFORMATION ON INGREDIENTS

None of the chemicals in this product are hazardous according to the GHS.

SECTION 4) FIRST-AID MEASURES

Inhalation

Remove source of exposure or move person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor/. If breathing has stopped, trained personnel should begin rescue breathing or, if the heart has stopped, immediately start cardiopulmonary resuscitation (CPR) or automated external defibrillation (AED).

Eye Contact

Remove source of exposure or move person to fresh air. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for a flushing duration of 30 minutes. Take care not to rinse contaminated water into the unaffected eye or onto the face. Immediately call a POISON CENTER/doctor.

Skin Contact

Take off immediately all contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Rinse skin with lukewarm, gently flowing water/shower for a duration of 30 minutes or until medical aid is available. Immediately call a POISON CENTER/doctor. Wash contaminated clothing before re-use or discard.

Ingestion

Rinse mouth with water. Do NOT induce vomiting. Give 1 to 2 cups of milk or water to drink. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, lie on your side, in the recovery position. Immediately call a POISON CENTER/doctor.

Most Important Symptoms and Effects, Both acute and Delayed

No data available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

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SECTION 5) FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Dry chemical, foam, carbon dioxide. Sand or earth may be used for small fires only.

Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media

Do not use direct water stream since this may cause fire to spread.

Specific Hazards in Case of Fire

In case of fire, hazardous decomposition products may include sulphur oxides.

Fire-Fighting Procedures

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Water may be ineffective but can be used to cool containers exposed to heat or flame. Caution should be exercised when using water or foam as frothing may occur, especially if sprayed into containers of hot, burning liquid. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

Special Protective Actions

Wear protective pressure self-contained breathing apparatus (SCBA) and full turnout gear.

SECTION 6) ACCIDENTAL RELEASE MEASURES

Emergency Procedure

Isolate hazard area and keep unnecessary people away. Remove all possible sources of ignition in the surrounding area. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.

Absorb spill with absorbent material or vacuum spill into polyethylene lined steel or plastic drums.

Do not touch or walk through spilled material.

If spilled material is cleaned up using a regulated solvent, the resulting waste mixture may be regulated.

Recommended Equipment

Positive pressure, full-facepiece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved).

Personal Precautions

Avoid breathing vapor or mist. Avoid contact with skin, eye or clothing. Ensure adequate ventilation. Do not touch damaged containers or spilled materials unless wearing appropriate protective clothing.

Environmental Precautions

Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems and natural waterways by using sand, earth, or other appropriate barriers.

Methods and Materials for Containment and Cleaning Up

Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Contaminated absorbent material may pose the same hazard as the spilled product.

SECTION 7) HANDLING AND STORAGE

General

Wash hands after use.
Do not get in eyes, on skin or on clothing.
Do not breathe vapors or mists.
Use good personal hygiene practices.
Eating, drinking and smoking in work areas is prohibited.
Remove contaminated clothing and protective equipment before entering eating areas.
Eyewash stations and showers should be available in areas where this material is used and stored.

Ventilation Requirements

Use only with adequate ventilation to control air contaminants to their exposure limits. The use of local ventilation is recommended to control emissions near the source.

Storage Room Requirements

Keep container(s) tightly closed and properly labeled. Store in cool, dry, well-ventilated areas away from heat, direct sunlight and strong oxidizers. Store in approved containers and protect against physical damage. Keep containers securely sealed when not in use. Indoor storage should meet OSHA standards and appropriate fire codes. Containers that have been opened must be carefully resealed to prevent leakage. Empty containers retain residue and may be dangerous.
Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas where this product is used and stored.

SECTION 8) EXPOSURE CONTROLS, PERSONAL PROTECTION

Eye Protection

Wear eye protection with side shields or goggles. Wear indirect-vent, impact and splash resistant goggles when working with liquids. If additional protection is needed for entire face, use in combination with a face shield.

Skin Protection

Use of gloves approved to relevant standards made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Use of an apron and over-boots of chemically impervious materials such as neoprene or nitrile rubber is recommended to avoid skin sensitization. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Launder soiled clothes or properly disposed of contaminated material, which cannot be decontaminated.

Respiratory Protection

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker, a respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed. Check with respiratory protective equipment suppliers.

Appropriate Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Density	6.26 lb/gal
Specific Gravity	0.6 - 0.9
Appearance	granular, white solid
pH	5 - 9 @ 5 g/L
Odor Threshold	N/A
Odor Description	N/A
Water Solubility	Complete
Viscosity	N/A
Vapor Pressure	Similar to water
Vapor Density	N/A
Freezing Point	<32 °F
Boiling Point	>212 °F
Evaporation Rate	N/A
Flammability	Will not burn

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SECTION 10) STABILITY AND REACTIVITY

Stability

Stable under normal storage and handling conditions.

Conditions To Avoid

Avoid heat, sparks, flame, high temperature and contact with incompatible materials.

Hazardous Reactions/Polymerization

Hazardous polymerization will not occur.

Incompatible Materials

Strong bases, acids, oxidizing and reducing agents.

Hazardous Decomposition Products

May produce carbon monoxide, carbon dioxide.

SECTION 11) TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

No Data Available

Acute Toxicity

Inhalation, Testing: Not expected to be toxic by inhalation.
Ingestion, Testing: LD50, Rat > 5,00 mg/kg
Dermal, Testing: LD50, Rat > 5,000 mg/kg

Respiratory/Skin Sensitization

No Data Available

Serious Eye Damage/Irritation

No Data Available

Skin Corrosion/Irritation

No Data Available

Specific Target Organ Toxicity - Repeated Exposure

No Data Available

Specific Target Organ Toxicity - Single Exposure

No Data Available

SECTION 12) ECOLOGICAL INFORMATION

Acute Ecotoxicity

Danio Rerio: 96 hr LC50 >100 mg/l (OECD 203)

Fathead Minnow (pimephales promelas): 96hr LC50 >100 mg/l (OECD 203)

Daphnia Magna: 48hr EC50 >100 mg/l (OECD 202)

Scenedesmus Subspicatus: 72hr IC50 >100 mg/l (OECD 201)

Mobility in Soil

No data available.

Bio-accumulative Potential

Not bioaccumulating.

Persistence and Degradability

Not readily biodegradable.

Other Adverse Effect

No data available.

SECTION 13) DISPOSAL CONSIDERATIONS

Waste Disposal

Under RCRA it is the responsibility of the user of the product to determine at the time of disposal whether the product meets RCRA criteria for hazardous waste. Waste management should be in full compliance with federal, state and local laws.
Empty Containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld or use for any other purposes. Return drums to reclamation centers for proper cleaning and reuse.

SECTION 14) TRANSPORT INFORMATION

U.S. DOT Information

For all transportation accidents, call CHEMTREC at 800/424-9300. All spills and leaks of this material must be handled in accordance with local, state, and federal regulations.

DOT Shipping Designation:

Non-hazardous under 29-CFR 1910.1200. Water treatment compound

SECTION 15) REGULATORY INFORMATION

CAS	Chemical Name	% By Weight	Regulation List
No applicable CAS	No applicable chemical	-	-

SECTION 16) OTHER INFORMATION

Glossary

ACGIH- American Conference of Governmental Industrial Hygienists; ANSI- American National Standards Institute; Canadian TDGCanadian Transportation of Dangerous Goods; CAS- Chemical Abstract Service; Chemtrec- Chemical Transportation Emergency Center(US); CHIP- Chemical Hazard Information and Packaging; DSL- Domestic Substances List; EC- Equivalent Concentration; EH40 (UK)- HSE Guidance Note EH40 Occupational Exposure Limits; EPCRA- Emergency Planning and Community Right-To-Know Act; ESL Effects screening levels; HMIS- Hazardous Material Information Service; LC- Lethal Concentration; LD- Lethal Dose; NFPA- National Fire Protection Association; OEL- Occupational Exposure Limits; OSHA- Occupational Safety and Health Administration, US Department of Labor; PEL- Permissible Exposure Limit; SARA (Title III)- Superfund Amendments and Reauthorization Act; SARA 313- Superfund Amendments and Reauthorization Act, Section 313; SCBA- Self Contained Breathing Apparatus; STEL-Short Term Exposure Limit; TCEQ Texas Commission on Environmental Quality; TLV- Threshold Limit Value; TSCA- Toxic Substances Control Act Public Law 94-469; TWA Time Weighted Value; US DOT- US Department of Transportation; WHMIS- Workplace Hazardous Materials Information System.

