ADDENDUM No. 1

ITB No. 4549

Carbon Replacement in Odor Control Units

Bids Due: September 12, 2018 at 2:00 P.M. (Local Time)

The following changes, additions, and/or deletions shall be made to the Invitation to Bid for Carbon Replacement in Odor Control Units, ITB No. 4549, on which proposals will be received on/or before September 12, 2018, at 2:00 P.M. (local time).

The information contained herein shall take precedence over the original documents and all previous addenda (if any), and is appended thereto. **This Addendum includes 32 pages.**

Bidder is to acknowledge receipt of this Addendum No. 1, including all attachments (if any) in its Bid by so indicating on page ITB-1 of the Invitation to Bid Form. Bids submitted without acknowledgment of receipt of this addendum will be considered nonconforming.

The following forms provided within the ITB document must be included in submitted bids:

- **Vendor Conflict of Interest Disclosure Form**
- **City of Ann Arbor Non-Discrimination Ordinance Declaration of Compliance**
- **City of Ann Arbor Living Wage Ordinance Declaration of Compliance**

Bids that fail to provide these completed forms listed above upon bid opening will be rejected as non-responsive and will not be considered for award.

I. CORRECTIONS/ADDITIONS/DELETIONS

Changes to the Bid document which are outlined below are referenced to a page or Section in which they appear conspicuously. The Bidder is to take note in its review of the documents and include these changes as they may affect work or details in other areas not specifically referenced here.

Section/Page(s)	Change
Page 3	As provided in ITB No. 4549 Bid Document: **A mandatory pre-bidders meeting and walk thru will be held on August 23, 2018 at 1:00pm at the City of Ann Arbor Wastewater Treatment Plant (WWTP), 49 South Dixboro Road Ann Arbor, MI 48105**. As updated herein: **A mandatory pre-bidders meeting and walk thru will be held on August 23, 2018 at 1:00pm and September 6, 2018 at 1:00pm at the City of Ann Arbor Wastewater Treatment Plant (WWTP), 49 South Dixboro Road Ann Arbor, MI 48105**.

Comment: In an effort to maximize competition a second Mandatory Pre-Bid Meeting will be held September 6, 2018 at 1:00pm. Attendees of the first Mandatory Pre-Bid Meeting do not need to attend the second Mandatory Pre-Bid Meeting.

All mentions — As provided in ITB No. 4549 Bid Document:
Bid Due Date: September 6, 2018 at 10:00 a.m. (local time)

As updated herein:
Bid Due Date: September 12, 2018 at 2:00 p.m.

Comment: The Due Date and Time for responses to this ITB has been extended to September 12, 2018 at 2:00 p.m. (local time).

II. QUESTIONS AND ANSWERS

The following Questions have been received by the City. Responses are being provided in accordance with the terms of the RFP. Offerors are directed to take note in their review of the documents of the following questions and City responses as they affect work or details in other areas not specifically referenced here.

Question 1: Do we enter the vessels to do the inspection
Answer 1: There should be no need to enter the vessels for inspection

Question 2: Is this carbon hazardous or non-hazardous material?
Answer 2: That decision is not made by the City

Question 3: Can you provide a copy of the Material Safety Data Sheet?
Answer 3: Yes, see attached

Question 4: Does the City have any paperwork or test results for the previous carbon?
Answer 4: Yes attached is the data for the Jacobi Carbon removed in 2015. The current carbon is Carbon Activated Corp COC-PA 60-HS3 coconut shell and there is no TCLP on it as all tests necessary for disposal are part of the ITB

Question 5: What is the time for completion?
Answer 5: Within 2 weeks from start, expectation is once work begins it will continue until completed

Question 6: Can someone bid if they were not present at the mandatory pre-bid meeting?
Answer 6: Bids received from companies that did not attend one of the two Mandatory Pre-Bid Meetings will not be opened or considered for award.

Question 7: Is there an existing TCLP, or certificate outlining the “hazardous/non-hazardous” condition of the carbon to be disposed?
Answer 7: There is no TCLP on the carbon that is to be disposed, all tests necessary for disposal are part of the ITB

Question 8: Is the required safety items, steel toe, hard hat, ear protection, safety glass required for the walk through?
Answer 8: Yes

Question 9: Is there a fork lift available for the contractor during the change-out?
Answer 9: No, contractor must provide all equipment necessary

Question 10: Is there a “confined space entry” personnel certification required for the change-out?
Answer 10: No, there should be no need to enter the vessels for the change-out

Question 11: What is the process or time line for competition of work, if the City is required to make any repairs?

Answer 11: The City will make the repairs as quickly as possible following the City's purchasing procedures.

Question 12: If repairs are required, will the carbon change-out contractor be employed to complete repairs? Or, will the work be completed by City personnel?

Answer 12: It will depend on repairs and contractor/City capabilities to make the repairs.

Question 13: If necessary is there 120V and/or 230/460 V power available? Location?

Answer 13: There are multiple 120V outlets within 100' of vessels, there is a single 460V outlet within 100'

Question 14: Would if be possible to get the bid results for the last time the carbon was replaced?

Answer 14: Yes, the bids for ITB# 4384 are attached hereto.

Question 15: The media in the ITB is specified as Jacobi, Addsorb Solfox-HC. But, at the pre-bid meeting, we were given a specification for Carbon Activated COC-PA 60-HS3 and told that this carbon was used at the last change-out. Has the Carbon Activated COC-PA 60-HS3 been officially approved as an equal?

Answer 15: Yes as long as the specifications are the same; as it met the ITB specifications that stipulate a H2S breakthrough capacity (grams/cc) of 0.28 minimum and test results utilizing ASTM 2854 where provided.

Question 16: Does the city have a copy of the manufacturer's change-out procedure?

Answer 16: Yes it was in the ITB under Specifications – Removal and attached hereto (Enduro Products purchased Bay products and provided this during the last change out)

Question 17: We have the type of carbon currently in use in the odor control units. But, we will need to have it tested by an independent lab to method ASTM D6646 as shown to have it qualified. If we don't have the carbon test results submitted before the bid due date, can we submit the results after the due date and before the service is performed? We understand that if we win the bid we are under obligation (at our expense) to supply one of the two approved products.

