Bridgeton Landfill Ambient Air and Landfill Source Gas Sampling-January 2015

Summary of Findings from the January 2015 Comprehensive Sampling Event

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June 12, 2015

Sign-off Sheet

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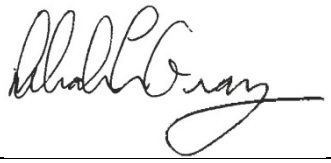

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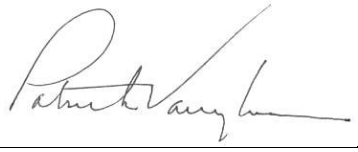

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Executive Summary

This report describes the methodology and presents the findings from the comprehensive sampling event conducted by Stantec Consulting Services Inc. (Stantec) on January 27, 28, and 29, 2015 on and around the Bridgeton Landfill, LLC (Bridgeton) facility located at 13570 St. Charles Rock Road, Bridgeton, Missouri (the landfill). The purpose of this comprehensive sampling event was to fulfill the requirements of the June 19, 2014 Second Amendment to Order of Preliminary Injunction (Second Amended Order) issued by the State of Missouri Attorney General and the Missouri Department of Natural Resources (MDNR). The Order required Bridgeton Landfill to "*undertake three air sampling events, initiating the first within 45 days of the entry of this Second Amendment, the second seven months following entry of this Second Amendment, and the third thirteen months from entry of this Second Amendment. These air sampling events will include all parameters included in the August 2012 Stantec sampling event. The sampling event will sample from the inlet prior to the flare, and from agreed locations…using under liner collection ports to sample the South Quarry, neck area and North Quarry.*"

As of the date of this report, four comprehensive sampling events have been conducted to characterize constituents of potential concern in ambient air and source gas; August 2012, April/May 2013, July 2014 and January 2015. Reports for the first three events can be found on the Bridgeton Landfill website. The subject of this report is the fourth event conducted in January 2015 (designated as the second comprehensive sampling event by the June 19, 2014 Second Amended Order).

The Second Amended Order mandated that ambient air and source gas samples be analyzed for the following list of parameters by the Methods indicated below.

- Fixed Gases: EPA Method 3C (hydrogen, oxygen + argon, nitrogen, carbon monoxide, carbon dioxide, methane)
- Ammonia: OSHA Method ID-188
- Mercury and Compounds: NIOSH Method 6009
- Hydrogen Cyanide: NIOSH Method 6010
- Reduced Sulfur Compounds: ASTM Method D5504
- Volatile Organic Compounds and Tentatively Identified Compounds: EPA Method TO-15
- Aldehydes (Carbonyl Compounds): EPA Method TO-11A
- Amines (Aliphatic): (ALS Laboratory in-house method) AQL 101

- Carboxylic Acids: (ALS Laboratory in-house method) AQL 102
- Polycyclic Aromatic Hydrocarbons (PAHs): EPA Method TO-13A
- Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans (Dioxins/Dibenzofurans): EPA Method TO-9

Conclusions

The following conclusions are based on the findings of the three comprehensive sampling events conducted in August 2012, April/May 2013, July 2014 and January 2015.

- Low concentrations of aldehydes, PAHs and dioxins/dibenzofurans were detected in ambient air. The following evidence indicates that the landfill is not the source of these compounds.
    - Concentrations of aldehydes, PAHs and dioxins/dibenzofurans in ambient air on the landfill and at downwind locations were similar to the concentrations in upwind ambient air for all samples collected in 2012, 2013, 2014 and 2015.
    - The concentrations of aldehydes detected in ambient air are within the background range for urban areas, including St. Louis.
    - Benzo[a]pyrene and related carcinogenic PAHs (cPAHs) associated with incomplete combustion of organic matter have not been detected in any sample of source gas or ambient air collected in 2012, 2013, 2014 and 2015.
    - The concentrations of dioxins/dibenzofurans in landfill source gas were similar to ambient air upwind of the landfill in 2012, 2013, 2014 and 2015.
    - The concentrations of dioxins/dibenzofurans detected in ambient air are within the background range for urban areas.
- The landfill is not a source of ammonia or hydrogen cyanide.
- Mercury has not been detected in any sample of ambient air. Mercury was detected in source gas from the Flare Inlet in 2014 and 2015, but has not been detected in any other landfill source gas sample from 2012, 2013, 2014 and 2015.
- Concentrations of benzene detected in ambient air from locations on the landfill and downwind locations have decreased significantly in 2014 and 2015 as compared to 2012 and 2013.
    - Benzene concentrations in 2014 and 2015 ranged from 0.35 to 2.3 µg/m^3 in samples of ambient air downwind of the landfill. The average concentrations are generally equal to the industrial RSL (1.6 µg/m3) and consistent with the annual

average benzene concentration (1.5 µg/m^3) reported by the St. Louis Community Air Project (US EPA 2005).

- Benzene concentrations were below occupational exposure standards in all samples of ambient air from locations on the landfill and downwind in 2012, 2013, 2014 and 2015. Occupational exposure standards are relevant to individuals working on the landfill.

- The concentrations of constituents of concern detected in source gas from the Neck in July 2014 and January 2015 were significantly less than detected in samples from this general area, previously referred to as the Second Tier in 2012 and 2013.

    - The concentrations and specific groups of constituents of concern in source gas from the Neck resemble source gas from the North Quarry where the subsurface reaction is not occurring.

- There is a decreasing trend in the concentrations of VOCs, aldehydes, reduced sulfur compounds and carboxylic acids detected in source gas in 2014 and 2015 as compared to 2012 and 2013..

- Benzo[a]pyrene and related carcinogenic PAHs associated with incomplete combustion of organic matter were not detected in any sample of source gas in 2012, 2013, 2014 and 2015.

- Based on the constituents of concern detected in source gas from the South Quarry and the gas entering the Flare in 2014 and 2015, the major groups of compounds contributing to the occasional odors are VOCs, reduced sulfur compounds (e.g. dimethyl sulfide and mercaptans), and carboxylic acids (e.g. butanoic and hexanoic acids).

- The constituents of concern contributing to occasional odors in the community are of low order of toxicity and do not pose a health threat to members of the community.

Recommendations

The final sampling event mandated by the Second Amended Order (June 19, 2014) will be conducted in July 2015; and should focus on the following constituents of concern present in the landfill source gas that are likely to be associated with the odor and are potentially of concern for public health:

- VOCs and TICs (particularly benzene)

- Reduced sulfur compounds, and

- Carboxylic acids

Continued sampling for constituents of concern that have never been detected in landfill source gas and/or constituents that are frequently detected in ambient air as a result of local

and regional sources will not provide useful information about potential exposures to the surrounding community that can be attributed (at least in part) to releases of reaction gas from the landfill. Sampling for the following constituents should be discontinued:

- Fixed Gases
- Ammonia
- Mercury and Compounds
- Hydrogen Cyanide
- Aldehydes
- Amines
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans (Dioxins/Dibenzofurans)

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienist
cPAHs	Carcinogenic Polycyclic Aromatic Hydrocarbons
CIH	Certified Industrial Hygienist
EVOH Cap	Ethylene Vinyl Alcohol Cap
FML	Flexible Membrane Liner
MDNR	Missouri Department of Natural Resources
NIOSH	National Institute of Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PAH	Polycyclic Aromatic Hydrocarbon
PEL	Permissible Exposure Limit
SWAPE	Soil Water Air Protection Enterprise
TCDD	2, 3, 7, 8-Tetrachlorodibenzo-p-dioxin
TEQ	2, 3, 7, 8-TCDD Toxicity Equivalent Concentration
TICs	Tentatively Identified Compounds
TLV	Threshold Limit Value
USEPA	United States Environmental Protection Agency
USEPA RSL	U.S. EPA Regional Screening Levels
VOC	Volatile Organic Compound

1.0 INTRODUCTION

This report describes the methodology and presents the findings from the comprehensive sampling event conducted by Stantec Consulting Services Inc. (Stantec) on January 27, 28 and 29, 2015 on and around the Bridgeton Landfill, LLC (Bridgeton) facility located at 13570 St. Charles Rock Road, Bridgeton, Missouri (the landfill). The purpose of this comprehensive sampling event was to fulfill the requirements of the June 19, 2014 Second Amendment to Order of Preliminary Injunction (Second Amended Order) issued by the State of Missouri Attorney General and the Missouri Department of Natural Resources (MDNR). The Order required Bridgeton Landfill to "undertake three air sampling events, initiating the first within 45 days of the entry of this Second Amendment Order, the second seven months following entry of this Second Amendment, and the third thirteen months from entry of this Second Amendment. These air sampling events will include all parameters included in the August 2012 Stantec sampling event. The sampling event will sample from the inlet prior to the flare, and from agreed locations…using under liner collection ports to sample the South Quarry, neck area and North Quarry."