Additional Information

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

Version 1.0:

Revision Date: Jan 25, 2018
First Edition.

DISCLAIMER

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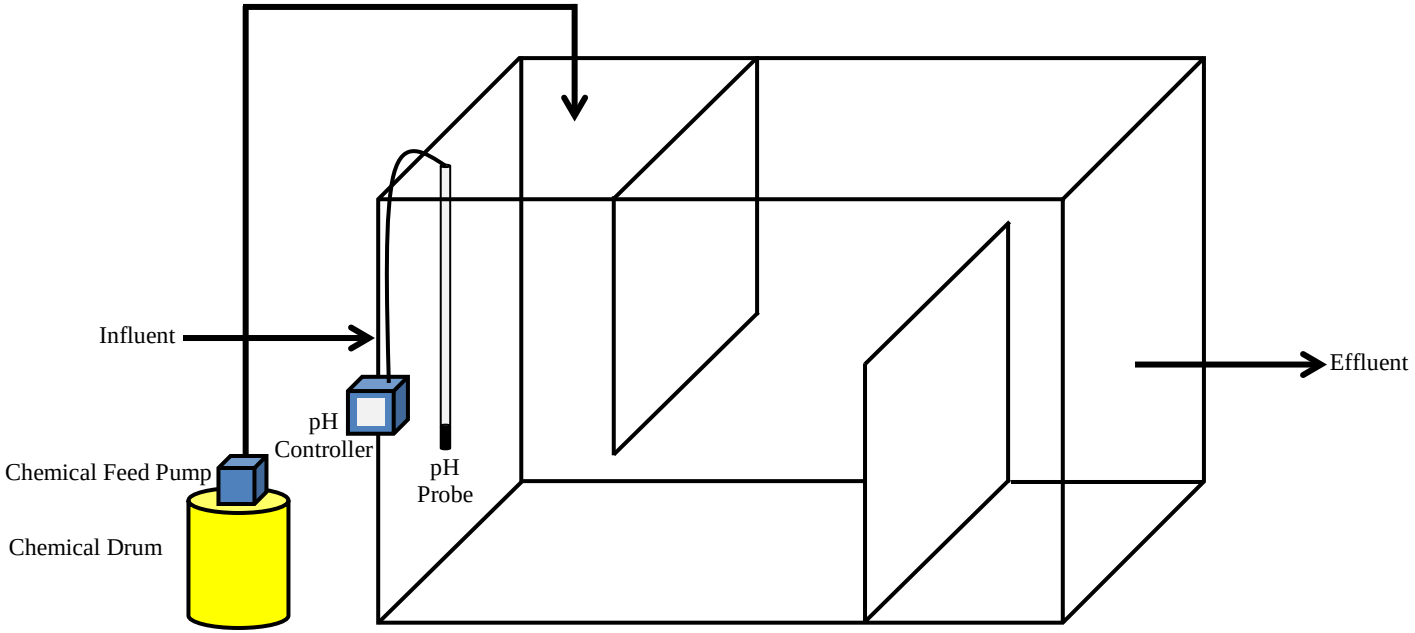

Notes:

1.) Figure is not to scale.
2.) System layout can vary with site conditions.

89 Crawford Street
Leominster, Massachusetts 01453
Tel: 774.450.7177
Fax: 888.835.0617
www.lrt-llc.net

Configuration of pH Adjustment System

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One Controller for the Broadest Range of Sensors.

Choose from 30 digital and analog sensor families for up to 17 di:erent parameters.

Maximum Versatility

The sc200 controller allows the use of digital and analog sensors, either alone or in combination, to provide compatibility with Hach's broad range of sensors, eliminating the need for dedicated, parameter-specific controllers.

Ease of Use and Confidence in Results

Large, high-resolution, transreflective display provides optimal viewing resolution in any lighting condition. Guided calibration procedures in 19 languages minimize complexity and reduce operator error. Password-protected SD card reader o:ers a simple solution for data download and transfer. Visual warning system provides critical alerts.

Wide Variety of Communication Options

Utilize two to five analog outputs to transmit primary and secondary values for each sensor, or integrate Hach sensors and analyzers into MODBUS RS232/RS485, Profibus® DP, and HART networks.

Password protected SD card reader offers a simple solution for data download and transfer, and sc200 and digital sensor configuration file duplication and backup.

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Controller Comparison



Features	Previous Models sc100™ Controller	Previous Models GLI53 Controller	sc200™ Controller	Benefits
Display	64 x 128 pixels 33 x 66 mm (1.3 x 2.6 in.)	64 x 128 pixels 33 x 66 mm (1.3 x 2.6 in.)	160 x 240 pixels 48 x 68 mm (1.89 x 2.67 in.) Transreflective	• Improved user interface—50% bigger • Easier to read in daylight and sunlight
Data Management	irDA Port/PDA Service Cable	N/A	SD Card Service Cable	• Simplifies data transfer • Standardized accessories/ max compatibility
Sensor Inputs	2 Max Direct Digital Analog via External Gateway	2 Max Analog Depending on Parameter	2 Max Digital and/or Analog with Sensor Card	• Simplifies analog sensor connections • Works with analog and digital sensors
Analog Inputs	N/A	N/A	1 Analog Input Signal Analog 4-20mA Card	• Enables non-sc analyzer monitoring • Accepts mA signals from other analyzers for local display • Consolidates analog mA signals to a digital output
4-20 mA Outputs	2 Standard	2 Standard	2 Standard Optional 3 Additional	• Total of five (5) 4-20 mA outputs allows multiple mA outputs per sensor input
Digital Communication	MODBUS RS232/RS485 Profibus DP V1.0	HART	MODBUS RS232/RS485 Profibus DP V1.0 HART 7.2	• Unprecedented combination of sensor breadth and digital communication options

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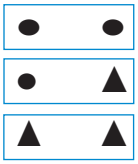
Choose from Hach's Broad Range of Digital and Analog Sensors

Parameter	Sensor	Digital or Analog
Ammonia	AMTAX™ sc, NH4D sc, AISE sc, AN-ISE sc	●
Chlorine	CLF10 sc, CLT10 sc, 9184 sc	●
Chlorine Dioxide	9185 sc	●
Conductivity	GLI 3400 Contacting, GLI 3700 Inductive	▲
Dissolved Oxygen	LDO® Model 2, 5740 sc	●
Dissolved Oxygen	5500	▲
Flow	U53, F53 Sensors	▲
Nitrate	NITRATAX™ sc, NO3D sc, NISE sc, AN-ISE sc	●
Oil in Water	FP360 sc	●
Organics	UVAS sc	●
Ozone	9187 sc	●
pH/ORP	pHD	●
pH/ORP	pHD, pH Combination, LCP	▲
Phosphate	PHOSPHAX™ sc	●
Sludge Level	SONATAX™ sc	●
Suspended Solids	SOLITAX™ sc, TSS sc	●
Turbidity	1720E, FT660 sc, SS7 sc, ULTRATURB sc, SOLITAX sc, TSS sc	●
Ultra Pure Conductivity	8310, 8311, 8312, 8315, 8316, 8317 Contacting	▲
Ultra Pure pH/ORP	8362	▲

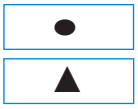
● = Digital ▲ = Analog

Connect up to two of any of the sensors listed above, in any combination, to meet your application needs. The diagrams below demonstrate the potential configurations. Operation of analog sensors requires the controller to be equipped with the appropriate sensor module. Contact Hach Technical Support for help with selecting the appropriate module.