Answer 17: No, all testing results must be available and provided to the City prior to bid opening or within the bid at bid opening.

Question 18: What is the process for having our carbon product approved? We have an independent outside lab, which familiar with the test will conduct the test. Do we submit the test results for approval?

Answer 18: Yes, the test results would be submitted showing the results, the test method used and any qa/qc results. They can be emailed or in the bid we just need them on or before the bid deadline.

Respondents are responsible for any conclusions that they may draw from the information contained in the Addendum.

Canada Colors and Chemicals Limited

152 Kennedy Road South
Brampton, Ontario
Canada
L6W 3G4

General Inquiry Number: (905) 459-1232

Material Safety Data Sheet Attached

MATERIAL SAFETY DATA SHEET

SECTION 1 : PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : Steam Processed Coconut Shell Activated Pellet Carbon with Magnesium Oxide.

HS CODE* : 3802.10

MANUFACTURE CODE : Activated carbon

PROPER SHIPPING NAME : COC-PA60HS3

COMPANY IDENTIFICATION : Carbon Activated Corporation 3774 Hoover Rd Blasdell NY 14219

CONTACT DETAILS : TEL 7168217830 FAX 7168210790

VERSION : I

(HS CODE* - Harmonized System Code)

This product is distributed by
Canada Colors and Chemicals Limited
General Inquiry: (905) 459-1232
24 Hour Emergency: (416) 444-2112
CCC: Product Code: 113506
CCC: Product Name: ACTIVATED CARBON COC-PA60 HS3

SECTION 2 : HAZARDS IDENTIFICATION

OSHA REGULATORY STATUS : None

HMIS* RATINGS :

	Activated Carbon	Magnesium Oxide
Health	**0**	**1**
Flammability	**1**	**0**
Reactivity	**0**	**0**
Special		

4 = Extreme/Severe
3 = High/Serious
2 = Moderate
1 = Slight
0 = Minimum
W = Water reactive
OX = Oxidizer

HEALTH EFFECT : See section (4)

ENVIRONMENTAL EFFECT : See section (7)

GHS* CLASSIFICATION :

Hazard symbol

Hazard/Category
Eye Irritation Category 2B
Respiratory Irritation Category 3

Warning
Contact may cause eye irritation. Dust may be slightly irritating to eyes and respiratory tract.

Wet activated carbon removes oxygen from air causing a severe hazard to workers in enclosed or confined space.

(HMIS* - Hazardous Material Information System, GHS* - Globally Harmonized System)

SECTION 3 : COMPOSITION / INFORMATION ON INGREDIENTS

Common name	Chemical Identity (% by weight)	CAS No	Impurities
Activated carbon (Steam processed coconut shell based)	75% - 100%	**7440-44-0**	**None**
Magnesium Oxide	up to 25%	**1309-48-4**	**None**

MATERIAL SAFETY DATA SHEET

SECTION 4 : FIRST AID MEASURES

ROUTES OF ENTRY

Inhalation : Dust may be inhaled and may cause mild irritation to the upper respiratory tract.

Ingestion : Dust may cause mild irritation to digestive track resulting in nausea or diarrhea

Skin Contact : Dust may cause mild irritation

Eye Contact : Dust may cause mild irritation

EFFECTS OF EXPOSURE : Inhalation of carbon dust may cause temporary discomfort. No adverse effects expected through skin or eye contact, but may cause mild irritation. Workers should also take appropriate precautions when dealing with spent (used) activated carbons which may exhibit properties of absorbed materials.

EMERGENCY AND FIRST AID

Inhalation : Expose to fresh air. Get medical attention for any breathing difficulty.

Ingestion : Give water to drink to dilute. If large quantities were swallowed, get medical attention immediately.

Skin Contact : Wash exposed area with soap and water. Seek medical attention if irritation develops.

Eye Contact : Immediately flush eyes with gentle but large stream of water for at least 15 min lifting lower and upper eye lids occasionally. Call a physician if irritation persists.

HEALTH HAZARD ACUTE AND CHRONIC : No data available.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

: People with pre-existing skin conditions, eye problems or impaired respiratory function may be more susceptible to the potential effects of the dust.

SECTION 5 : FIRE FIGHTING MEASURES

	FLASH POINT	AUTO IGNITION TEMPERATURE
Steam activated Carbon	NA	Above 350 ^{o}C
Magnesium Oxide	NA	NA

But not available for mixture

FLAMMABLE LIMIT - LEL : Not applicable (Lower Explosive Limit)

- UEL : Not applicable (Upper Explosive Limit)

EXTINGUISHING MEDIA : Water, carbon dioxide, nitrogen, dry chemical extinguishing agents, sand and foam. Avoid methods which may stir up dust clouds.

UNSUITABLE EXTINGUISHING MEDIA Not known

SPECIAL FIRE FIGHTING PROCEDURE : Wet carbons adsorb oxygen, do not enter closed vessels without using a self-contained breathing apparatus. Magnesium Oxide may ignite and explode when heated with sublimed sulfur, Mg powder or Al powder . It reacts violently with interhalogens and produces fumes.

PROTECTIVE EQUIPMENT : In the event of fire, wear full protective clothing and NIOSH approved self contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

Wet carbons adsorb oxygen, therefore do not enter closed vessels without using a self-contained breathing apparatus.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS : Use an extinguishing media suitable for the surrounding fire.

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in section 8. Use non-sparking tools and equipment. Reduce airborne dust to prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

ENVIRONMENMTAL PRECAUTIONS : Carbon is not soluble, but can cause a particulate emission if discharged to waterways.

Spills: Clean up spills in a manner that does not disperse dust into the air.

Warning! Spent carbon may have adsorbed hazardous materials.

Carbon Activated Corporation 3774 Hoover Road Blasdell NY 14219
PHONE: 7168217830, E-MAIL. nyinfo@activatedcarbon.com, FAX.7168210790

MATERIAL SAFETY DATA SHEET

SECTION 7 : HANDLING & STORAGE

SAFE HANDLING :

Minimize spills, generation of airborne dust and accumulation of dust on exposed surfaces. Adequate exhaust ventilation to be used to draw dust from working environment.