The January 2015 sampling is the fourth comprehensive air sampling event to be conducted at the landfill, and the second of three events specified by the Second Amended Order. The first event specified by the second Amended Order was conducted in July 2014. The report is available on-line (*"Bridgeton Landfill Ambient Air and Landfill Source Gas Sampling-July 2014"* – issue date January 7, 2015) is available at: http://www.bridgetonlandfill.com/sites/default/files/docs/air_monitoring/air_sampling_reports/Summary%20of%20Stantec%20Consulting%20Services%2C%20Inc%20Ambient%20Air%20and%20Landfill%20Source%20Gas%20Sampling%20July%202014.pdf).

In addition to the sampling specified by the Second Amended Order, Stantec conducted two previous comprehensive sampling events at the request of ***Bridgeton:***

The first event was conducted in August 2012 (as referenced in the Second Amendment Order). The summary report ("*Bridgeton Landfill Air and Landfill Gas Sampling August 2012: Summary of Findings*" – Issue date October 19, 2012) is available at: http://www.bridgetonlandfill.com/sites/default/files/docs/air_monitoring/air_sampling_reports/a6cce178-69d1-4b1d-9ae8-9b7dc2f8a970.pdf

The second event was conducted in April/May 2013. The summary report ("*Summary of Ambient Air Sampling at Bridgeton Landfill Second Comprehensive Sampling Study" – Issue date August 27, 2013*) is available at: http://www.bridgetonlandfill.com/sites/default/files/docs/air_monitoring/air_sampling_reports/2cf706a9-d1f3-42f0-8660-f8732dc2d660.pdf

In addition to the comprehensive sampling described in this report, MDNR instituted a community air monitoring program in May 2013. This program, which is ongoing as of the date of this report, consists of fixed monitors (AreaRAEs) that continuously record total VOCs, sulfur

dioxide (SO2), carbon monoxide (CO), hydrogen sulfide (H2S), oxygen (O2), % Lower Explosive Limit (%LEL), and gamma radiation. The data from the AreaRAE monitors is supplemented by an individual who traverses a prescribed path around the exterior of the landfill recording odors, and taking real-time measurements of benzene (UltraRAE benzene monitor) and H_2S (Jerome J-605 monitor). MDNR also collects 8-hour ambient air samples for laboratory analysis of volatile organic compounds on a weekly basis. The results of MDNR's monitoring are on the Agency website along with weekly interpretations of the results from the Missouri Department of Health and Senior Services (DHSS).

2.0 CONSTITUENTS OF CONCERN IN LANDFILL SOURCE GAS AND AMBIENT AIR

As specified by the Second Amended Order, the January 2015 comprehensive sampling event addressed the same analytical groupings as the August 2012 sampling event. The 2013 comprehensive sampling event included all of the same analytical groupings as 2012, but also included sulfur dioxide and hydrogen chloride. Landfill source gas and ambient air samples were analyzed for constituents that are commonly associated with odors and/or are of concern to public health at low concentrations in ambient air, and for which there are well-accepted laboratory analytical methods. For example the following compounds are associated with objectionable odors:

- Amines
- Carboxylic acids
- Reduced sulfur compounds
- Ammonia

The following constituents are of potential concern for public health at low concentrations:

- Fixed Gases, specifically carbon monoxide
- Individual aldehyde compounds (e.g. acetaldehyde and formaldehyde)
- Individual volatile organic compounds or VOCs (e.g. benzene)
- Mercury
- Hydrogen cyanide
- Polycyclic aromatic hydrocarbons, specifically carcinogenic PAHs (e.g. benzo[a]pyrene]
- Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (dioxins/dibenzofurans).

Consistent with previous sampling events in 2012, 2013 and 2014, ambient air and landfill source gas were analyzed for the preceding constituents of concern (referred to as the full suite of analytes) in January 2015.

3.0 SAMPLING METHODOLGY

The sampling methodology was consistent with methods employed during the July 2014 sampling event. A detailed description of the methodology can be found in the following report: *"Bridgeton Landfill Ambient Air and Landfill Source Gas Sampling-July 2014"* – issue date January 7, 2015. Any deviations from the sampling methodology in during the 2015 sampling event are discussed in section 3.4 of this report.

The following table summarizes the methods and sample collection media and also provides links to the analytical methods.

Analytical Methods and Collection Media	
Constituents of Concern	**Analytical Method**
1 Liter or 6 Liter Silonite® Canister	
Fixed Gases	EPA 3C http://www.epa.gov/ttn/emc/promgate/m-03c.pdf
Reduced Sulfur Compounds	ASTM D5504 http://www.astm.org/Standards/D5504.htm
Volatile Organic Compounds + TICs	EPA TO-15 http://www.epa.gov/ttnamti1/files/ambient/airtoxic/to-15r.pdf
Sorbent Tube; low flow sampling pump	
Ammonia	OSHA ID-188F http://www.osha.gov/dts/sitc/methods/inorganic/id188/id188.html
Mercury and Compounds	NIOSH 6009 http://www.cdc.gov/niosh/docs/2003-154/pdfs/6009.pdf
Hydrogen Cyanide	NIOSH 6010 http://www.cdc.gov/niosh/docs/2003-154/pdfs/6010.pdf
Aldehydes (Carbonyl Compounds)	EPA TO-11A http://www.epa.gov/ttnamti1/files/ambient/airtoxic/to-15r.pdfhttp://www.epa.gov/ttnamti1/files/ambient/airtoxic/to-11ar.pdf
Amines	ALS Lab Method AQL 101 http://www.caslab.com/Forms-Downloads/Flyers/CARBOXYLIC Sampling FLYER.pdf
Carboxylic Acids	ALS Lab Method AQL 102 http://www.caslab.com/Forms-Downloads/Flyers/AMINES Method 101 FLYER.pdf
Polyurethane Foam (PUF) media; high-volume sampling apparatus	
Polycyclic Aromatic Hydrocarbons	EPA TO-13A http://www.epa.gov/ttnamti1/files/ambient/airtoxic/to-15r.pdfhttp://www.epa.gov/ttnamti1/files/ambient/airtoxic/to-13arr.pdf
Dioxins/Dibenzofurans	EPA TO-9 http://www.epa.gov/ttnamti1/files/ambient/airtoxic/to-15r.pdfhttp://www.epa.gov/ttnamti1/files/ambient/airtoxic/to-9arr.pdf

3.1 SOURCE GAS

The major objective of collecting source gas samples from beneath the Ethylene Vinyl Alcohol (EVOH) cap is to characterize the chemical constituents in the landfill source gas from the specified locations without interference from ambient sources of the same constituents (e.g. gasoline or diesel powered equipment operating on and near the landfill). The sampling methodology in January 2015 was consistent with the July 2014 sampling methodology, with the exception of any deviations noted in section 3.4. As of the date of this report, the EVOH covers most of the landfill. In 2012 and 2013, source gas samples were collected from beneath the flexible membrane liner (FML) that covered portions of the landfill at that time.

The following list describes specific source gas sample locations, and the analyte/analyte groups sampled at each onsite landfill location. The "full suite" of analytes refers to the constituents of concern listed in the preceding table.

- ***1/29/2015 - Flare*** – Full Suite of Analytes less PAHs and Dioxins/Dibenzofurans
- ***1/29/2015 - North Quarry*** – Full Suite of Analytes
- ***1/29/2015 - Neck*** – Full Suite of Analytes
- ***1/29/2015 -* South Quarry** – Full Suite of Analytes

PAH and Dioxins/Dibenzofuran samples were not collected from the gas stream entering the flare due to the practical difficulties in configuring a sample port into existing infrastructure as well as difficulties with collecting a representative sample from a high pressure gas line using the high-volume samplers and PUF media required for these analytical methods.

The following photographs (Figure 5) depict source gas sampling methods using sorbent tubes with personal sampling pumps (PSPs) and polyurethane foam filters with high volume sampling pumps:

- Photograph #1: the flux-box located at the South Quarry.
- Photograph #2: source gas sampling sorbent tubes and low flow PSPs connected via Teflon tubing to the airtight barbed fittings in the flux box.
- Photograph #3: sorbent tube and low flow PSP connected to the piping components leading to the flare.
- Photograph #4: the collection of a grab canister sample from the sampling port on the flux-box.
- Photograph #5: high volume sampling of source gas from under the EVOH on the North Quarry.