2 Channel Configurations



1 Channel Configurations



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Specifications*

Dimensions (H x W x D)	5.7 in x 5.7 in x 7.1 in (144 mm x 144 mm x 181 mm)
Display	Graphic dot matrix LCD with LED backlighting, transreflective
Display Size	1.9 x 2.7 in. (48 mm x 68 mm)
Display Resolution	240 x 160 pixels
Weight	3.75 lbs. (1.70 kg)
Power Requirements (Voltage)	100 - 240 V AC, 24 V DC
Power Requirements (Hz)	50/60 Hz
Operating Temperature Range	-20 to 60 °C , 0 to 95% RH non-condensing
Analog Outputs	Two (Five with optional expansion module) to isolated current outputs, max 550 Ω , Accuracy: ± 0.1% of FS (20mA) at 25 °C, ± 0.5% of FS over -20 °C to 60 °C range Operational Mode: measurement or calculated value
Analog Output Functional Mode	Linear, Logarithmic, Bi-linear, PID
Security Levels	2 password-protected levels
Mounting Configurations	Wall, pole, and panel mounting
Enclosure Rating	NEMA 4X/IP66
Conduit Openings	1/2 in NPT Conduit
Relay: Operational Mode	Primary or secondary measurement, calculated value (dual channel only) or timer
Relay Functions	Scheduler (Timer), Alarm, Feeder Control, Event Control, Pulse Width Modulation, Frequency Control, and Warning
Relays	Four electromechanical SPDT (Form C) contacts, 1200 W, 5 A
Communication	MODBUS RS232/RS485, PROFIBUS DPV1, or HART 7.2 optional
Memory Backup	Flash memory
Electrical Certifications	EMC CE compliant for conducted and radiated emissions: - CISPR 11 (Class A limits) - EMC Immunity EN 61326-1 (Industrial limits) Safety cETLus safety mark for: - General Locations per ANSI/UL 61010-1 & CAN/CSA C22.2. No. 61010-1 - Hazardous Location Class I, Division 2, Groups A,B,C & D (Zone 2, Group IIC) per FM 3600 / FM 3611 & CSA C22.2 No. 213 M1987 with approved options and appropriately rated Class I, Division 2 or Zone 2 sensors cULus safety mark - General Locations per UL 61010-1 & CAN/CSA C22.2. No. 61010-1

**Subject to change without notice.*

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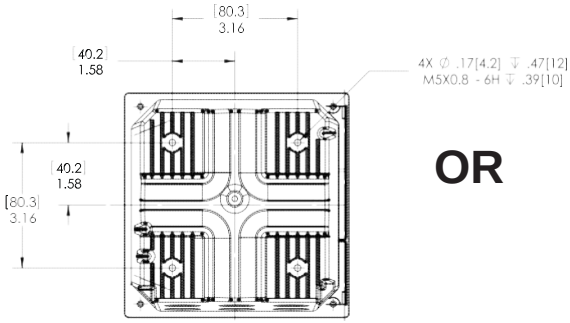
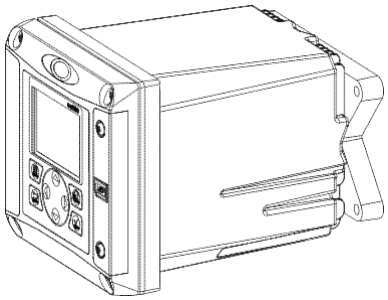
Dimensions

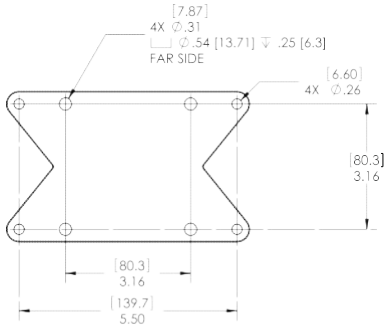
Surface Mounting Dimensions



Mounting Dimensions
(Rear View)

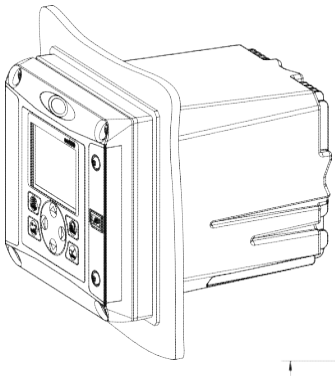
OR

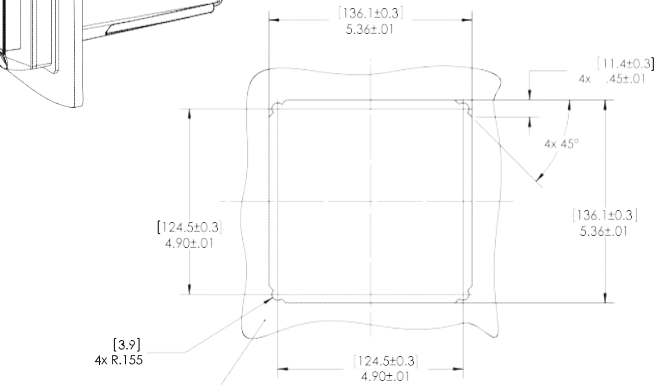




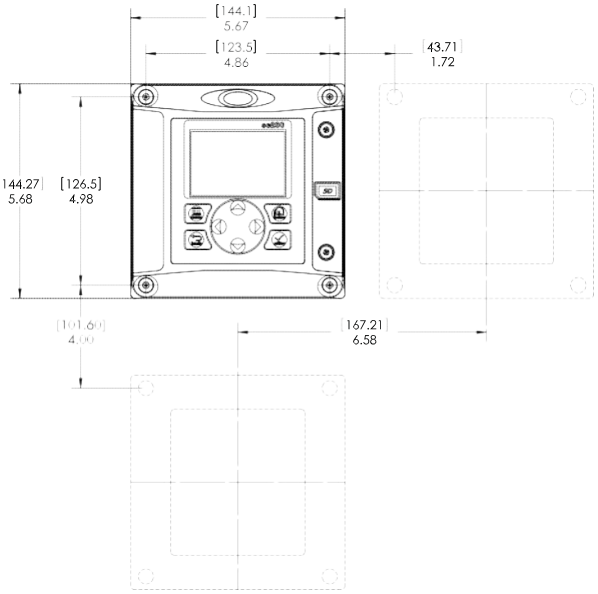
Bracket (supplied) for Surface Mounting
(Not compatible with Weather and Sun Shield
p/n 9220600 when surface mounting.)

Panel Mounting Dimensions



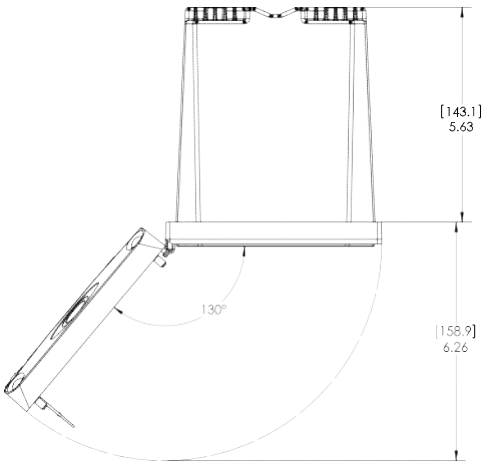


Recommended Cutout
for Panel Mounting

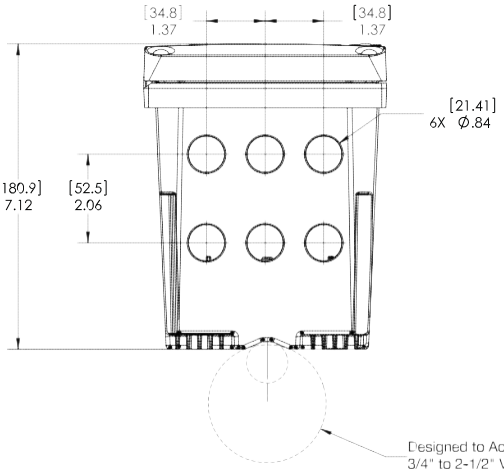


Minimum Spacing Dimensions
for Group Mounting

Top and Bottom Views



Door Opening Details



Designed to Accommodate
3/4" to 2-1/2" Vertical / Horizontal Pipe

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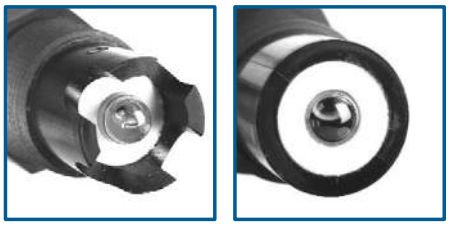
3/4-inch Combination pH and ORP Sensor Kits

Use the Digital Gateway to make any Hach analog combination pH or ORP sensor compatible with the Hach sc1000 Controller.