Use appropriate respirators, gloves and eye protection to prevent or minimize exposures to dust.

CONDITIONS FOR SAFE STORAGE : Store in cool, dry, ventilated place and in closed container. Keep away from oxidizers, heat or flames. Store away from ignition sources.

SECTION 8 : EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne Exposure Guidelines:	Activated Carbon	Magnesium Oxide
OSHA PEL (Occupational Safety and Health Association - Permissible exposure Limit) :	Data not available	TWA = 10(mg/m3)
ACGIH TLV (American Conference of Governmental Industrial Hygienists - Threshold Limit Value):	Data not available	TWA = 10(mg/m3)

Exposure Guidelines

Keep in airtight packing to prevent pickup of odors and moisture from air. Wet activated carbon depletes oxygen from the air and therefore dangerously low levels of oxygen may be encountered in confined spaces.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.

Personal Respirators (NIOSH* Approved) :

For conditions of use where exposure to the dust or mist is apparent, Use NIOSH/OSHA* approved respirator for Phosphoric acid and dust/mist (non-toxic particles). Select the suitable respirator based on exposure limits. For emergencies or instances where the exposure levels are not known, use a full-face positive pressure, air-supplied respirator.

WARNING: Air-purifying respirators do not protect workers in oxygen deficient atmospheres.

Skin Protection :

Wear protective gloves and clean body-covering clothing. For personal hygiene purposes, use adequate clothing to prevent skin contact including boots, gloves, lab coat, apron or overalls as appropriate.

Eye Protection :

Use safety glasses/goggles when working with activated carbon. Contact lenses should not be worn. Install eyewash fountain and quick-drench facilities in work area.

(NIOSH* - National Institute for Occupational Safety and Health/ OSHA* - Occupational Safety and Health Association)

SECTION 9 : PHYSICAL AND CHEMICAL CHARACTERISTICS

APPEARANCE AND ODOUR	:	Black granules or powder ,odorless.
pH VALUE	:	6 - 11
MOLECULAR WEIGHT	:	Not applicable
BOILING POINT	:	Not applicable
VAPOUR PRESSURE	:	Not applicable
SOLUBILITY IN WATER	:	Insoluble for Carbon, only Magnesium Oxide will be dissolved. (6.2mg/l (200C)
PARTICLE DENSITY	:	Nominal 0.82 g/cc
BULK DENSITY	:	0.30 - 0.64 g/cc
MELTING POINT	:	Not applicable
FREEZING POINT	:	Not applicable
EVAPORATION RATE	:	Not applicable
FLASH POINT	:	Not applicable
PARTITION COEFFICIENT	:	Not applicable
DECOMPOSITION TEMP.	:	Not applicable for Carbon and Magnesium Oxide
VISCOSITY	:	Not applicable

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MATERIAL SAFETY DATA SHEET

SECTION 10 : STABILITY AND REACTIVITY

CHEMICAL STABILITY : Stable under ordinary conditions of use and storage.

CONDITIONS TO AVOID : Moisture and incompatibles (See below)

INCOMPATIBILITY (MATERIALS TO AVOID)
Strong oxidizing chemicals such as ozone, liquid oxygen, chlorine, permanganate, chlorates, bromates, nitrates, etc. may result rapid combustion. Avoid contact with strong acids.

HAZARDOUS DECOMPOSITION PRODUCT/BY-PRODUCT : On burning carbon dioxide, carbon monoxide / Magnesium oxides.

HAZARDOUS POLYMERIZATION : Will not occur

SECTION 11 : TOXICOLOGICAL INFORMATION

ACUTE EFFECTS

Toxicity Studies

Oral LD50*	Not determined on the finished product
Dermal LD50*	Not determined on the finished product

Inhalation Section (4)
Ingestion Section (4)
Eye Irritation Section (4)
Skin Irritation Section (4)

Sensitization Not determined on the finished product

Target organ(s) or System Eyes, skin and upper respiratory system

Signs and Symptoms of Exposure Irritation and redness of eyes, irritation of skin and respiratory system may result from exposure to carbon dust.

Chronic Effects
Carcinogenicity Not determined on the finished product.
Mutagenicity Not determined on the finished product.
Reproductive effects Not determined on the finished product.
Development factors Not determined on the finished product.

(LD50* - Lethal Dose expected to kill 50% of a group of test animals)

SECTION 12 : ECOLOGICAL INFORMATION

Eco toxicity Not determined on the finished product.

Persistence/degradability Not determined on the finished product.

Bioaccumulation/Accumulation Not determined on the finished product.

Mobility in Environmental Media Not determined on the finished product.

Other adverse effects Not determined on the finished product.

SECTION 13 : DISPOSAL CONSIDERATIONS

Approved waste disposal facilities should be used for material that cannot be recycled/regenerated appropriately. Processing, use or contamination of this product may change the waste management options. Country, Federal, State, City and local disposal regulations may differ from each other. Consider potential hazards of any adsorbed material before disposal.

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PHONE: 7168217830, E-MAIL. nyinfo@activatedcarbon.com, FAX.7168210790

MATERIAL SAFETY DATA SHEET

SECTION 14 : TRANSPORT INFORMATION

Proper Shipping Name:
Activated carbon (Not DOT* regulated)

Identification Number:
Not applicable for finish product

Packing Group
NOT REGULATED
FOR MIXTURE

UN NO*
1362 for Carbon

IMCO* CLASS
4.2 for Carbon

Note: Activated carbon passes the test for self-heating substances as reflected in the United Nations Recommendations on the Transport of dangerous Goods, manual of Tests and Criteria (see 33.3.1.3.3) and is not considered spontaneously combustible. Therefore, the provisions for shipping activated carbon, class 4.2, in the IATA*, ICAO*, and IMDG* Code publications do not apply to shipments of this material.