A detailed description of the source gas sampling methodology can be found in: *"Bridgeton Landfill Ambient Air and Landfill Source Gas Sampling-July 2014"* – issue date January 7, 2015.

3.2 COLLECTION OF AMBIENT AIR SAMPLES

Samples were collected to characterize the constituents of concern in the local/regional ambient air mass moving onto the landfill before passing over the landfill (upwind or background); ambient air on the landfill at the same locations where source gas was collected; and ambient air moving off of the landfill towards the surrounding community (downwind). Sampling methodology was consistent with the July 2014 sampling methodology with the exception of the deviations noted in section 3.4.

The following list describes specific ambient air sample locations, relative wind direction associated with sample location and the analyte/analyte groups sampled at each location. Detailed summary tables of sampling procedures are provided as Appendix A.

- **Onsite landfill locations**
    - ***1/27/2015 – Flare Station –*** Full Suite of Analytes
    - ***1/28/2015 - North Quarry*** – Full Suite of Analytes less PAHs and Dioxins/Dibenzofurans
    - ***1/28/2015 - Neck*** – Full Suite of Analytes less PAHs and Dioxins/Dibenzofurans
    - ***1/27/2015 - South Quarry*** – Full Suite of Analytes less PAHs and Dioxins/Dibenzofurans
- **Upwind Locations**
    - ***1/27/2015 - Grassy Knoll Lower Level -*** Full Suite of Analytes
    - ***1/28/2015 - Corner of East Fence and Retention Pond*** - (VOCs, reduced sulfur compounds, fixed gases, aldehydes amines, ammonia and carboxylic acids)
    - **1/29/2015 - Grassy Knoll Upper Level (Grab)** - Limited Suite of Analytes (VOCs, reduced sulfur compounds)
- **Downwind Locations**
    - ***1/27/2015 – Corner of East Fence and Retention Pond*** – Full Suite of Analytes
    - ***1/27/2015 - East Fence*** – Limited Suite of Analytes (VOCs, reduced sulfur compounds, aldehydes amines, ammonia and carboxylic acids)
    - ***1/28/2015 – Grassy Knoll North of Pipe Staging Area*** - Limited Suite of Analytes (VOCs, reduced sulfur compounds, fixed gases, aldehydes amines, ammonia and carboxylic acids)
    - ***1/28/2015 – Grassy Knoll North of Asphalt Plant West of Pipe Staging Area*** - Limited Suite of Analytes (VOCs, reduced sulfur compounds, fixed gases)
    - ***1/29/2015 – Grab Across from MSD Lift Station*** - Limited Suite of Analytes (VOCs, reduced sulfur compounds)

Note:

The wind shifted 180 degrees during the nighttime hours between 1/27/2015 and 1/28/2015. Consequently, the 24-hour high volume samples for PAHs and dioxins/dibenzofurans may reflect variable sources of these constituents rather than the initial designations as upwind or downwind samples.

The full suite of analytes was collected at one onsite landfill location (Flare) and one upwind and downwind location.

Hydrogen cyanide and mercury samples were not collected during every sampling event as these compounds have not been detected in ambient air in previous comprehensive sampling events.

The following photograph depicts typical ambient air sampling assemblies:

- Photograph #6: sample collection structures and pump assemblies.

A detailed description of the ambient air sampling methodology can be found in the following report: *"Bridgeton Landfill Ambient Air and Landfill Source Gas Sampling-July 2014"* – issue date January 7, 2015.

3.3 QUALITY ASSURANCE PROCEDURES

Stantec's Quality Assurance/Quality Control procedures address all facets of this project, specifically: field sampling procedures; documentation of sampling conditions, instrument calibration, sample identification and sample custody; independent validation of the analytical results received from ALS Laboratories; technical review and checking of all data summary tables; and both quality review and independent peer review of this report.

3.3.1 Quality Assurance for Field Sampling

Sampling quality assurance encompasses procedures used for pre-sample calibration of sampling pumps, handling of samples before, during, and after collection, post-calibration of sampling pumps; and procedures to minimize potential cross contamination and interferences. Appendix A, Tables A-1 through A-4 provide specific details on sample collection times and instrument calibration.

Table 1 lists all samples collected by analytical group, date, sample identifiers and laboratory report identifiers. As specified on Table 1, representative trip blanks and field duplicate samples were submitted for each analytical method.

Instrument Calibration

A detailed description of instrument calibration procedures (PSPs and Tisch® High Volume Sampling Pumps) can be found in the following report: *"Bridgeton Landfill Ambient Air and Landfill Source Gas Sampling-July 2014"* – issue date January 7, 2015.

Handling of Sample Media

PUF media for Method TO-9 dioxin/dibenzofuran analysis were received from the ALS Laboratory in Houston, TX and the PUF media for the Method TO-13 PAH analysis were received from the ALS Laboratory in Simi Valley, CA. A detailed description of media handling procedures from receipt to shipment for analyses can be found in the following report: *"Bridgeton Landfill Ambient Air and Landfill Source Gas Sampling-July 2014"* – issue date January 7, 2015.

A unique identifier was assigned to each sample (Table 1) and recorded on the Chain of Custody forms supplied by ALS Laboratories. All samples and blanks were shipped following laboratory guidance using overnight delivery to ensure maximum holding times were not exceeded. Proper chain-of-custody forms were used for all shipped samples.

3.3.2 Independent Data Validation

All of the data packages and Electronic Data Deliverables (EDDs) received from ALS Laboratories were reviewed by a Stantec analytical chemist. As part of the review, data validation reports corresponding to the laboratory data packages were prepared (see Appendix C). All data were deemed acceptable with regards to precision, sensitivity, accuracy, representativeness, method compliance and completeness. However, due to the detection of compounds in trip blanks, lab method blanks or discrepancies with field duplicate samples, the following changes were made to analytical results;

- Acetone (0.84 µg/m^3) was detected in the laboratory method blank (TO-15 batch P150206).
    - Associated sample results below the blank concentration are validated to non-detect and flagged "UJB". Results greater than the blank concentration and less than 10 times the blank concentration are flagged "JB". The detection limit is changed to the blank concentration. Results greater than 10 times the blank concentration require no qualifying action.
- Benzene (0.19 µg/m^3) and 2-propanol (0.49 µg/m^3) were detected in the trip blank (127-SUMMA-B).
    - Associated results below the blank concentration are validated to non-detect and flagged "UJB". Sample results greater than the blank concentration but less than 10 times the blank concentrations are flagged "JB". The detection limit is changed to the blank concentration. Results greater than 10 times the blank concentration require no qualifying.
- Relative Percent Difference for paired duplicate sample (127D1-SUMMA, DUP10-SUMMA) were within limits for EPA 3C and ASTM D15504. TO-15 analyte RPDs within limits except Acrylonitrile, n-Hexane, n-Heptane, Toluene, n-Octane, x,p-Xylene and n-Nonane.

  - Associated results flagged "J" if positive or "UJ" if non-detect for duplicate samples only.
- RPDs for duplicate pair (128U1-SUMMA, DUP11-SUMMA) were within limits for EPA 3C and ASTM D15504. TO-15 analyte RPDs within limits except n-Hexane, Benzene, Cyclohexane, Methyl Methacrylate, n-Heptane, Toluene, n-Octane, x,p-Xylene, o-Xylene and n-Nonane.
  - Associated results flagged "J" if positive or "UJ" if non-detect for duplicate samples only.
- OCDD (31.8 picograms or pg).was detected in field blank for analysis for Dioxins and Furans by EPA TO-9a (129BLANK-DF).
  - Associated sample results below the blank concentration are validated to non-detect and flagged "UJB". Sample results greater than the blank concentration are flagged "NJB". The detection limit is changed to the blank concentration. Sample results greater than 10 times the blank concentration required no qualifying.
  - Note: OCDD was the only dioxin/dibenzofuran isomer detected in the source gas and all detected concentrations were below 31.8 pg, therefore the sample results were validated to non-detect and flagged UJB.

3.3.3 Technical Quality Assurance for Report Preparation

This report has undergone both technical quality and independent peer review by appropriate senior level individuals.

- All data tables were checked against the original laboratory analytical reports by a team member who did not compile the original tables. Other quantitative information presented in this report, such as exposure screening levels were independently verified.

- The Quality Review and Independent Peer Reviews were conducted by senior-level individuals with the appropriate expertise and credentials, and who have minimal or no involvement in preparing the report. Patrick H. Vaughan provided the Quality Review and Gerald R. Myers provided the Independent Peer Review for this report.