Digital combination pH and ORP sensors are available in convertible, insertion, and sanitary mounting styles. Choose from rugged dome electrodes or "easy-to-clean" flat glass electrodes.

Features and Benefits

Low Price—High Performance

These combination sensors are designed for specialty applications for immersion or in-line mounting. The reference cell features a double-junction design for extended service life, and a built-in solution ground. The body is molded from chemically-resistant Ryton® or PVDF, and the reference junction is coaxial porous Teflon®. All sensors are rated 0 to 105ºC up to 100 psig, and have integral 4.5 m (15 ft.) cables with tinned leads. The PC-series (for pH) and RC-series (for ORP) combination sensors are ideal for measuring mild and aggressive media.

Special Electrode Configurations

Sensors with rugged dome electrodes, "easy-to-clean" flat glass electrodes, and even HF (hydrofluoric acid) resistant glass electrodes are available for a wide variety of process solutions.

Temperature Compensation Element Option

The PC-series combination pH sensors are available with or without a Pt 1000 ohm RTD temperature element. The RC-series combination ORP sensors are supplied without a temperature element.

Versatile Mounting Styles

Sensors are available in three mounting styles—convertible, insertion, and sanitary. Please turn to page 3 for more information.

Full-Featured "Plug and Play" Hach sc Digital Controllers

There are no complicated wiring or set up procedures with any Hach sc controller. Just plug in any combination of Hach digital sensors and it's ready to use—it's "plug and play."

One or multiple sensors—The sc controller family allows you to receive data from up to eight Hach digital sensors in any combination using a single controller.

Communications—Multiple alarm/control schemes are available using the relays and PID control outputs. Available communications include analog 4-20 mA, digital MODBUS® (RS485 and RS232) or Profibus DP protocols. (Other digital protocols are available. Contact your Hach representative for details.)

Data logger—A built-in data logger collects measurement data, calibration, verification points, and alarm history.

Specifications*

Most pH applications fall in the 2.5-12.5 pH range. General purpose pH glass electrodes perform well in this range. Some industrial applications require accurate measurements and control at pH values below 2 or above 12. Consult Hach Technical Support for details on these applications.

Combination pH Sensors

Measuring Range
0 to 14 pH

Accuracy
Less than 0.1 pH under reference conditions

Temperature Range
0 to 105ºC (32 to 221ºF)

Flow Rate
0 to 2 m/s (0 to 6.6 ft./s); non-abrasive

Pressure Range
0 to 6.9 bar at 100ºC (0 to 100 psig at 212ºF)

Signal Transmission Distance
100 m (328 ft.) when used with the Hach Digital Gateway and a Hach sc Digital Controller.

1000 m (3280 ft.) when used with the Hach Digital Gateway, Termination Box, and a Hach sc Digital Controller.

Sensor Cable
Integral coaxial cable (plus two conductors for temperature compensator option); 4.5 m (15 ft.) long

Wetted Materials

Convertible style: Ryton® body (glass filled)

Insertion style: PVDF body (Kynar®)

Sanitary style: 316 stainless steel sleeved PVDF body

Common materials for all sensor styles include PTFE Teflon double junction, glass process electrode, and Viton® O-rings

Warranty
90 days

Combination ORP Sensors

Measuring Range
-2000 to +2000 millivolts

Accuracy
Limited to calibration solution accuracy (± 20 mV)

Temperature Range
0 to 105ºC (32 to 221ºF)

Flow Rate
0 to 2 m/s (0 to 6.6 ft./s); non-abrasive

Pressure Range
0 to 6.9 bar at 100ºC (0 to 100 psig at 212ºF)

Signal Transmission Distance
100 m (328 ft.) when used with the Hach Digital Gateway and a Hach sc Digital Controller.

1000 m (3280 ft.) when used with the Hach Digital Gateway, Termination Box, and a Hach sc Digital Controller.

Sensor Cable
Integral coaxial cable; 4.5 m (15 ft.) long; terminated with stripped and tinned wires

Wetted Materials

Convertible style: Ryton® body (glass filled)

Insertion style: PVDF body (Kynar®)

Common materials for all sensor styles include PTFE Teflon double junction, glass with platinum process electrode, and Viton® O-rings

Warranty
90 days

**Specifications subject to change without notice.*

Ryton® is a registered trademark of Phillips 66 Co.; Viton® is a registered trademark of E.I. DuPont de Nemours + Co.; Kynar® is a registered trademark of Pennwalt Corp.

Engineering Specifications

1. The pH sensor shall be available in convertible, insertion or sanitary styles. The ORP sensor shall be available in only convertible or insertion styles.
2. The convertible style sensor shall have a Ryton® body. The insertion style sensor shall have a PVDF body. The sanitary style sensor shall have a 316 stainless steel sleeved PVDF body. Common materials for all sensor styles shall include a PTFE Teflon® double junction, and Viton® O-rings. The pH sensor shall have a glass pH electrode. The ORP sensor shall have a platinum ORP electrode.
3. The convertible style pH sensor shall be available with or without a built-in Pt 1000 ohm RTD temperature element. Insertion and sanitary style pH sensors shall have a built-in Pt 1000 ohm RTD temperature element. Convertible and insertion style ORP sensors shall not have a built-in temperature element.
4. The sensor shall communicate via MODBUS® RS-485 to a Hach sc Digital Controller.
5. The sensor shall be Hach Company Model PC sc or PC-series for pH measurement or Model PC sc or RC-series for ORP measurement.

Dimensions

Convertible Style Sensor

The convertible style sensor has a Ryton® body that features 3/4-inch NPT threads on both ends. The sensor can be directly mounted into a standard 3/4-inch pipe tee for flow-through mounting or fastened onto the end of a pipe for immersion mounting. The convertible style sensor enables inventory consolidation, thereby reducing associated costs. Mounting tees and immersion mounting hardware are offered in a variety of materials to suit application requirements.

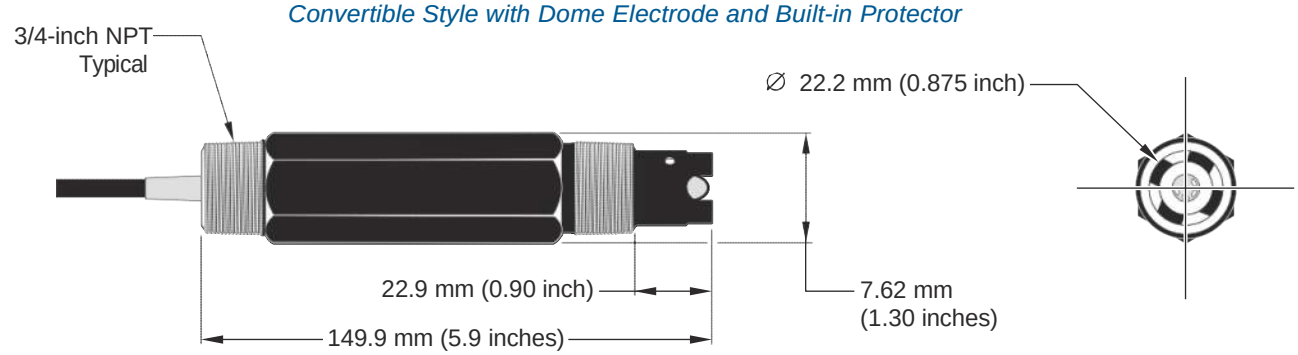
Insertion Style Sensor

Insertion style sensors feature a longer, non-threaded PVDF body with two Viton® O-rings, providing a seal when used with the optional Hach insertion mount hardware assembly. This ball valve hardware enables sensor insertion and retraction from a pipe or vessel without having to stop the process flow.