(DOT* - Department of Transportation, UN NO* - United Nations Hazardous substance No, IMCO * - Intergovernmental Maritime Consultative Organization, IATA* - International Air Transportation Association, ICAO* - International Civil Aviation Organization, IMDG* - International Maritime Dangerous Goods)

SECTION 15 : REGULATORY INFORMATION

	Activated carbon	Magnesium Oxide
SARA* Title III, Section 302:	Does not contain any chemicals under this section.	
SARA* Title III, Section 313:	Does not contain any chemicals under this section.	
OSHA*	Activated carbon is listed on the TSCA inventory list.	
TSCA*:	Activated carbon and magnesium Oxide is listed on the TSCA inventory list.	
California proposition 65:	Does not contain any chemicals currently in the California List of known carcinogens and reproductive toxins.	Magnesium Oxide listed

U.S. Federal Regulations:

OSHA* (29 CFR 1910.1200) - Air contaminate, Table Z-1-A CERCLA* (40 CFR 302.4) - Contains no CERCLA hazardous substance RCRA* (40 CFR 261.33, 261.20-24) - Listed hazardous waste: No.

For Activated Carbon

Chemical inventory status

Japan	Australia	Korea	CANADA		Phil.
			DSL*	WHMIS*	
No	Yes	Yes	Yes	Yes	Yes

* This is given only for activated carbon, information not available for finished product.

(SARA* - Superfund Amendments and reauthorization Act, TSCA* - Toxic Substances Control Act, OSHA* - Occupational Safety and Health Association, CERLA* - Comprehensive Environmental Response, Compensation and Liability Act, RCRA* - Resource Conservation and Recovery Act., DSL* - Domestic Substance s List, WHMIS* - Workplace Hazardous Material Information System))

SECTION 16 : OTHER INFORMATION

Do not enter vessels containing wet Activated Carbon before checking oxygen level. Vessels with limited ventilation may be low in oxygen due to the adsorbing characteristics of Activated Carbon. If necessary, use a NIOSH-approved self-contained breathing apparatus.

Dangerous goods regulation-
Steam activated carbon (HS CODE 3802.10) is not classified as dangerous good as per UN No 1362, IMCO Class or division 4.2, Packing group III, Special provisions 925

Special Provision 925 - The provisions of this Code do not apply to:

- carbons made by a steam activation process.
- a consignment of carbon if it passes the tests for self-heating substances as reflected in the UN Manual of Tests and Criteria (see 33.3.1.3.3), and is accompanied by a certificate from a laboratory accredited by the competent authority, stating that the product to be loaded has been correctly sampled by trained staff from that laboratory and that the sample was correctly tested and has passed the test

EMPLOYERS SHOULD USE THIS INFORMATION ONLY AS A SUPPLEMENT TO OTHER INFORMATION GATHERED BY THEM AND SHOULD MAKE INDEPENDENT JUDGMENT OF SUITABILITY OF THIS INFORMATION TO ENSURE PROPER USE AND PROTECT THE HEALTH AND SAFETY OF EMPLOYEES. THIS INFORMATION IS FURNISHED WITHOUT WARRANTY AND ANY USE OF THE PRODUCT NOT IN CONFORMANCE WITH THIS MATERIAL SAFETY DATA SHEET OR IN COMBINATION WITH ANY OTHER PRODUCT OR PROCESS, IS THE RESPONSIBILITY OF THE USER.

Last Revised date: January 2015

*** THIS MSDS IS VALID UNTIL THE NEXT VERSION.**

-oOo-

Carbon Activated Corporation 3774 Hoover Road Blasdell NY 14219
PHONE: 7168217830, E-MAIL. nyinfo@activatedcarbon.com, FAX.7168210790

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-84879-1
Client Project/Site: TCLP Analysis

For:
Carbon Activated Corp.
3774 Hoover Road
Blasdell, New York 14219

Attn: Matthew McCormick

Authorized for release by:
8/6/2015 12:21:38 PM

Brian Fischer, Manager of Project Management
(716)504-9835
brian.fischer@testamericainc.com

Table of Contents

Definitions/Glossary

Client: Carbon Activated Corp.
Project/Site: TCLP Analysis

TestAmerica Job ID: 480-84879-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Carbon Activated Corp.
Project/Site: TCLP Analysis

TestAmerica Job ID: 480-84879-1

Job ID: 480-84879-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-84879-1

Comments
No additional comments.

Receipt
The sample was received on 7/31/2015 1:04 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 20.2º C.

GC/MS VOA
Method(s) 8260C: The following samples was diluted due to the nature of the TCLP matrix: ANN ARBOR WWTP SPENT (480-84879-1) and (LB 480-256657/1-A). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
Method(s) 9045D: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following sample has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: ANN ARBOR WWTP SPENT (480-84879-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Carbon Activated Corp.
Project/Site: TCLP Analysis

TestAmerica Job ID: 480-84879-1

Client Sample ID: ANN ARBOR WWTP SPENT — Lab Sample ID: 480-84879-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
3-Methylphenol	0.031		0.010	0.00040	mg/L	1		8270D	TCLP
2-Methylphenol	0.0021	J	0.0050	0.00040	mg/L	1		8270D	TCLP
4-Methylphenol	0.031		0.010	0.00036	mg/L	1		8270D	TCLP

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	8.55	HF	0.100	0.100	SU	1		9045D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: ANN ARBOR WWTP SPENT