3.4 DEVIATIONS FROM SAMPLING SCHEDULE OR METHODS

The following list details all deviations from the sampling schedule as presented in Table 1:

- On January 27, 2015, the downwind location 2 (East Fence) ambient air sample for carboxylic acids was not collected due to a pump failure. A downwind carboxylic acid sample was collected on January 28, 2015 (Grassy Knoll North of Asphalt Plant West of Pipe Staging Area);
- January 27, 2015: the downwind location 1 (Corner of East Fence and Retention Pond) ambient air sample for carboxylic acids was not collected due to a pump failure. A downwind carboxylic acid sample was collected on January 28, 2015 at the (Grassy Knoll north pipe staging area).

- January 27, 2015: the downwind location 1 (Corner of East Fence and Retention Pond) ambient air sample for ammonia was not collected due to a pump failure. A downwind ammonia sample was collected on January 28, 2015 (Grassy Knoll north of pipe staging area).
- January 27, 2015: the onsite flare station location ambient air sample for ammonia was not collected due to a pump failure. An onsite ammonia sample was collected at the flare station on January 28, 2015.
- January 27, 2015: the onsite flare station location ambient air field duplicate sample for carboxylic acid was not collected due to a pump failure. A duplicate carboxylic acid sample was collected along with the South Quarry carboxylic acid sample at the South Quarry location on January 28, 2015.
- January 27, 2015: the onsite South Quarry location ambient air sample for ammonia was not collected due to a pump failure. An onsite ammonia sample was collected at the South Quarry on January 28, 2015.
- The sample durations for high volume sampling of source gas were reduced from 4 hours to 2 hours due to concerns over moisture and oversaturation of sample media. Laboratory reporting limits were acceptable and all data are acceptable for the intended purpose.

4.0 SAMPLING LOCATIONS

Table 1 summarizes the ambient air and landfill source gas samples collected on January 27, 28 and 29, 2015. Figure 1 shows ambient air and source gas sample locations on an aerial view of the Bridgeton Landfill and immediately adjacent properties. The sampling strategy was designed to characterize the constituents of concern in the landfill source gas; the local/regional ambient air mass moving onto the landfill before passing over the landfill (upwind or background); ambient air on the landfill at the same locations where source gas was collected; and ambient air moving off of the landfill towards the surrounding community (downwind).

4.1 SOURCE GAS SAMPLE LOCATIONS

As indicated in Section 1.0, source gas samples were collected in those locations specified by MDNR and agreed to by Bridgeton. In the June 19, 2014 Second Amended Order, MDNR specified that source gas be collected from the following locations:

- ***North Quarry***
- ***Neck***
- ***South Quarry***
- ***Inlet to the Flare***

During the July 2014 and January 2015 comprehensive sampling events, source gas samples were collected from the Flare, North Quarry, Neck and South Quarry. Samples from the North

Quarry, Neck and South Quarry were collected utilizing specially-constructed "flux-boxes" that minimized ambient air dilution of the gas and are representative of source gas that has migrated upwards from deeper in the waste mass and accumulated under the EVOH. The North Quarry represents source gas from the area of the landfill where the subsurface reaction has not occurred. The Neck is a location between the North Quarry and the South Quarry. The South Quarry represents source gas from the area where the reaction was occurring at the time of the sampling.

Samples collected from the flare were collected from a port at the Inlet to the Flare. This sample is representative of the mixed stream of gas from all locations in the collection system. The gas collection system draws from deep within the waste mass from all areas of the landfill.

4.2 AMBIENT AIR SAMPLING LOCATIONS

Sampling locations were selected based on relative wind direction and when possible to correlate with sample locations from historical comprehensive sampling events at the landfill. Ambient air samples were collected to characterize the local/regional ambient air mass moving onto the landfill before passing over the landfill (upwind or background); ambient air on the landfill; and ambient air moving off of the landfill towards the surrounding community (downwind).

4.2.1 On Landfill Locations

In January 2015, ambient (on-landfill) air samples were collected at the same four locations as the source gas samples (Figure 1). On-landfill ambient samples were located within 10 feet of the flux-boxes on top of the EVOH at the North Quarry, Neck and South Quarry. The sample at the Flare Station was collected approximately 50 feet from the Flare Inlet. Samples for the full suite of analytes were collected from the flare location. Samples from the North Quarry, Neck and South Quarry were analyzed for all analytes except PAHs/Dioxins/Furans. With the exceptions listed in *Section 3.4 Deviations from Sample Schedule or Methods*, on-landfill ambient air samples were collected from the Flare Station and South Quarry on January 27, 2015. On-landfill ambient air samples were collected from the North Quarry and Neck on January 28, 2015. Due to the presence of a consistently strong odor at the South Quarry location, a grab Summa® sample was also collected on January 28, 2015 for analyses for VOC and reduced sulfur compounds. No time-integrated on-landfill ambient samples were collected on January 29 when the source gas samples for dioxin/dibenzofurans and PAH analyses were being collected to avoid potential influence from the source gas being exhausted through the high volume sampling units. However, a grab sample was collected across from the MSD lift station in order to characterize constituents of concern during an intermittent odor. An upwind sample was collected at the same time for comparison purposes.

4.2.2 Downwind Sample Locations

Downwind ambient air samples representing air moving from the landfill into the surrounding community were collected at locations inside the facility fence-line. On sample days there was an intermittent odor at the downwind ambient sample locations. Landfill odors were not consistently present in the same locations or at the same intensity.

On January 27, 2015 winds were generally out of the N to NW and two downwind samples were collected; 1) Corner of East Fence and Retention Pond (full suite of analytes) and 2) East Fence (limited to VOCs, Aldehydes, Amines, Ammonia and Carboxylic Acids). Overnight between January 27 and January 28, 2015, the winds shifted 180 degrees from NNW to ESE. On January 28, 2015, two downwind samples were collected: 1) Grassy Knoll North of Pipe Staging Area (limited to VOCs, Aldehydes, Amines, Ammonia and Carboxylic Acids) and 2) Grassy Knoll North of Asphalt Plant and West of Pipe Staging Area (limited to Aldehydes, Amines, Ammonia and Carboxylic Acids).

4.2.3 Upwind Sample Locations

On January 27, 2015, ambient air samples representing local/regional background were collected (full suite of analytes) in the open grassy field, or Grassy Knoll Lower Level to the north of the landfill office (Figure 1). The Grassy Knoll is at a slightly higher elevation than the entrance road and landfill office. No landfill odor was present on the Grassy Knoll on the days that the samples were collected. On January 28, 2015, the upwind ambient samples were collected at the corner of the east fence and retention pond (limited to VOCs, aldehydes, amines, ammonia and carboxylic acids) due to the 180 degree shift in the prevailing wind direction. Upwind and downwind samples were always collected contemporaneously.

5.0 ANALYTICAL RESULTS

Review of the laboratory analytical reports, data validation forms, field notes and instrument calibration records indicate that all data are acceptable for the intended purpose. Appendix A, Tables A-1 through A-4 summarize the sampling procedures, sample identifiers and relevant calibration information for each date and location for the January 2015 sampling event. Analytical reports from ALS Laboratories are presented in Appendix B. Stantec's analytical chemist reviewed the laboratory data packages from ALS Laboratories for samples collected in January 2015. All data were considered usable. Data validation reports are provided in Appendix C.

5.1 AMBIENT AIR

As described in Sections 3 and 4, ambient air samples were collected to characterize the upwind/background air mass arriving at the landfill, ambient air at the source gas sample

locations and ambient air at downwind locations along the facility fence-line where the odor was noted.

The analytical results for ambient air are organized and discussed for each of the three days when samples were collected. Table 2 presents the analytical results for all ambient samples collected on January 27, 2015, Table 3 presents results for January 28, 2015, and Table 4 presents results for January 29, 2015.

5.1.1 Constituents of Concern in Ambient Air on January 27, 2015

Climate summary for Tuesday January 27: Low temperature 29 deg. F, high temperature 46 deg. F; no precipitation; partly cloudy; morning winds from the northwest; afternoon winds from the north northwest.

Analytical results for all ambient samples collected on January 27 are presented in Table 2.

5.1.1.1 Analytical Results for Upwind Ambient Air on January 27, 2015

Upwind Sample Location: The Grassy Knoll to the north of the landfill office and entrance road (Grassy Knoll Lower Level – Figure 1);

Constituents analyzed for but not detected: Hydrogen cyanide, amines, mercury, ammonia, carboxylic acids, reduced sulfur compounds, hydrogen, carbon monoxide, methane and carbon dioxide.