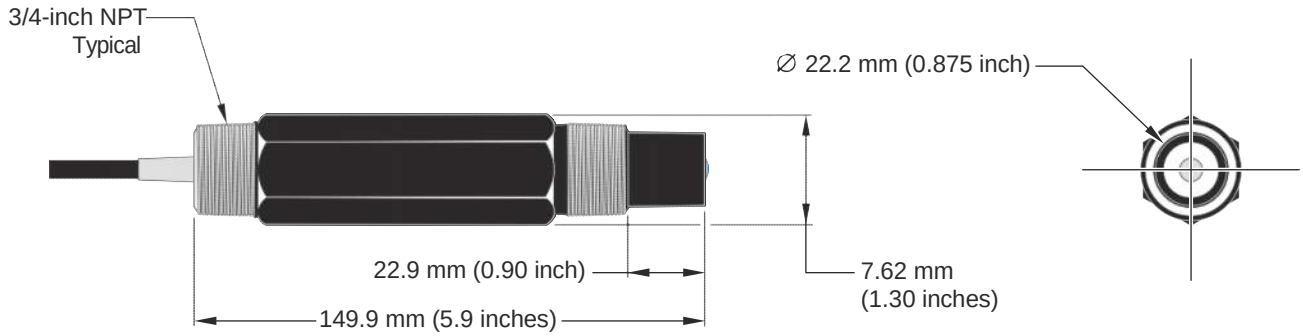
Sanitary Style Sensor

The sanitary style sensor, offered for pH measurement, has a 316 stainless steel-sleeved PVDF body with a 2-inch flange. The sensor mates to a standard 2-inch Tri-Clover fitting. The optional Hach sanitary mounting hardware includes a standard 2-inch sanitary tee, sanitary clamp, and Viton® sanitary gasket.

Convertible Style with Dome Electrode and Built-in Protector



Convertible Style with Flat Electrode



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Lockwood Remediation Technologies, LLC

The Pulsatron Series A Plus offers manual function controls over stroke length and stroke rate as standard with the option to select external pace for automatic control.

Ten distinct models are available, having pressure capabilities to 250 PSIG (17 BAR) @ 12 GPO (1.9 lph), and flow capacities to 58 GPO (9.1 lph) @ 100 PSIG (7.0 BAR), with a standard turndown ratio of 100:1, and optional ratio of 1000:1. Metering performance is reproducible to within ± 3% of maximum capacity.

Features

- Manual Control by on-line adjustable stroke rate and stroke length.
- Highly Reliable timing circuit.
- Circuit Protection against voltage and current upsets.
- Solenoid Protection by thermal overload with auto-reset.
- Water Resistant, for outdoor and indoor applications.
- Internally Dampened To Reduce Noise.
- Guided Ball Check Valve Systems, to reduce back flow and enhance outstanding priming characteristics.
- Few Moving Parts and Wall Mountable.
- Safe & Easy Priming with durable leak-free bleed valve assembly (standard).
- Optional Control: External pace with auto/manual selection.

Controls

Manual Stroke Rate

Manual Stroke Length

External Pacing - Optional

External Pace With Stop - Optional (125 SPM only)

Controls Options		
Feature	Standard Configuration	Optional Configuration [1]
External Pacing	--	Auto / Manual Selection
External Pace w/ Stop (125 SPM only)	--	Auto / Manual Selection [2]
Manual Stroke Rate	10:1 Ratio	100:1 Raio
Manual Stroke Length	10:1 Ratio	10:1 Ratio
Total Turndown Ratio	100:1 Ratio	1000:1 Ratio

Note 1: On S2, S3 & S4 sizes only.

Note 2: Not available on 1000:1 turndown pumps.

Operating Benefits

- Reliable metering performance.
- Rated "hot" for continuous duty.
- High viscosity capability.
- Leak-free, sealless, liquid end.

Aftermarket

- KOPkits
- Gauges
- Dampeners
- Pressure Relief Valves
- Tanks
- Pre-Engineered Systems
- Process Controllers (PULSAblue, MicroVision)

Series A Plus
Electronic Metering Pumps

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Lockwood Remediation Technologies, LLC

Series A Plus

Specifications and Model Selection

MODEL			LBC2	LB02	LBC3	LB03	LB04	LB64	LBC4	LBS2	LBS3	LBS4
Capacity nominal (max.)		GPH	0.25	0.25	0.42	0.50	1.00	1.25	2.00	0.50	1.38	2.42
		GPO	6	6	10	12	24	30	48	12	33	58
		LPH	0.9	0.9	1.6	1.9	3.8	4.7	7.6	1.9	5.2	9.14
Pressure[3] (max.)	GFPP, PVDF, 316SS or PVC <;N code) wITFE Seats)	PSIG (Bar)	250 (17)	150 (10)	250 (17)	150 (10)	100 (7)	100 (7)	50 (3.3)	250 (17)	150 (10)	100 (7)
	PVC (V code) Viton or CSPE Seats IDegas Liquid End		150 (10)							150 (10)		
Connections:		Tubina	1.14'ID X 3.18' OD						3.18'D X 1.12' OD	1.14'D X 3.18' OD		
		Pioina	1.14'FNPT									
Strokes/Minute		SPM	125							250		

Note 3: Pumps with rated pressure above 150 PSI will be de-rated to 150 PSI Max. when selecting certain valve options, see Price Book for details.

Engineering Data

Pump Head Materials Available:	GFPPL
	PVC
	PVDF
	316 SS
Diaphragm:	PTFE-faced CSPE-backed
Check Valves Materials Available:	
Seats/0-Rings:	PTFE
	CSPE
	Viton
Balls:	Ceramic
	PTFE
	316 SS
	Alloy C
Fittings Materials Available:	GFPPL
	PVC
	PVDF
Bleed Valve:	Same as fitting and check valve selected, except 316SS
Injection Valve & Foot Valve Assy:	Same as fitting and check valve selected
Tubing:	Clear PVC
	White PE

Important: Material Code - GFPPL=Glass-filled Polypropylene, PVC=Polyvinyl Chloride, PE=Polyethylene, PVDF=Polyvinylidene Fluoride, CSPE=Generic formulation of Hypalon, a registered trademark of E.I. DuPont Company. Viton is a registered trademark of E.I. DuPont Company. PVC wetted end recommended for sodium hypochlorite.

Engineering Data

Reproducibility:	+/- 3% at maximum capacity
Viscosity Max CPS:	1000 CPS
Stroke Frequency Max SPM:	125 / 250 by Model
Stroke Frequency Turn-Down Ratio:	10:1 / 100:1 by Model
Stroke Length Turn-Down Ratio:	10:1
Power Input:	115 VAC/50-60 HZ/1 ph
	230 VAC/50-60 HZ/1 ph
Average Current Draw:	
@ 115 VAC; Amps:	0.6 Amps
@ 230 VAC; Amps:	0.3 Amps
Peak Input Power:	130 Watts
Average Input Power @ Max SPM:	50 Watts

Custom Engineered Designs - Pre-Engineered Systems

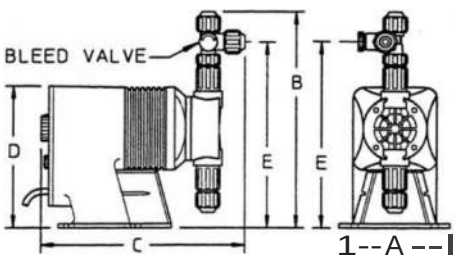
Pre-Engineered Systems

Pulsafeeder's Pre-Engineered Systems are designed to provide complete chemical feed solutions for all electronic metering applications. From stand alone simplex pH control applications to full-featured, redundant sodium hypochlorite disinfection metering, these rugged fabricated assemblies offer turn-key simplicity and industrial-grade durability. The UV-stabilized, high-grade HOPE frame offers maximum chemical compatibility and structural rigidity. Each system is factory assembled and hydrostatically tested prior to shipment.