Date Collected: 07/31/15 11:45
Date Received: 07/31/15 13:04

Lab Sample ID: 480-84879-1
Matrix: Solid

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			08/04/15 22:09	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			08/04/15 22:09	10
Chlorobenzene	ND		0.010	0.0075	mg/L			08/04/15 22:09	10
Chloroform	ND		0.010	0.0034	mg/L			08/04/15 22:09	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			08/04/15 22:09	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			08/04/15 22:09	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			08/04/15 22:09	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			08/04/15 22:09	10
Trichloroethene	ND		0.010	0.0046	mg/L			08/04/15 22:09	10
Vinyl chloride	ND		0.010	0.0090	mg/L			08/04/15 22:09	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 137*		*08/04/15 22:09*	*10*
Toluene-d8 (Surr)	*106*		*71 - 126*		*08/04/15 22:09*	*10*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*08/04/15 22:09*	*10*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.010	0.00046	mg/L		08/04/15 14:18	08/05/15 16:44	1
2,4-Dinitrotoluene	ND		0.0050	0.00045	mg/L		08/04/15 14:18	08/05/15 16:44	1
Hexachlorobenzene	ND		0.0050	0.00051	mg/L		08/04/15 14:18	08/05/15 16:44	1
Hexachlorobutadiene	ND		0.0050	0.00068	mg/L		08/04/15 14:18	08/05/15 16:44	1
Hexachloroethane	ND		0.0050	0.00059	mg/L		08/04/15 14:18	08/05/15 16:44	1
3-Methylphenol	**0.031**		0.010	0.00040	mg/L		08/04/15 14:18	08/05/15 16:44	1
2-Methylphenol	**0.0021**	**J**	0.0050	0.00040	mg/L		08/04/15 14:18	08/05/15 16:44	1
4-Methylphenol	**0.031**		0.010	0.00036	mg/L		08/04/15 14:18	08/05/15 16:44	1
Nitrobenzene	ND		0.0050	0.00029	mg/L		08/04/15 14:18	08/05/15 16:44	1
Pentachlorophenol	ND		0.010	0.0022	mg/L		08/04/15 14:18	08/05/15 16:44	1
Pyridine	ND		0.025	0.00041	mg/L		08/04/15 14:18	08/05/15 16:44	1
2,4,5-Trichlorophenol	ND		0.0050	0.00048	mg/L		08/04/15 14:18	08/05/15 16:44	1
2,4,6-Trichlorophenol	ND		0.0050	0.00061	mg/L		08/04/15 14:18	08/05/15 16:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*90*		*52 - 132*	*08/04/15 14:18*	*08/05/15 16:44*	*1*
2-Fluorobiphenyl	*83*		*48 - 120*	*08/04/15 14:18*	*08/05/15 16:44*	*1*
2-Fluorophenol	*46*		*20 - 120*	*08/04/15 14:18*	*08/05/15 16:44*	*1*
Nitrobenzene-d5	*77*		*46 - 120*	*08/04/15 14:18*	*08/05/15 16:44*	*1*
p-Terphenyl-d14	*91*		*67 - 150*	*08/04/15 14:18*	*08/05/15 16:44*	*1*
Phenol-d5	*30*		*16 - 120*	*08/04/15 14:18*	*08/05/15 16:44*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide, Reactive	ND		9.8	9.8	mg/Kg		08/04/15 14:00	08/05/15 11:17	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**8.55**	**HF**	0.100	0.100	SU			08/04/15 19:10	1

Surrogate Summary

Client: Carbon Activated Corp.
Project/Site: TCLP Analysis

TestAmerica Job ID: 480-84879-1

Method: 8260C - TCLP Volatiles

Matrix: Solid — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		12DCE	TOL	BFB
Lab Sample ID	Client Sample ID	(66-137)	(71-126)	(73-120)
LCS 480-256997/4	Lab Control Sample	98	103	100
MB 480-256997/6	Method Blank	100	103	100

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)

Method: 8260C - TCLP Volatiles

Matrix: Solid — **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)		
		12DCE	TOL	BFB
Lab Sample ID	Client Sample ID	(66-137)	(71-126)	(73-120)
480-84879-1	ANN ARBOR WWTP SPENT	102	106	103
LB 480-256657/1-A	Method Blank	99	101	99

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPH	PHL
Lab Sample ID	Client Sample ID	(52-132)	(48-120)	(20-120)	(46-120)	(67-150)	(16-120)
LCS 480-256962/2-A	Lab Control Sample	92	89	45	85	102	31
MB 480-256962/1-A	Method Blank	90	92	44	84	103	30

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPH = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid — **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPH	PHL
Lab Sample ID	Client Sample ID	(52-132)	(48-120)	(20-120)	(46-120)	(67-150)	(16-120)
480-84879-1	ANN ARBOR WWTP SPENT	90	83	46	77	91	30
LB 480-256656/1-D	Method Blank	96	87	53	81	95	36

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl

Surrogate Summary

Client: Carbon Activated Corp.
Project/Site: TCLP Analysis

TestAmerica Job ID: 480-84879-1

2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPH = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8260C - TCLP Volatiles

Lab Sample ID: MB 480-256997/6
Matrix: Solid
Analysis Batch: 256997

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0010	0.00041	mg/L			08/04/15 20:42	1
Carbon tetrachloride	ND		0.0010	0.00027	mg/L			08/04/15 20:42	1
Chlorobenzene	ND		0.0010	0.00075	mg/L			08/04/15 20:42	1
Chloroform	ND		0.0010	0.00034	mg/L			08/04/15 20:42	1
1,2-Dichloroethane	ND		0.0010	0.00021	mg/L			08/04/15 20:42	1
1,1-Dichloroethene	ND		0.0010	0.00029	mg/L			08/04/15 20:42	1
2-Butanone (MEK)	ND		0.0050	0.0013	mg/L			08/04/15 20:42	1
Tetrachloroethene	ND		0.0010	0.00036	mg/L			08/04/15 20:42	1
Trichloroethene	ND		0.0010	0.00046	mg/L			08/04/15 20:42	1
Vinyl chloride	ND		0.0010	0.00090	mg/L			08/04/15 20:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 137*		*08/04/15 20:42*	*1*
Toluene-d8 (Surr)	*103*		*71 - 126*		*08/04/15 20:42*	*1*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*		*08/04/15 20:42*	*1*

Lab Sample ID: LCS 480-256997/4
Matrix: Solid
Analysis Batch: 256997

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.0250	0.0255		mg/L		102	71 - 124
Chlorobenzene	0.0250	0.0255		mg/L		102	72 - 120
1,2-Dichloroethane	0.0250	0.0238		mg/L		95	75 - 127
1,1-Dichloroethene	0.0250	0.0240		mg/L		96	58 - 121
Tetrachloroethene	0.0250	0.0256		mg/L		103	74 - 122
Trichloroethene	0.0250	0.0260		mg/L		104	74 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 137*
Toluene-d8 (Surr)	*103*		*71 - 126*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*

Lab Sample ID: LB 480-256657/1-A
Matrix: Solid
Analysis Batch: 256997

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			08/04/15 21:24	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			08/04/15 21:24	10
Chlorobenzene	ND		0.010	0.0075	mg/L			08/04/15 21:24	10
Chloroform	ND		0.010	0.0034	mg/L			08/04/15 21:24	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			08/04/15 21:24	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			08/04/15 21:24	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			08/04/15 21:24	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			08/04/15 21:24	10
Trichloroethene	ND		0.010	0.0046	mg/L			08/04/15 21:24	10