VOCs: Low concentrations of the following VOCs were detected: 2-butanone (MEK), isopropyl alcohol, acetone, acetonitrile, benzene, carbon tetrachloride, chloromethane, dichlorodifluoromethane (Freon 12), ethanol, ethyl acetate, methylene chloride, n-hexane, propene, toluene, trichlorofluromethane, and trichlorotrifluoroethane. **TICs:** No TICs were detected in the January 27, 2015 upwind sample.

Aldehydes: Acetaldehyde, formaldehyde and n-hexaladehyde were detected.

PAHs: A twenty-four (24) hour high-volume sample was collected starting on January 27 and ending on January 28 and submitted for analysis of PAHs. Low concentrations of the following PAHs were detected: naphthalene and phenanthrene.

Dioxins/Dibenzofurans: A twenty-four (24) hour high-volume sample was collected starting on January 27 and ending on January 28 and submitted for analysis of dioxins/dibenzofurans. Table 9 presents the detailed analytical results for the ambient air samples that were analyzed for dioxins/dibenzofurans. The two isomers detected in the upwind/background sample, 1,2,3,4,6,7,8-HpCDD and OCDD were converted to 2,3,7,8-TCDD equivalents and added together to yield a total TCDD equivalent (TEQ) concentration of 5.0E-10 µg/m^3.

5.1.1.2 Analytical Results for Ambient Air on the Landfill on January 27, 2015

Ambient Air at the Flare Station

Constituents analyzed for but not detected: Hydrogen cyanide, amines, mercury, ammonia, carboxylic acids, reduced sulfur compounds, hydrogen, carbon monoxide, methane and carbon dioxide.

VOCs: The following VOCs were detected: acetonitrile, benzene, carbon tetrachloride, chloromethane, dichlorodifluoromethane (Freon 12), ethanol, ethyl acetate, methylene chloride, n-butyl acetate, n-heptane, n-hexane, n-heptane, toluene, trichlorofluoromethane, and trichlorotrifluoroethane. **TICs**: propane

Aldehydes: Acetaldehyde, formaldehyde and n-hexaldehyde were detected.

PAHs: A twenty-four (24) hour high-volume sample was collected from the Flare Station starting on January 27 and ending on January 28 and submitted for analysis of PAHs. Low concentrations of the following PAHs were detected (see Table 2): naphthalene and phenanthrene.

Dioxins/Dibenzofurans: A twenty-four (24) hour high-volume sample was collected from the flare Station starting on January 27 and ending on January 28 and submitted for analysis of dioxins/dibenzofurans. Table 9 presents the detailed analytical results for the ambient air samples that were analyzed for dioxins/dibenzofurans. The two isomers detected in the upwind/background sample, 1,2,3,4,6,7,8-HpCDD and OCDD were converted to 2,3,7,8-TCDD equivalents and added together to yield a total TCDD equivalent (TEQ) concentration of 5.88E-10 µg/m^3.

Ambient Air at the South Quarry

Constituents analyzed for but not detected: Hydrogen cyanide, amines, mercury, ammonia, reduced sulfur compounds, hydrogen, carbon monoxide, methane and carbon dioxide.

VOCs: The following VOCs were detected: 2-butanone (MEK), isopropyl alcohol, acetone, acetonitrile, benzene, carbon tetrachloride, chloromethane, cyclohexane, dichlorodifluoromethane (Freon 12), d-limonene, ethanol, ethyl acetate, methylene chloride, n-heptane, n-hexane, propene, tetrahydrofuran, toluene, trichlorofluoromethane, and trichlorotrifluoroethane. **TICs**: isobutane, n-pentane, n-nonanol and one unidentified siloxane.

Aldehydes: Acetaldehyde, formaldehyde and n-hexaldehyde were detected.

Carboxylic acids: Butanoic and propanoic acid were detected.

5.1.1.3 Analytical Results for Ambient Air at Downwind Locations on January 27, 2015

Downwind: Corner of the east fence and retention pond (Figure 1); and East Fence (East Fence - Figure 1). Intermittent low level odors were present at both of these locations when sampling was initiated on the morning of January 27.

An odor was intermittently present at these locations throughout the sampling event.

Corner of East Fence and Retention Pond

Constituents analyzed for but not detected: Hydrogen cyanide, amines, mercury, ammonia, carboxylic acids, reduced sulfur compounds, hydrogen, carbon monoxide, methane and carbon dioxide.

VOCs: The following VOCs were detected: 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, 2-butanone (MEK), isopropyl alcohol, acetone, acetonitrile, acrolein, benzene, carbon tetrachloride, chloroethane, chloromethane, cyclohexane, dichlorodifluoromethane (Freon 12), ethanol, ethyl acetate, ethylbenzene, m,p-xylenes, methylene chloride, naphthalene, n-heptane, n-hexane, n-nonane, n-octane, o-xylene, propene, toluene, trichlorofluoroethane, and trichlorotifluoroethane. **TICs**: n-nonanol

Aldehydes: Acetaldehyde, formaldehyde and n-hexaldehyde were detected.

PAHs: A twenty-four (24) hour high-volume sample was collected starting on January 27 and ending on January 28 and submitted for analysis of PAHs. Low concentrations of the following PAHs were detected: naphthalene and phenanthrene.

Dioxins/Dibenzofurans: A twenty-four (24) hour high-volume sample was collected starting on January 27 and ending on January 28 and submitted for analysis of dioxins/dibenzofurans. Table 9 presents the detailed analytical results for the ambient air samples that were analyzed for dioxins/dibenzofurans. The two isomers detected in the upwind/background sample, 1,2,3,4,6,7,8-HpCDD and OCDD were converted to 2,3,7,8-TCDD equivalents and added together to yield a total TCDD equivalent (TEQ) concentration of 5.10E-10 µg/m^3.

East Fence

Constituents analyzed for but not detected: Amines, ammonia, carboxylic acids and reduced sulfur compounds were not detected.

VOCs: The following VOCs were detected: 2-butanone (MEK), acetone, benzene, carbon tetrachloride, chloromethane, dichlorodifluoromethane (Freon 12), ethanol, ethyl acetate, methylene chloride, n-hexane, toluene, trichlorofluoroethane, and trichlorotifluoroethane. **TICs**: propane, one unidentified siloxane and one unidentified compound.

Aldehydes: Acetaldehyde and formaldehyde were detected.

5.1.2 Constituents of Concern in Ambient Air on January 28, 2015

Climate summary for Wednesday January 28: Low temperature 28 deg. F, high temperature 52 deg. F; no precipitation; variable cloudiness; winds were consistently out of East/Southeast.

Slight intermittent odors were present at the downwind locations when sampling was initiated in the morning of January 28.

Analytical results for all ambient samples collected on January 28 are presented in Table 3.

5.1.2.1 Analytical Results for Upwind Ambient Air on January 28, 2015

Upwind: The Corner of East Fence and Retention Pond

Constituents analyzed for but not detected: Amines, ammonia, carboxylic acids, and reduced sulfur compounds were not detected.

VOCs: Low concentrations of the following VOCs were detected: 1,2,4-Trimethylbenzene, 1,3,5-trimethylbenzene, 2-butanone (MEK), acetone, benzene, carbon tetrachloride, chloromethane, cyclohexane, dichlorodifluoromethane (Freon 12), ethanol, ethyl acetate, ethylbenzene, m,p-xylenes, methylene chloride, n-heptane, n-hexane, n-nonane, n-octane, o-xylene, toluene, trichlorofluromethane, and trichlorotrifluoroethane. The following **TICs** were detected: propane, n-butane, n-pentane, 2-methylpentane, methylcyclohexane, dimethylcyclohexane isomer, hexamethylcyclotrisiloxane, n-decane and one unidentified siloxane.

Aldehydes: Acetaldehyde, formaldehyde and n-hexaldehyde were detected.

5.1.2.2 Analytical Results for Ambient Air on the Landfill on January 28, 2015

On-Landfill: The Neck and the North Quarry within ten feet of the source gas flux-box at each location. A grab sample was also collected approximately 50 feet north of the South Quarry flux box. The sample was collected to characterize a strong intermittent odor for VOCs and reduced sulfur compounds.

Ambient Air at the Neck

Constituents analyzed for but not detected: Hydrogen cyanide, amines, mercury, ammonia, carboxylic acids, reduced sulfur compounds, hydrogen, carbon monoxide, methane and carbon dioxide.

VOCs: The following VOCs were detected: 1,2,4-Trimethylbenzene, 2-butanone (MEK), isopropyl alcohol, acetone, acetonitrile, acrolein, alpha-pinene, benzene, carbon tetrachloride, chloromethane, cyclohexane, dichlorodifluoromethane (Freon 12), d-limonene, ethanol, ethyl acetate, ethylbenzene, m,p-xylenes, methylene chloride, n-butyl acetate, n-heptane, n-hexane, n-nonane, n-octane, o-xylene, propene, tetrachloroethene, toluene, trichlorofluromethane, and

trichlorotrifluoroethane. **TICs** 1,1-difluoroethane, chlorodifluoromethane, propane, isobutane, n-butane, n-pentane, n-nonanal, 2-ethylhexylacetate and one unidentified siloxane.