Dimensions

Series A PLUS Dimensions (inches)						
Model No.	A	B	C	D	E	Shipping Weight
LB02 IS2	5.0	9.6	9.5	6.5	8.2	10
LBC2	5.0	9.9	9.5	6.5	8.5	10
LBC3	5.0	9.9	9.5	6.5	8.5	10
LB03 IS3	5.0	9.9	9.5	6.5	8.5	10
LB0B4	5.0	9.9	9.5	6.5	8.5	10
LB64	5.0	9.9	9.5	6.5	8.5	10
LBC4	5.0	9.9	9.5	6.5	8.5	10

NOTE: Inches X 2.54 cm



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Lockwood Remediation Technologies, LLC

95-Gallon OverPack - 32" dia x 41.5", 1 each/package

Stock a SpillTech® OverPack with sorbents for emergency spill response, or use it as a salvage drum to ship damaged containers or hazardous waste.

- DOT-Approved for Salvage: All SpillTech® OverPacks are DOT-approved and X-rated for use as salvage drums. Helps companies conform to federal regulations when shipping damaged or leaking containers of hazardous materials, or absorbents contaminated with hazardous substances.
- Perfect for Spill Kits: Stores sorbent products (not included) for easy access as needed for spill control. Saves time when quick response is necessary.
- Sturdy Construction: 100% polyethylene OverPack resists chemicals, rust and corrosion for years of use. Integrated handles make them easy to lift, move or carry with standard material handling equipment. Twist-on, double-wall lid with closed-cell gasket provides sealed, secure closure to prevent leaks and protect contents from moisture, dirt and damage. Durable to withstand rough handling.
- Customized for You: We can customize a Spill Kit to your exact specifications, including the container, its contents and accessories, with no upcharge! Contact your local Distributor for details.

A95OVER Specifications

Dimensions:	ext. dia. 32" x 41.5" H
Shipping Dimensions:	31.75" W x 41.5" L x 31.75" H
Sold as:	1 per package
Color:	Yellow
Composition:	Polyethylene
# per Pallet:	3
Incinerable:	No
Ship Class:	250

Metric Equivalent Specifications

Dimensions:	ext. dia. 81.3cm x 105.4cm H
Shipping Dimensions:	80.6cm W x 105.4cm L x 80.6cm H

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A95OVER Technical Information

Warnings & Restrictions:
There are no known warnings and restrictions for this product.

Regulations and Compliance:
49 CFR 173.3(c)(1) - If a container of hazardous waste is damaged or leaking, it can be placed in a compatible salvage drum that meets UN criteria for shipping

49 CFR 173.12(b)(2)(iv) - When labpacking, "Inner packagings…must be surrounded by a chemically compatible absorbent material in sufficient quantity to absorb the total liquid contents."

49 CFR 173.12(b) - A container used for labpacking must be "a UN 1A2 or UN 1B2 metal drum, a UN 1D plywood drum, a UN 1G fiber drum or a UN 1H2 plastic drum tested and marked at least for the Packing Group III performance level for liquids or solids."

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Sulfuric Acid, 70-100%

Safety Data Sheet

According to U.S. Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations and according to Canada's Hazardous Products Regulation, February 11, 2015.
Revision Date: 05/07/2018 Date of Issue: 05/31/2016 Version: 4.0

SECTION 1: IDENTIFICATION

Product Identifier

Product Form: Mixture

Product Name: Sulfuric Acid, 70-100%

Formula: H_2O_4S

Intended Use of the Product

Use Of The Substance/Mixture: Industrial use.

Name, Address, and Telephone of the Responsible Party

Manufacturer

CHEMTRADE LOGISTICS INC.
155 Gordon Baker Road
Suite 300
Toronto, Ontario M2H 3N5
For SDS Info: (416) 496-5856
www.chemtradelogistics.com

Emergency Telephone Number

Emergency Number : Canada: CANUTEC +1-613-996-6666 / US: CHEMTREC +1-800-424-9300
INTERNATIONAL: +1-703-741-5970
Chemtrade Emergency Contact: (866) 416-4404
For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

GHS Classification

Met. Corr. 1	H290
Skin Corr. 1A	H314
Eye Dam. 1	H318
Carc. 1A	H350
Aquatic Acute 3	H402

Full text of hazard classes and H-statements : see section 16

Label Elements

GHS Labeling

Hazard Pictograms :


GHS05


GHS08

Signal Word : Danger

Hazard Statements : H290 - May be corrosive to metals.
H314 - Causes severe skin burns and eye damage.
H318 - Causes serious eye damage.
H350 - May cause cancer (Inhalation).
H402 - Harmful to aquatic life.

Precautionary Statements : P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P234 - Keep only in original container.
P260 - Do not breathe vapors, mist, or spray.
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.
P273 - Avoid release to the environment.
P280 - Wear protective gloves, protective clothing, and eye protection.
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P310 - Immediately call a POISON CENTER or doctor.
P321 - Specific treatment (see section 4 on this SDS).
P363 - Wash contaminated clothing before reuse.
P390 - Absorb spillage to prevent material damage.
P405 - Store locked up.
P406 - Store in corrosive resistant container with a resistant inner liner.
P501 - Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

Other Hazards

Exposure may aggravate pre-existing eye, skin, or respiratory conditions.

Unknown acute toxicity

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Name	Product Identifier	%*	GHS Ingredient Classification
Sulfuric acid**	(CAS-No.) 7664-93-9	70 - 100	Met. Corr. 1, H290 Skin Corr. 1A, H314 Eye Dam. 1, H318 Carc. 1A, H350 Aquatic Acute 3, H402
Water	(CAS-No.) 7732-18-5	0.1 - 30	Not classified

Full text of H-phrases: see section 16

*Percentages are listed in weight by weight percentage (w/w%) for liquid and solid ingredients. Gas ingredients are listed in volume by volume percentage (v/v%).

**Strong inorganic acid aerosols/mists containing this substance are carcinogenic to humans via inhalation. Under normal conditions of use this route of exposure is not expected.

SECTION 4: FIRST AID MEASURES

Description of First-aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

Inhalation: When symptoms occur: go into open air and ventilate suspected area. Obtain medical attention if breathing difficulty persists.

Skin Contact: Remove contaminated clothing. Immediately flush skin with plenty of water for at least 30 minutes. Get immediate medical advice/attention. Wash contaminated clothing before reuse.

Eye Contact: Rinse cautiously with water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.

Ingestion: Rinse mouth. Do NOT induce vomiting. Obtain medical attention.

Most Important Symptoms and Effects Both Acute and Delayed

General: Corrosive to eyes, respiratory system and skin. May cause cancer.

Inhalation: May be corrosive to the respiratory tract.

Skin Contact: Causes severe irritation which will progress to chemical burns.

Eye Contact: Causes permanent damage to the cornea, iris, or conjunctiva.

Ingestion: May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

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Chronic Symptoms: Strong inorganic acid mists containing sulfuric acid are carcinogenic to humans. Prolonged inhalation of fumes or mists may cause erosion of the teeth.

Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

SECTION 5: FIRE FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Foam, carbon dioxide, dry chemical.

Unsuitable Extinguishing Media: Do not use water. Do not get water inside containers. Do not apply water stream directly at source of leak.

Special Hazards Arising From the Substance or Mixture

Fire Hazard: Not flammable.

Explosion Hazard: Product is not explosive.

Reactivity: May be corrosive to metals. Contact with metals may evolve flammable hydrogen gas. May react exothermically with water releasing heat. Adding an acid to a base or base to an acid may cause a violent reaction. This product may act as an oxidizer.

Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire.

Firefighting Instructions: Use water spray or fog for cooling exposed containers.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: Toxic fumes are released.

Other Information: Do not allow run-off from fire fighting to enter drains or water courses.