Method: 8260C - TCLP Volatiles (Continued)

Lab Sample ID: LB 480-256657/1-A
Matrix: Solid
Analysis Batch: 256997

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.010	0.0090	mg/L			08/04/15 21:24	10

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 137*		*08/04/15 21:24*	*10*
Toluene-d8 (Surr)	*101*		*71 - 126*		*08/04/15 21:24*	*10*
4-Bromofluorobenzene (Surr)	*99*		*73 - 120*		*08/04/15 21:24*	*10*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-256962/1-A
Matrix: Solid
Analysis Batch: 257114

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 256962

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.0025	0.00012	mg/L		08/04/15 14:18	08/05/15 12:15	1
2,4-Dinitrotoluene	ND		0.0013	0.00011	mg/L		08/04/15 14:18	08/05/15 12:15	1
Hexachlorobenzene	ND		0.0013	0.00013	mg/L		08/04/15 14:18	08/05/15 12:15	1
Hexachlorobutadiene	ND		0.0013	0.00017	mg/L		08/04/15 14:18	08/05/15 12:15	1
Hexachloroethane	ND		0.0013	0.00015	mg/L		08/04/15 14:18	08/05/15 12:15	1
3-Methylphenol	ND		0.0025	0.00010	mg/L		08/04/15 14:18	08/05/15 12:15	1
2-Methylphenol	ND		0.0013	0.00010	mg/L		08/04/15 14:18	08/05/15 12:15	1
4-Methylphenol	ND		0.0025	0.000090	mg/L		08/04/15 14:18	08/05/15 12:15	1
Nitrobenzene	ND		0.0013	0.000073	mg/L		08/04/15 14:18	08/05/15 12:15	1
Pentachlorophenol	ND		0.0025	0.00055	mg/L		08/04/15 14:18	08/05/15 12:15	1
Pyridine	ND		0.0063	0.00010	mg/L		08/04/15 14:18	08/05/15 12:15	1
2,4,5-Trichlorophenol	ND		0.0013	0.00012	mg/L		08/04/15 14:18	08/05/15 12:15	1
2,4,6-Trichlorophenol	ND		0.0013	0.00015	mg/L		08/04/15 14:18	08/05/15 12:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*90*		*52 - 132*	*08/04/15 14:18*	*08/05/15 12:15*	*1*
2-Fluorobiphenyl	*92*		*48 - 120*	*08/04/15 14:18*	*08/05/15 12:15*	*1*
2-Fluorophenol	*44*		*20 - 120*	*08/04/15 14:18*	*08/05/15 12:15*	*1*
Nitrobenzene-d5	*84*		*46 - 120*	*08/04/15 14:18*	*08/05/15 12:15*	*1*
p-Terphenyl-d14	*103*		*67 - 150*	*08/04/15 14:18*	*08/05/15 12:15*	*1*
Phenol-d5	*30*		*16 - 120*	*08/04/15 14:18*	*08/05/15 12:15*	*1*

Lab Sample ID: LCS 480-256962/2-A
Matrix: Solid
Analysis Batch: 257114

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 256962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	0.0500	0.0335		mg/L		67	32 - 120
2,4-Dinitrotoluene	0.0500	0.0457		mg/L		91	65 - 154
Hexachloroethane	0.0500	0.0320		mg/L		64	14 - 130
Pentachlorophenol	0.100	0.0964		mg/L		96	39 - 136

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-256962/2-A
Matrix: Solid
Analysis Batch: 257114

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 256962

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*92*		*52 - 132*
2-Fluorobiphenyl	*89*		*48 - 120*
2-Fluorophenol	*45*		*20 - 120*
Nitrobenzene-d5	*85*		*46 - 120*
p-Terphenyl-d14	*102*		*67 - 150*
Phenol-d5	*31*		*16 - 120*

Lab Sample ID: LB 480-256656/1-D
Matrix: Solid
Analysis Batch: 257114

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 256962

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.010	0.00046	mg/L		08/04/15 14:18	08/05/15 18:32	1
2,4-Dinitrotoluene	ND		0.0050	0.00045	mg/L		08/04/15 14:18	08/05/15 18:32	1
Hexachlorobenzene	ND		0.0050	0.00051	mg/L		08/04/15 14:18	08/05/15 18:32	1
Hexachlorobutadiene	ND		0.0050	0.00068	mg/L		08/04/15 14:18	08/05/15 18:32	1
Hexachloroethane	ND		0.0050	0.00059	mg/L		08/04/15 14:18	08/05/15 18:32	1
3-Methylphenol	ND		0.010	0.00040	mg/L		08/04/15 14:18	08/05/15 18:32	1
2-Methylphenol	ND		0.0050	0.00040	mg/L		08/04/15 14:18	08/05/15 18:32	1
4-Methylphenol	ND		0.010	0.00036	mg/L		08/04/15 14:18	08/05/15 18:32	1
Nitrobenzene	ND		0.0050	0.00029	mg/L		08/04/15 14:18	08/05/15 18:32	1
Pentachlorophenol	ND		0.010	0.0022	mg/L		08/04/15 14:18	08/05/15 18:32	1
Pyridine	ND		0.025	0.00041	mg/L		08/04/15 14:18	08/05/15 18:32	1
2,4,5-Trichlorophenol	ND		0.0050	0.00048	mg/L		08/04/15 14:18	08/05/15 18:32	1
2,4,6-Trichlorophenol	ND		0.0050	0.00061	mg/L		08/04/15 14:18	08/05/15 18:32	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*96*		*52 - 132*	*08/04/15 14:18*	*08/05/15 18:32*	*1*
2-Fluorobiphenyl	*87*		*48 - 120*	*08/04/15 14:18*	*08/05/15 18:32*	*1*
2-Fluorophenol	*53*		*20 - 120*	*08/04/15 14:18*	*08/05/15 18:32*	*1*
Nitrobenzene-d5	*81*		*46 - 120*	*08/04/15 14:18*	*08/05/15 18:32*	*1*
p-Terphenyl-d14	*95*		*67 - 150*	*08/04/15 14:18*	*08/05/15 18:32*	*1*
Phenol-d5	*36*		*16 - 120*	*08/04/15 14:18*	*08/05/15 18:32*	*1*