Aldehydes: Acetaldehyde, formaldehyde and n-hexaldehyde were detected.

Ambient Air at the North Quarry

Constituents analyzed for but not detected: Hydrogen cyanide, amines, mercury, ammonia, carboxylic acids, reduced sulfur compounds, hydrogen, carbon monoxide, methane and carbon dioxide.

VOCs: The following VOCs were detected: 1,2,4-Trimethylbenzene, 2-butanone (MEK), acetone, benzene, carbon tetrachloride, chloromethane, cyclohexane, dichlorodifluoromethane (Freon 12), ethanol, ethyl acetate, m,p-xylenes, methylene chloride, n-heptane, n-hexane, n-nonane, n-octane, o-xylene, toluene, trichlorofluromethane, and trichlorotrifluoroethane. **TICs** Propane, n-butane.

Aldehydes: Acetaldehyde, formaldehyde and n-hexaldehyde were detected.

Grab sample - Ambient Air North of South Quarry

Constituents analyzed for but not detected: Reduced sulfur compounds.

VOCs: The following VOCs were detected: 2-butanone (MEK), isopropyl alcohol, acetone, benzene, chloromethane, dichlorodifluoromethane (Freon 12), propene, tetrahydrofuran, toluene, trichlorofluromethane.

Analytical Results for Ambient Air at Downwind Locations on January 28, 2015

Downwind: Two downwind samples were collected on January 28, 2015: 1) Samples were collected from the grassy knoll north of pipe staging area (Grassy Knoll Above Pipe Staging Area – Figure 1); 2) samples were collected north of asphalt plant and east of pipe staging area (North of Asphalt Plant Pipe Staging Area – Figure 1).

Grassy Knoll North of Pipe Staging Area

Constituents analyzed for but not detected: Amines, ammonia, carboxylic acids, and reduced sulfur compounds.

VOCs: The following VOCs were detected: 2-butanone (MEK), isopropyl alcohol, acetone, benzene, carbon tetrachloride, chloromethane, dichlorodifluoromethane (Freon 12), ethanol, ethyl acetate, ethylbenzene, m,p-xylenes, methylene chloride, n-heptane, n-hexane, n-nonane, n-octane, o-xylene, propene, toluene, trichlorofluromethane, and trichlorotrifluoroethane. ***TICs:*** 1,1-difluoroethane, isobutene and n-butane,

Aldehydes: Acetaldehyde, formaldehyde and n-hexaldehyde were detected.

North of Asphalt Plant by Pipe Staging Area

Constituents analyzed for but not detected: Amines, ammonia and carboxylic acids.

Aldehydes: Acetaldehyde, formaldehyde and n-hexaldehyde were detected.

5.1.3 Constituents of Concern in Ambient Air on January 29, 2015

Climate summary for Thursday January 29: Low temperature 36 deg. F, high temperature 54 deg. F; no precipitation; scattered clouds; winds out of west/northwest 10-20 mph, gusts to 40 mph.

No ambient sampling had been scheduled for Thursday January 29, however, the landfill source gas being exhausted from the high volume sampling units drawing source gas from the South Quarry (for dioxin/dibenzofurans and PAH analyses) caused a strong odor. Stantec collected grab 1 liter Silonite® canister samples from the west fence-line across the street from the MSD Lift Station (Southwest Side of Landfill – Figure 1) which was downwind of the South Quarry and a companion upwind sample from the Grassy Knoll (Grassy Knoll Upper Level – Figure 1) for TO-15 analysis. The results from the two January 29 grab samples are presented in Table 7.

Upwind: Very low concentrations of acetone, benzene, chloromethane, dichlorodifluoromethane (Freon 12), methylene chloride and trichlorofluoromethane were detected at the Grassy Knoll upper Level location.

Downwind: Low concentrations of acetone, benzene, chloromethane,dichlorodifluoromethane (Freon 12) and trichlorofluoromethane were detected proximate to the MSD lift station. Results from both samples are consistent with local/regional background.

5.2 LANDFILL SOURCE GAS

Table 5 presents the analytical results and laboratory method detection limits (for constituents analyzed for but not detected) for all samples of landfill source gas collected in January 2015. Figure 1 shows the locations of the four source gas sample locations: The Flare Inlet, Neck, North Quarry and South Quarry as specified by MDNR in the June 19, 2014 Orders.

The subsurface reaction (which is suspected as being the cause of the odors) is thought to be well-controlled south of the Neck; and no subsurface reaction was or is occurring in the North Quarry. The South Quarry is still active and the gases entering the Flare Inlet represent contributions from all areas of the landfill gas collection system. Samples from the Neck, North Quarry and South Quarry locations represent gas that has migrated upward through the waste mass and accumulated between the surface of the landfill and the EVOH cover. Samples from the Flare Inlet represent contributions from all locations within the waste mass that are serviced

by the gas collection system. Although the composition is related, gas from the Flare Inlet is not directly comparable to the gas collected from immediately beneath the EVOH.

5.2.1 Analytical Results for Source Gas from the Neck

Constituents analyzed for but not detected: Hydrogen cyanide, amines, mercury, ammonia, carboxylic acids, hydrogen, carbon monoxide and dioxins/dibenzofurans. (Table 5).

VOCs: The following VOCs were detected: 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,3-butadiene, 1,4-dichlorobenzene, 4-ethyltoluene, acetone, alpha-pinene, benzene, chlorobenzene, chloromethane, cumene, cyclohexane, dichlorodifluoromethane (Freon 12), d-limonene, ethylbenzene, m, p-xylenes, methyl tertiary butyl ether (MTBE), n-heptane, n-hexane, n-nonane, n-octane, o-xylene, propene, tetrahydrofuran and toluene. **TICs**: propane, dimethyl ether, 2-methyl-1-propene, n-butane, 2 isomers of C4H8 alkenes, furan, dimethyl sulfide, C5H10 alkene, cyclopentene, C6H12 alkene, 2-methylfuran, camphene, 4-isopropyltoluene + 4-methyldecane and an unidentified compound.

Aldehydes: Acetaldehyde was the only aldehyde detected.

Reduced sulfur compounds: The following reduced sulfur compounds were detected: dimethyl disulfide, dimethyl sulfide, ethyl methyl sulfide, and thiophene.

PAHs: A two (2) hour high-volume sample was collected on the morning of January 29 and submitted for analysis of PAHs. Low concentration naphthalene was detected.

5.2.2 Analytical Results for Source Gas from the North Quarry

Constituents analyzed for but not detected: Hydrogen cyanide, amines, mercury, ammonia, reduced sulfur compounds, carbon monoxide and dioxins/dibenzofurans. (Table 5).

Aldehydes: Acetaldehyde was the only aldehyde detected.

Carboxylic Acids: Butanoic Acid (Butyric) was the only carboxylic acid detected.

VOCs: The following VOCs were detected: 1,1-dichloroethane, 1,2,4-trimethylbenzene, 1,2-dichloro-1,1,2,2-tetrafluoroethane, 1,3,5-trimethylbenzene, 1,3-butadiene, 1,4-dichlorobenzene, 2-butanone (MEK), 4-ethyltoluene, acetone, alpha-pinene, benzene, carbon disulfide, chlorobenzene, chloroethane, chloroform, cis-1,2-dichloroethene, cumene, cyclohexane, dichlorodifluoromethane (Freon 12), ethylbenzene, d-limonene, ethylbenzene, m, p-xylenes, n-heptane, n-hexane, n-nonane, n-octane, n-propylbenzene, o-xylene, propene, tetracloroethene, toluene, trichlorotrifluoroethane and vinyl chloride. **TICs**: propane, isobutane, 2-methyl-1-propene, n-butane, 2 isomers of C4H8 alkenes, 2-methylbutane, n-pentane, C5H10 alkene, 2,2-dimethylbutane, 2-methylpentane, 3-methylpentane, 3-methylhexane, hexamethyldisoloxane, unidentified compound and unidentified siloxane.

Aldehydes: Acetaldehyde was the only aldehyde detected.

PAHs: A two (2) hour high-volume sample was collected on the morning of January 29 and submitted for analysis of PAHs. A low concentration of naphthalene was detected.