Reference to Other Sections

Refer to Section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Do not get in eyes, on skin, or on clothing. Do not breathe vapor, mist or spray. Do not handle until all safety precautions have been read and understood.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protective equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit. Ventilate area.

Environmental Precautions

Prevent entry to sewers and public waters. Avoid release to the environment.

Methods and Materials for Containment and Cleaning Up

For Containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. As an immediate precautionary measure, isolate spill or leak area in all directions.

Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. Absorb spillage to prevent material damage. Cautiously neutralize spilled liquid. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill.

Reference to Other Sections

See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Handle empty containers with care because they may still present a hazard. Do not get in eyes, on skin, or on clothing. Do not breathe vapors, mist, spray. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Additional Hazards When Processed: May be corrosive to metals. May release corrosive vapors. NEVER pour water into this substance; when dissolving or diluting always add it slowly to the water.

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Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations.

Storage Conditions: Keep container closed when not in use. Store in a dry, cool place. Keep/Store away from extremely high or low temperatures and incompatible materials. Store in original container or corrosive resistant and/or lined container.

Incompatible Materials: Combustible materials. Reducing agents. Strong oxidizers. Strong bases. Metals. Water.

Specific End Use(s)

Industrial use.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

For substances listed in section 3 that are not listed here, there are no established Exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), OSHA (PEL), Canadian provincial governments, or the Mexican government.

Sulfuric acid (7664-93-9)		
Mexico	OEL TWA (mg/m³)	1 mg/m³
USA ACGIH	ACGIH TWA (mg/m³)	0.2 mg/m³ (thoracic particulate matter)
USA ACGIH	ACGIH chemical category	Suspected Human Carcinogen contained in strong inorganic acid mists
USA OSHA	OSHA PEL (TWA) (mg/m³)	1 mg/m³
USA NIOSH	NIOSH REL (TWA) (mg/m³)	1 mg/m³
USA IDLH	US IDLH (mg/m³)	15 mg/m³
Alberta	OEL STEL (mg/m³)	3 mg/m³
Alberta	OEL TWA (mg/m³)	1 mg/m³
British Columbia	OEL TWA (mg/m³)	0.2 mg/m³ (Thoracic, contained in strong inorganic acid mists)
Manitoba	OEL TWA (mg/m³)	0.2 mg/m³ (thoracic particulate matter)
New Brunswick	OEL STEL (mg/m³)	3 mg/m³
New Brunswick	OEL TWA (mg/m³)	1 mg/m³
Newfoundland & Labrador	OEL TWA (mg/m³)	0.2 mg/m³ (thoracic particulate matter)
Nova Scotia	OEL TWA (mg/m³)	0.2 mg/m³ (thoracic particulate matter)
Nunavut	OEL STEL (mg/m³)	0.6 mg/m³ (thoracic fraction)
Nunavut	OEL TWA (mg/m³)	0.2 mg/m³ (thoracic fraction)
Northwest Territories	OEL STEL (mg/m³)	0.6 mg/m³ (thoracic fraction, strong acid mists only)
Northwest Territories	OEL TWA (mg/m³)	0.2 mg/m³ (thoracic fraction, strong acid mists only)
Ontario	OEL TWA (mg/m³)	0.2 mg/m³ (thoracic)
Prince Edward Island	OEL TWA (mg/m³)	0.2 mg/m³ (thoracic particulate matter)
Québec	VECD (mg/m³)	3 mg/m³
Québec	VEMP (mg/m³)	1 mg/m³
Saskatchewan	OEL STEL (mg/m³)	0.6 mg/m³ (thoracic fraction)
Saskatchewan	OEL TWA (mg/m³)	0.2 mg/m³ (thoracic fraction)
Yukon	OEL STEL (mg/m³)	1 mg/m³
Yukon	OEL TWA (mg/m³)	1 mg/m³

Exposure Controls

Appropriate Engineering Controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed.

Personal Protective Equipment: Gloves. Protective clothing. Protective goggles. Face shield. Insufficient ventilation: wear respiratory protection.

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Materials for Protective Clothing: Acid-resistant clothing.

Hand Protection: Wear protective gloves.

Eye Protection: Chemical safety goggles and face shield.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.

Other Information: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	:	Liquid
Appearance	:	Clear, Colorless to Amber, Oily
Odor	:	Pungent
Odor Threshold	:	Not available
pH	:	0.3
Evaporation Rate	:	Not available
Melting Point	:	10.56 °C (51.01 °F)
Freezing Point	:	Not available
Boiling Point	:	290 °C (554 °F)
Flash Point	:	Not applicable
Auto-ignition Temperature	:	Not applicable
Decomposition Temperature	:	Not available
Flammability (solid, gas)	:	Not applicable
Lower Flammable Limit	:	Not applicable
Upper Flammable Limit	:	Not applicable
Vapor Pressure	:	0.00027 - 0.16 kPa at 25 °C (77 °F)
Relative Vapor Density at 20°C	:	3.4 (air = 1)
Relative Density	:	Not available
Specific Gravity	:	1.84 g/l
Solubility	:	Water: Miscible
Partition Coefficient: N-Octanol/Water	:	Not available
Viscosity	:	Not available

SECTION 10: STABILITY AND REACTIVITY

Reactivity: May be corrosive to metals. Contact with metals may evolve flammable hydrogen gas. May react exothermically with water releasing heat. Adding an acid to a base or base to an acid may cause a violent reaction. This product may act as an oxidizer.

Chemical Stability: Stable under recommended handling and storage conditions (see section 7).

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Extremely high or low temperatures and incompatible materials.

Incompatible Materials: Combustible materials. Reducing agents. Strong bases. Strong oxidizers. Metals. Water.

Hazardous Decomposition Products: Thermal decomposition generates: Corrosive vapors.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product

Acute Toxicity (Oral): Not classified

Acute Toxicity (Dermal): Not classified

Acute Toxicity (Inhalation): Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Causes severe skin burns and eye damage.

pH: 0.3

Eye Damage/Irritation: Causes serious eye damage.

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pH: 0.3

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Carcinogenicity: May cause cancer (Inhalation).

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Effects After Inhalation: May be corrosive to the respiratory tract.

Symptoms/Effects After Skin Contact: Causes severe irritation which will progress to chemical burns.

Symptoms/Effects After Eye Contact: Causes permanent damage to the cornea, iris, or conjunctiva.

Symptoms/Effects After Ingestion: May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

Chronic Symptoms: Strong inorganic acid mists containing sulfuric acid are carcinogenic to humans. Prolonged inhalation of fumes or mists may cause erosion of the teeth.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Water (7732-18-5)	
LD50 Oral Rat	> 90000 mg/kg

Sulfuric acid (7664-93-9)	
LD50 Oral Rat	2140 mg/kg
LC50 Inhalation Rat	510 mg/m³ (Exposure time: 2 h)

Sulfuric acid (7664-93-9)	
IARC Group	1
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.

Strong inorganic acid mists containing sulfuric acid	
National Toxicology Program (NTP) Status	Known Human Carcinogens.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Ecology - General: Harmful to aquatic life.

Sulfuric acid (7664-93-9)	
LC50 Fish 1	500 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static])
LC50 Fish 2	42 mg/l (Exposure time: 96 h - Species: Gambusia affinis [static])

Persistence and Degradability

Sulfuric Acid, 70-100%	
Persistence and Degradability	Not established.

Bioaccumulative Potential

Sulfuric Acid, 70-100%	
Bioaccumulative Potential	Not established.

Sulfuric acid (7664-93-9)	
BCF Fish 1	(no bioaccumulation)

Mobility in Soil Not available

Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

Additional Information: Container may remain hazardous when empty. Continue to observe all precautions.

Ecology - Waste Materials: Avoid release to the environment. This material is hazardous to the aquatic environment. Keep out of sewers and waterways.

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SECTION 14: TRANSPORT INFORMATION

The shipping description(s) stated herein were prepared in accordance with certain assumptions at the time the SDS was authored, and can vary based on a number of variables that may or may not have been known at the time the SDS was issued.