Method: 9034 - Sulfide, Reactive

Lab Sample ID: MB 480-257002/1-A
Matrix: Solid
Analysis Batch: 257152

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 257002

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide, Reactive	ND		10.0	10.0	mg/Kg		08/04/15 14:00	08/05/15 11:17	1

Method: 9034 - Sulfide, Reactive (Continued)

Lab Sample ID: LCS 480-257002/2-A
Matrix: Solid
Analysis Batch: 257152

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 257002

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide, Reactive	1000	541.0		mg/Kg		54	10 - 100

QC Association Summary

Client: Carbon Activated Corp.
Project/Site: TCLP Analysis

TestAmerica Job ID: 480-84879-1

GC/MS VOA

Leach Batch: 256657

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84879-1	ANN ARBOR WWTP SPENT	TCLP	Solid	1311	
LB 480-256657/1-A	Method Blank	TCLP	Solid	1311	

Analysis Batch: 256997

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84879-1	ANN ARBOR WWTP SPENT	TCLP	Solid	8260C	256657
LB 480-256657/1-A	Method Blank	TCLP	Solid	8260C	256657
LCS 480-256997/4	Lab Control Sample	Total/NA	Solid	8260C	
MB 480-256997/6	Method Blank	Total/NA	Solid	8260C	

GC/MS Semi VOA

Leach Batch: 256656

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84879-1	ANN ARBOR WWTP SPENT	TCLP	Solid	1311	
LB 480-256656/1-D	Method Blank	TCLP	Solid	1311	

Prep Batch: 256962

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84879-1	ANN ARBOR WWTP SPENT	TCLP	Solid	3510C	256656
LB 480-256656/1-D	Method Blank	TCLP	Solid	3510C	256656
LCS 480-256962/2-A	Lab Control Sample	Total/NA	Solid	3510C	
MB 480-256962/1-A	Method Blank	Total/NA	Solid	3510C	

Analysis Batch: 257114

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84879-1	ANN ARBOR WWTP SPENT	TCLP	Solid	8270D	256962
LB 480-256656/1-D	Method Blank	TCLP	Solid	8270D	256962
LCS 480-256962/2-A	Lab Control Sample	Total/NA	Solid	8270D	256962
MB 480-256962/1-A	Method Blank	Total/NA	Solid	8270D	256962

General Chemistry

Prep Batch: 257002

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84879-1	ANN ARBOR WWTP SPENT	Total/NA	Solid	7.3.4	
LCS 480-257002/2-A	Lab Control Sample	Total/NA	Solid	7.3.4	
MB 480-257002/1-A	Method Blank	Total/NA	Solid	7.3.4	

Analysis Batch: 257003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84879-1	ANN ARBOR WWTP SPENT	Total/NA	Solid	9045D	
LCS 480-257003/1	Lab Control Sample	Total/NA	Solid	9045D	

Analysis Batch: 257152

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84879-1	ANN ARBOR WWTP SPENT	Total/NA	Solid	9034	257002
LCS 480-257002/2-A	Lab Control Sample	Total/NA	Solid	9034	257002
MB 480-257002/1-A	Method Blank	Total/NA	Solid	9034	257002

Lab Chronicle

Client: Carbon Activated Corp.
Project/Site: TCLP Analysis

TestAmerica Job ID: 480-84879-1

Client Sample ID: ANN ARBOR WWTP SPENT

Lab Sample ID: 480-84879-1

Date Collected: 07/31/15 11:45

Matrix: Solid

Date Received: 07/31/15 13:04

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			256657	08/03/15 08:17	TRG	TAL BUF
TCLP	Analysis	8260C		10	256997	08/04/15 22:09	EDB	TAL BUF
TCLP	Leach	1311			256656	08/03/15 08:16	JLS	TAL BUF
TCLP	Prep	3510C			256962	08/04/15 14:18	VNP	TAL BUF
TCLP	Analysis	8270D		1	257114	08/05/15 16:44	DMR	TAL BUF
Total/NA	Prep	7.3.4			257002	08/04/15 14:00	KMF	TAL BUF
Total/NA	Analysis	9034		1	257152	08/05/15 11:17	KMF	TAL BUF
Total/NA	Analysis	9045D		1	257003	08/04/15 19:10	NDB	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Certification Summary

Client: Carbon Activated Corp.
Project/Site: TCLP Analysis

TestAmerica Job ID: 480-84879-1

Laboratory: TestAmerica Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	03-31-16

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
9034	7.3.4	Solid	Sulfide, Reactive

Method Summary

Client: Carbon Activated Corp.
Project/Site: TCLP Analysis

TestAmerica Job ID: 480-84879-1

Method	Method Description	Protocol	Laboratory
8260C	TCLP Volatiles	SW846	TAL BUF
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL BUF
9034	Sulfide, Reactive	SW846	TAL BUF
9045D	pH	SW846	TAL BUF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Carbon Activated Corp.
Project/Site: TCLP Analysis

TestAmerica Job ID: 480-84879-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-84879-1	ANN ARBOR WWTP SPENT	Solid	07/31/15 11:45	07/31/15 13:04

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes☐ No☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client: Carbon Activated Corp	Project Manager: Matt McCormick	Date: 7/31/15	Chain of Custody Number: 284309
Address: 3774 Hoover Rd.	Telephone Number (Area Code)/Fax Number: 716-392-5587	Lab Number:	Page _____ of _____
City: Blasdell / State: NY / Zip Code: 14219	Site Contact:	Lab Contact: Brian Fricker	
Project Name and Location (State): Ann Arbor	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.: Verbal Matt			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: VOC's TCLP	SVOC's TCLP	Pb	Reactive Sulfide
Ann Arbor WWTP Spent	7/31/15	11:45am				X							X	X	X	X

Analysis (Attach list if more space is needed)

Special Instructions/ Conditions of Receipt

480-84879 Chain of Custody

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other 30 days

QC Requirements (Specify)

1. Relinquished By: Matt McCormick	Date: 7/31/15	Time: 1304	1. Received By: TA	Date: 07/31/15	Time: 1304
2. Relinquished By:	Date:	Time:	2. Received By:	Date:	Time:
3. Relinquished By:	Date:	Time:	3. Received By:	Date:	Time:

Comments: Temp 20.2 No ICE #1

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Login Sample Receipt Checklist

Client: Carbon Activated Corp.