5.2.3 Analytical Results for Source Gas from the South Quarry

Constituents analyzed for but not detected: Hydrogen cyanide, amines, mercury, ammonia, carbon monoxide and dioxins/debenzofurans. (Table 5).

Aldehydes: Acetaldehyde, butyraldehyde, n-hexaldehyde, m,p-tolualdehyde and propionaldehyde were detected.

Carboxylic acids: The following carboxylic acids were detected: 2-methylbutanoic acid, 2-methylpentanoic acid, 2-methylpropionic acid (isobutyric), 3-methylbutanoic acid (isovaleric), acetic acid, butanoic acid (butyric), hexanoic acid (caproic), pentanoic acid (valeric), and propionic acid (propanoic).

VOCs: The following VOCs were detected: 1,2,4-trimethylbenzene, 1,3-butadiene, 1,4-dichlorobenzene, 1,4-dioxane, 2-butanone (MEK), 2-hexanone, 2-propanol (isopropyl alcohol), 4-ethyltoluene, 4-methyl-2-pentanone, acetone, alpha-pinene, benzene, chlorobenzene, chloroethane, chloromethane, cumene, d-limonene, ethanol, ethylbenzene, m, p-xylenes, n-butyl acetate, n-heptane, n-hexane, n-nonane, n-octane, n-propylbenzene, o-xylene, propene, styrene, tetrahydrofuran, and toluene. **TICs**: dimethyl ether, 2-methyl-1-propene, 2 x C4C8 alkene isomers, furan, dimethyl sulfide, C5C10 alkene, cyclopentene, 2-butanol, 2-methylfuran, methyl butyrate, dimethyl disulfide, 3-ethylcyclohexene, n-decane and p-isopropyltoluene.

Reduced sulfur compounds: The following reduced sulfur compounds were detected: dimethyl disulfide, dimethyl sulfide, ethyl methyl sulfide, methyl mercaptan, n-butyl mercaptan, tetrahydrothiophene, and thiophene.

Fixed gases: *Oxygen*, *nitrogen*, *methane*, *carbon dioxide and hydrogen* were detected in source gas from the South Quarry.

PAHs: A two (2) hour high-volume sample was collected on the morning of January 29 and submitted for analysis of PAHs. Naphthalene was detected in source gas from the South Quarry.

5.2.4 Analytical Results for Source Gas from the Flare Inlet

Constituents analyzed for but not detected: Hydrogen cyanide, amines, ammonia and carbon monoxide. (Table 5).

Aldehydes: Acetaldehyde, butyraldehyde, isovaleraldehyde, n-hexaldehyde, m,p-tolualdehyde and propionaldehyde were detected.

Mercury: Mercury was detected at the Flare Inlet. Mercury was also detected in the flare gas sample during the July 2014 sampling event. Mercury has not been detected in any ambient air sample or from any source gas samples collected from the North Quarry, South Quarry or Neck during the four previous comprehensive sampling events.

Carboxylic acids: The following carboxylic acids were detected: 2-methylbutanoic acid, 2-methylpentanoic acid, 2-methylpropionic acid (isobutyric), 3-methylbutanoic acid (isovaleric), acetic acid, butanoic acid (butyric), hexanoic acid (caproic), pentanoic acid (valeric), and propionic acid (propanoic).

VOCs: The following VOCs were detected: 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,3-butadiene, 1,4-dichlorobenzene, 1,4-dioxane, 2-butanone (MEK), 2-hexanone, 2-propanol (isopropyl alcohol), 4-ethyltoluene, 4-methyl-2-pentanone, acetone, alpha-pinene, benzene, chloroethane, chloromethane, cumene, d-limonene, ethanol, ethyl acetate, ethylbenzene, m, p-xylenes, n-butyl acetate, n-heptane, n-hexane, n-nonane, n-octane, o-xylene, propene, tetrahydrofuran and toluene. **TICs**: dimethyl ether, 2-methyl-1-propene, 2 x C4C8 alkene isomers, dimethyl sulfide, 1-propanol, 2-butanol, 2-methylfuran, methyl propionate, 2-pentanone, methyl butyrate, dimethyl disulfide, methyl isovalerate and methyl valerate.

Reduced sulfur compounds: The following reduced sulfur compounds were detected: dimethyl disulfide, dimethyl sulfide, ethyl mercaptan, ethyl methyl sulfide, hydrogen sulfide, methyl mercaptan, n-butyl mercaptan, tetrahydrothiophene, and thiophene.

Fixed gases: *Oxygen*, *nitrogen*, *methane*, *carbon dioxide and hydrogen* were detected in source gas from the South Quarry.

No high volume samples for PAH or dioxin/furan analysis were collected from the gas stream entering the Flare Inlet.

5.3 DISCUSSION OF SAMPLING RESULTS FOR JANUARY 2015

5.3.1 Public Health and Occupational Screening Levels for Ambient Air

Along with the analytical results and laboratory minimum reporting limits (MRLs), health based screening levels are provided in four columns on the left-hand side of the ambient air results tables as a" point of reference" for the concentrations. Two general categories of screening levels are presented and discussed: risk-based screening levels and occupational exposure limits.

US EPA risk-based Regional Screening Levels (RSL) are concentrations of constituents in indoor air in residential (Residential RSL) and industrial settings (Industrial RSL) that are considered to be protective of individuals who are exposed to those concentrations over many years. RSLs for carcinogenic chemicals are derived to correspond to an excess lifetime cancer risk of 1 in 1,000,000 (1 in 1 million or 1E-06) for a person who is assumed to be exposed to that

concentration on an ongoing basis over an extended period of time (25 years for industrial and 30 years for residential). US EPA updates the RSL tables two times a year. The most recent RSL concentrations (January 2015) were used in this report.

Although the EPA RSLs for carcinogenic chemicals were derived to correspond to a cancer risk of 1 in 1 million, many States and other jurisdictions consider a cancer risk of 1 in 100,000 to be a point of departure for regulating chemicals in the environment and mitigating potential risks. For carcinogenic chemicals such as benzene, the RSL concentrations for ambient air would be ten times higher for a target cancer risk of 1 in 100,000. We have conservatively chosen to present the lower concentrations.

RSLs for chemicals that produce adverse non-cancer effects (and are also not considered to be carcinogens) are concentrations that are very unlikely to produce health effects in people who are exposed to those concentrations over many years. Non-cancer RSL concentrations were derived to correspond to a non-cancer hazard index (HI) of 1. For most States and jurisdictions an estimated hazard index greater than 1.0 for non-cancer health effects from potential exposures to chemicals in the ambient environment is the point of departure for further evaluation and consideration of actions to mitigate the exposure.

Concentrations of constituents below applicable RSL concentrations are not a concern for public health. Concentrations above RSLs do not mean that adverse health effects will occur, but indicate that additional evaluation may be appropriate. RSLs are extremely conservative and do not account for other (non-environmental) sources of exposure to the same chemicals or personal risk factors for developing disease.

Many of the individuals with regular job duties on the landfill are covered by OSHA Hazard Communication requirements. Occupational Exposure Limits (OELs) published as OSHA PELs (Permissible Exposure Limits) and ACGIH TLVs (Threshold Limit Values) are applicable to this category of worker and are presented for perspective. ACGIH TLVs are health-based values, and refer to concentrations of chemical substances and represent conditions under which it is believed nearly all workers may be repeatedly exposed, day after day, over a working lifetime, without adverse health effects. OSHA PELs are based on 1969 TLVs with the exception that some have been updated as substance specific standards to reflect more current toxicological data and research.

5.3.2 Ambient Air

Analytical results for all ambient air samples collected during the January 2015 event can be found in Tables 2, 3 and 4. Tables 6 & 7 presents compounds that were detected in all time weighted ambient samples collected on January 27 and January 28, 2015.

Fixed Gases, Hydrogen Cyanide and Mercury

Only oxygen and nitrogen, the normal constituents of ambient air, were detected in ambient samples. Hydrogen, carbon monoxide, methane, and carbon dioxide were not detected in any of the ambient air samples. Hydrogen cyanide and mercury were not detected in any ambient air sample.

Volatile Organic Compounds

The analytical results from 8-hour samples collected in 6-liter Silonite® canisters can be compared for upwind, on-landfill, and downwind locations. These samples were collected on January 27 & January 28, 2015 and results are presented in tables 2, 3 and 6. The grab samples collected near the south quarry (downwind) on January 28, near the MSD lift station (downwind) and at the Grassy Knoll Upper Level (upwind) on January 29 will be discussed separately. The analytical results for all grab samples can be found in tables 3, 4 and 7.