TRANSPORTATION CLASSIFICATION	DOT	TDG	IMDG	IATA
Identification Number	UN1830	UN1830	UN1830	UN1830
Proper Shipping Name	SULFURIC ACID	SULFURIC ACID	SULPHURIC ACID	SULPHURIC ACID
Transport Hazard Class(es)	8	8	8	8
				
Packing Group	II	II	II	II
Environmental Hazards	**Marine Pollutant :** No	**Marine Pollutant** : No	**Marine Pollutant** : No	**Marine Pollutant**: N/A
Emergency Response	**ERG Number :** 137	**ERAP Index:** 3 000	**EMS:** F-A, S-B	**ERG code (IATA):** 8L
Additional Information	Not applicable	Not applicable	Not applicable	Not applicable

SECTION 15: REGULATORY INFORMATION

US Federal Regulations

Chemical Name (CAS No.)	CERCLA RQ	EPCRA 304 RQ	SARA 302 TPQ	SARA 313
Sulfuric acid (7664-93-9)	1000 lb	1000 lb	1000 lb	Yes

SARA 311/312

Sulfuric Acid, 70-100%
Immediate (acute) health hazard. Delayed (chronic) health hazard. Reactive hazard

US TSCA Flags Not present

US State Regulations

California Proposition 65

Chemical Name (CAS No.)	Carcinogenicity	Developmental Toxicity	Female Reproductive Toxicity	Male Reproductive Toxicity
Sulfuric acid (7664-93-9)	Yes	No	No	No
Strong inorganic acid mists containing sulfuric acid	Yes	No	No	No

State Right-To-Know Lists

Sulfuric acid (7664-93-9)
U.S. - Massachusetts - Right To Know List - Yes U.S. - New Jersey - Right to Know Hazardous Substance List - Yes U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List - Yes U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances - No U.S. - Pennsylvania - RTK (Right to Know) List - Yes

Canadian Regulations

Sulfuric acid (7664-93-9)
Listed on the Canadian DSL (Domestic Substances List) Not listed on the Canadian NDSL (Non-Domestic Substances List)

International Inventories/Lists

Chemical Name (CAS No.)	Australia AICS	Turkey CICR	Korea ECL	EU EINECS	EU ELINCS	EU SVHC	EU NLP	Mexico INSQ
Sulfuric acid (7664-93-9)	Yes	No	Yes	Yes	No	No	No	No

Sulfuric Acid, 70-100%

Safety Data Sheet

According to U.S. Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations and according to Canada's Hazardous Products Regulation, February 11, 2015.

Chemical Name (CAS No.)	China IECSC	Japan ENCS	Japan ISHL	Japan PDSCL	Japan PRTR	Philippines PICCS	New Zealand NZIOC	US TSCA
Sulfuric acid (7664-93-9)	Yes	Yes	No	Yes	No	Yes	Yes	Yes

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Date of Preparation or Latest Revision : 05/07/2018

Revision Summary

Section	Change	Date Changed
16	Data modified	05/07/2018

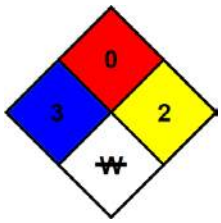
Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200 and Canada's Hazardous Products Regulations (HPR).

GHS Full Text Phrases:

Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3
Carc. 1A	Carcinogenicity Category 1A
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Met. Corr. 1	Corrosive to metals Category 1
Skin Corr. 1A	Skin corrosion/irritation Category 1A
H290	May be corrosive to metals
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H350	May cause cancer
H402	Harmful to aquatic life

NFPA 704

NFPA Health Hazard : 3
NFPA Fire Hazard : 0
NFPA Reactivity Hazard : 2
NFPA Specific Hazards : W



HMIS Rating

Health : 3
Flammability : 0
Physical : 2
PPE See Section 8

Abbreviations and Acronyms

AICS – Australian Inventory of Chemical Substances
ACGIH – American Conference of Governmental Industrial Hygienists
AIHA – American Industrial Hygiene Association
ATE - Acute Toxicity Estimate
BCF - Bioconcentration factor
BEI - Biological Exposure Indices (BEI)
CAS No. - Chemical Abstracts Service number
CERCLA RQ - Comprehensive Environmental Response, Compensation, and Liability Act - Reportable Quantity
CICR - Turkish Inventory and Control of Chemicals
DOT – 49 CFR – US Department of Transportation – Code of Federal Regulations Title 49 – Transportation.
EC50 - Median effective concentration
ECL - Korea Existing Chemicals List
EINECS - European Inventory of Existing Commercial Chemical Substances
ELINCS - European List of Notified Chemical Substances
EmS - IMDG Emergency Schedule Fire & Spillage
ENCS - Japanese Existing and New Chemical Substances Inventory
LC50 - Median Lethal Concentration
LD50 - Median Lethal Dose
LOAEL - Lowest Observed Adverse Effect Level
LOEC - Lowest-observed-effect Concentration
Log Pow - Octanol/water Partition Coefficient
NFPA 704 – National Fire Protection Association - Standard System for the Identification of the Hazards of Materials for Emergency Response
NIOSH - National Institute for Occupational Safety and Health
NLP - Europe No Longer Polymers List
NOAEL - No-Observed Adverse Effect Level
NOEC - No-Observed Effect Concentration
NZIOC - New Zealand Inventory of Chemicals
OEL - Occupational Exposure Limits
OSHA – Occupational Safety and Health Administration
PEL - Permissible Exposure Limits
PICCS - Philippine Inventory of Chemicals and Chemical Substances
PDSCL - Japan Poisonous and Deleterious Substances Control Law
PPE – Personal Protective Equipment

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EPA – Environmental Protection Agency
EPCRA 304 RQ – EPCRA 304 Extremely Hazardous Substance Emergency Planning and Community Right-to-Know-Act – Reportable Quantity
ERAP Index – Emergency Response Assistance Plan Quantity Limit
ErC50 - EC50 in Terms of Reduction Growth Rate
ERG code (IATA) - Emergency Response Drill Code as found in the International Civil Aviation Organization (ICAO)
ERG No. - Emergency Response Guide Number
HCCL - Hazard Communication Carcinogen List
HMIS – Hazardous Materials Information System
IARC - International Agency for Research on Cancer
IATA - International Air Transport Association – Dangerous Goods Regulations
IDLH - Immediately Dangerous to Life or Health
IECSC - Inventory of Existing Chemical Substances Produced or Imported in China
IMDG - International Maritime Dangerous Goods Code
INSQ - Mexican National Inventory of Chemical Substances
ISHL - Japan Industrial Safety and Health Law
PRTR - Japan Pollutant Release and Transfer Register
REL - Recommended Exposure Limit
SADT - Self Accelerating Decomposition Temperature
SARA - Superfund Amendments and Reauthorization Act
SARA 302 - Section 302, 40 CFR Part 355
SARA 311/312 - Sections 311 and 312, 40 CFR Part 370 Hazard Categories
SARA 313 - Section 313, 40 CFR Part 372
SRCL - Specifically Regulated Carcinogen List
STEL - Short Term Exposure Limit
SVHC – European Candidate List of Substance of Very High Concern
TDG – Transport Canada Transport of Dangerous Goods Regulations
TLM - Median Tolerance Limit
TLV - Threshold Limit Value
TPQ - Threshold Planning Quantity
TSCA – United StatesToxic Substances Control Act
TWA - Time Weighted Average
WEEL - Workplace Environmental Exposure Levels

Handle product with due care and avoid unnecessary contact. This information is supplied under U.S. OSHA'S "Right to Know" (29 CFR 1910.1200) and Canada's WHMIS regulations. Although certain hazards are described herein, we cannot guarantee these are the only hazards that exist. The information contained herein is based on data available to us and is believed to be true and accurate but it is not offered as a product specification. No warranty, expressed or implied, regarding the accuracy of this data, the hazards connected with the use of the product, or the results to be obtained from the use thereof, is made and Chemtrade and its affiliates assume no responsibility. Chemtrade is a member of the CIAC (Chemistry Industry Association of Canada) and adheres to the codes and principles of Responsible Care™.

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