Job Number: 480-84879-1

Login Number: 84879
List Number: 1
Creator: Kolb, Chris M

List Source: TestAmerica Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	Yes: Received same day of collection
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	CARBON ACTIVATED CORP.
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

CITY OF ANN ARBOR PURCHASING
BID OPENING TABULATION

INVITATION TO BID (ITB)# 4384 - Carbon Replacement in Odor Control Units at the WWTP

BIDDER NAME	ACKNOWLEDGED ADDENDA (YES/NO)	BID BOND (YES/NO)	TOTAL BASE BID
1.) UNIVAR	—	—	NO BID
2.) PURE AIR FILTRATION	YES	YES	$181,700.00
3.) CARBON ACTIVATED CORP	YES	YES	$81,900.00
4.) JACOBI CARBONS, INC.	YES	YES	$98,750.00
5.) DOER PRODUCTS	YES	YES	$101,300.00
6.)			
7.)			
8.)			
9.)			
10.)			
11.)			

Bid Recorded By: Mark V. Berryman

3. Media Handling, Precautions, Installation, Removal

3.1 ~~Media Details~~

~~Inner Media~~

~~3,350 lbs of OdorSorb-VB1 Media with the following specifications~~

Moisture Conte	15% (max)
Carbon Tetrachlori Ac ity	60 (min)
Total Ash (base carbo	15% ax
Ball-Pan Hardness	95% (
Apparent Densit	39.3 s/ft
Phosphoric Acid Content	1 (min)
Pellet Diameter	mm +/- 0.4mm

Out Media

3,37 of activated Carb rSor Max with the following s ifications

Typical H_2 apacit s/cc carbon	15 min
Carbon tetrac (CTC) activity %	mi
Moisture, Cont	4%
Apparent D ty l ft3	27
Ball-Pan dness Nu r	% min
Pallet meter	3.6 mm
Hea oss @ 50 fpm	0.9” /ft.

See attached material safety data sheet.

Safety Precautions

Oxygen Demand Created by Activated Carbon in Confined Vessels

It has been confirmed that wet granular activated carbon confined in vessels creates an oxygen demand, which is hazardous to human health and can cause death unless proper safety precautions are taken.

Studies conducted in vessels have shown that low oxygen content exists in vessels containing wet carbon. Laboratory experiments conducted also have revealed that commercial activated carbons in a wet or moist condition will lower the oxygen content of an isolated space. Preliminary indications of this research are:

- The phenomenon occurs with wet activated carbon of all common types.

- The rate of oxygen uptake naturally varies with the degree of exposure of the wet carbon to the air. Thus it is relatively rapid in a drained enclosure.
- There is some indication of a limit to carbon's capacity for oxygen, but until more is known, it would be prudent to assume that all carbon (fresh, used, reactivated) will also exhibit this characteristic. Similarly, although these tests were run with water, it should be assumed that the phenomenon would occur in other liquid and vapor systems.

All confined spaces, including those containing activated carbon, should be presumed to be hazardous. Appropriate safety measures should always be taken before entering, as well as when workers are in, a confined space. OSHA regulations applicable to respiratory protection in oxygen-deficient atmospheres should be strictly adhered to.

3.2 Media Installation

A. Before Installation

1. Visually inspect the vessel interior and media support baskets for any visible defects. Ensure the baskets are centered and straight.
2. Visually inspect that the polypropylene screen covering the baskets is intact.

B. Installation

1. Media can be either dumped into the vessel directly from the sack, or can be pumped. Begin by carefully loading the inner media first. Open the 4 inner spin-off covers and fill the media through each one spin-off maintain approximately the same level each of the fill points. Fill the media until the solid part of the basket is filled. Repeat the same procedure for the outer media. Make sure that the screen stays intact and does not allow any media to fall through.

Please contact ENDURO COMPOSITES for media installation assistance if required.

3.3 Media Removal

It is ENDURO COMPOSITES recommendation that you contact ENDURO COMPOSITES to perform any media removal or exchanges to ensure system warranty is maintained.

A. To Remove Media:

1. Make sure system fan is off.
2. Remove the media loading/unloading spin-off lids on top of the vessel.
3. Use appropriate media pneumatic vacuum system to suck media from vessel following vacuum equipment guidelines.
4. Once media is removed, inspect internal and media containment system for wear, damage or deformation. Contact ENDURO COMPOSITES if replacement is required.
5. Dispose of spent media in appropriate and approved manner.
6. Install fresh media as described above.

7. Replace lids.
8. Follow system start up procedures.

3.4 Activated Carbon Sampling/Testing Procedure

The activated carbon media should be tested regularly to determine its remaining life expectancy. This will allow the user to better forecast media change-outs, purchase new media, and reduce nuisance odor complaints.

- Sampling should take place every three (3) months at first. This schedule can then be adjusted as needed, based on the individual site conditions and plant operator comfort level.
- The odor control system may be left operational while gathering the carbon samples.
- Observe all local and specific plant safety guidelines.
- Locate the carbon sampling connection(s) on the vessel. See attached system drawings.
- A carbon sampling device, or a grain thief, is the best way to gather the carbon samples. A carbon sampling device can be purchased from Enduro Composites (Part #700595), or a grain thief may be purchased directly.
- Starting with the sampling connection closest to the center, open the PVC ball valve, insert the grain thief completely into the vessel, and take the media sample. This carbon sample should then be placed in a one quart sealed plastic container and clearly marked for accurate testing and recording with the following information:
    - Odor control system
    - Location of sampling (closest to center of vessel, second closest, farthest)
    - Date of sampling.
- Repeat the process for each corresponding sample connection. There are typically two or three sample connections, based on the size of the vessel. One (1) sample should be taken from each connection.
- These samples should then be properly packaged and sent to a testing laboratory. The samples should be tested for remaining life expectancy.

Contact Enduro Composites with any questions on this procedure.