Due to an 180 degree shift in wind direction, the downwind sample collected on January 27, 2015 (127D1-SUMMA) and the upwind sample collected January 28, 2015 (128U1-SUMMA) were collected from the same location (corner of east fence and retention pond). This location lies along a main landfill service road with consistent vehicle traffic. Vehicle exhaust from traffic on January 27 and 28 may have contributed to the increased number of VOCs detected at low concentrations in these two samples.

Low concentrations of 2-butanone, isopropyl alcohol, acetone, acetonitrile, benzene, carbon tetrachloride, chloromethane, cyclohexane, dichlorodifluoromethane (Freon 12), ethanol, ethyl acetate, methylene chloride, xylenes, n-heptane, n-hexane, n-nonane, n-octane, propene, toluene, trichlorfluoromethane and trichlorotrifluoroethane were found in the upwind sample locations on January 27 and 28, 2015.

With a few exceptions, the same compounds were detected in ambient air from the source gas locations on the Neck, North Quarry, South Quarry and Flare Station, and from the downwind sample locations.

The concentrations of VOCs detected in 8-hour ambient air samples from the four source gas locations were similar (within one order of magnitude) to the concentrations detected at the downwind locations and to the concentrations detected in the upwind samples collected on the same day. There were no clear patterns by compound or by location.

With the exceptions discussed below, the concentrations of all VOCs detected in 8-hour samples of ambient air (regardless of location) were less than the conservative risk-based industrial and residential RSLs. The laboratory sample MRLs were sufficiently low for all VOCs to allow meaningful comparisons of the detected concentrations to the risk-based RSL concentrations and occupational exposure limits. The concentrations of all VOCs (including benzene) detected in 8-hour samples of ambient air were thousands of times less than the corresponding OSHA PEL and ACGIH TLV concentrations for workplace exposures.

Four VOCs were detected in one or more 8-hour ambient air samples at concentrations higher than the corresponding risk-based EPA RSLs; acetonitrile, acrolein, benzene and carbon tetrachloride.

- **Acetonitrile**
    - On January 27, Acetonitrile was detected in the upwind sample (Grassy Knoll) at a concentration (240 µg/m^3) which exceeded the residential RSL (63 µg/m^3).
    - Acetonitrile was detected at lower concentrations in three onsite landfill sample locations (0.95 – 9.1 µg/m^3) and in one downwind sample (8.1 µg/m^3). Acetonitrile was not detected in source gas samples.
    - The concentrations were higher in the upwind sample and were similar in the onsite landfill sample locations and downwind sample location and likely represent local/regional background conditions at the time the samples were collected.
    - The presence of acetonitrile in ambient air cannot be attributed to the landfill.
- **Acrolein**
    - Acrolein was detected (0.30 µg/m^3) at the Neck location (128N-Summa) and in the downwind sample (127D1-SUMMA) on January 27 (0.29 µg/m^3). The detected concentrations of acrolein were higher than both the residential and industrial RSLs of 0.021 and 0.088 µg/m^3, respectively, but well below the OSHA PEL and ACGIH TLV of 250 µg/m^3. Acrolein was not detected in source gas samples.
    - The concentrations were similar in all sample locations and represent local/regional background conditions at the time the samples were collected.
    - The presence of acrolein in ambient air cannot be attributed to the landfill.
- **Carbon tetrachloride**
    - All detected concentrations of carbon tetrachloride, including the concentrations in the upwind samples were approximately the same as the Residential RSL (0.47 – 0.53 µg/m^3), but less than the industrial RSL (2 µg/m^3), and ten thousand times lower than the OSHA PEL (30,000 µg/m^3), and ACGIH TLV (15,000 µg/m^3).
    - Carbon tetrachloride is stable in the atmosphere and is almost always detected in ambient air at concentrations just below 1.0 µg/m^3 (ATSDR 2005).

- The concentrations were similar in all sample locations and represent local/regional background conditions at the time the samples were collected.

- The presence of carbon tetrachloride in ambient air cannot be attributed to the landfill.

- **Benzene**

  - The concentrations of benzene detected in 8-hour samples of ambient air ranged from 0.38 to 2.3 µg/m^3. The highest concentration (2.3 µg/m^3) was detected in the downwind sample collected at the corner of the east fence and retention pond on January 27, 2015. Similar concentrations were observed January 28 at the Neck (1.8 µg/m^3) and in the upwind sample (1.8 µg/m^3) on January 28, 2015. These concentrations are essentially identical and are similar to the industrial RSL (1.6 µg/m^3), but higher than the residential RSL (0.36 µg/m^3).

  - Both the industrial and residential RSL concentrations correspond to a target cancer risk of 1 in 1 million for individuals who are exposed on a daily basis over many years.

    - As mentioned in Section 5.3.2, the risk-based RSLs corresponding to a 1 in 100,000 cancer risk would be 16 µg/m^3 for industrial exposure and 3.6 µg/m^3 for residential exposure.

    - All concentrations of benzene detected in ambient air on the landfill and at upwind/downwind locations in January 2015 were lower than the RSL concentrations corresponding to a 1 in 100,000 cancer risk.

  - By comparison, the occupational standards for benzene are thousands of times higher than the industrial RSL, e.g. OSHA PEL = 32,000 µg/m^3, and the ACGIH TLV = 1,600 µg/m^3.

  - All detections of benzene exceeding the residential RSL were inside the fence-line, onsite and are not representative of offsite concentrations since they do not account for anticipated dilution in the air mass moving off of the landfill boundaries, or for contributions from other non-landfill sources in the surrounding community.

  - To put the concentrations of benzene detected in ambient air into context, the annual average benzene concentration reported by the St. Louis Community Air Project (US EPA 2005) was 1.5 µg/m^3. According to US EPA (2010), for the US as a whole, the mean and 90th percentile concentrations of benzene in ambient air in 2009 were 0.85 µg/m^3 and 1.39 µg/m^3, respectively.

BRIDGETON LANDFILL AMBIENT AIR AND LANDFILL SOURCE GAS SAMPLING-JANUARY 2015

Analytical Results
June 12, 2015

On January 28, a grab sample was collected in a 1-liter Silonite® canister just north of the South Quarry flux box during a period of strong odor. The objective of this sample was to determine the concentrations of VOCs and reduced sulfur compounds during a short period when the odor was very strong. Two additional grab samples were collected on January 29: a downwind sample near the MSD lift station during a period of moderate odor and an upwind sample from the grassy knoll upper level for comparison purposes.

- Very few VOCs were detected in the grab samples collected on January 28 and 29, 2015.

- The concentrations of benzene detected in the grab sample near the South Quarry flux box (2.4 µg/m^3) and in the sample collected near the MSD lift station (0.87 µg/m^3) were comparable to the benzene concentrations in the 8-hour time-integrated ambient samples.

- The grab sample does not represent long-term exposure to individuals working on the Landfill or to members of the surrounding community.

- Even given the fleeting nature of the exposure, the concentration of benzene detected in the grab samples when the odor was intense was lower than either the OSHA PEL (32,000 µg/m^3) or the ACGIH TLV (1,600 µg/m^3) for an 8-hour work day over many years.

Aldehydes

Acetaldehyde, formaldehyde and n-hexaldehyde were detected at similar low concentrations in upwind, on-landfill, and downwind fence-line locations on both January 27 and 28, 2015 (Tables 2, 3 and 6).

- The concentrations of acetaldehyde (range from 0.92 to 2.3 µg/m^3) and formaldehyde (range from 0.92 to 1.9 µg/m^3) detected in ambient air upwind, on the landfill, and downwind on January 27 and 28 were well below their respective OSHA PELs (acetaldehyde = 360,000 µg/m^3; and formaldehyde = 1,000 µg/m^3) and ACGIH TLVs (acetaldehyde = 45,000 µg/m^3; and formaldehyde = 400 µg/m^3).

- All detected concentrations of formaldehyde, including the concentrations in the upwind samples were higher than both the residential (0.22 µg/m^3) and industrial RSLs (0.94 µg/m^3).

- Detected concentrations of acetaldehyde, including the concentrations in the upwind samples were close to, or higher than the residential RSL (1.3 µg/m^3) but less than the industrial RSL (5.6 µg/m^3).

    - The concentrations of acetaldehyde and formaldehyde were similar in all sample locations and represent local/regional background conditions at the time the samples were collected.

- To put the concentrations of aldehydes detected in ambient air into context, the annual average acetaldehyde and formaldehyde concentrations reported by the St. Louis Community Air Project (US EPA 2005) were 4.8 µg/m^3 and 4.6 µg/m^3, respectively.

The presence of acetaldehyde and formaldehyde in ambient air cannot be attributed to the landfill.

Reduced Sulfur Compounds

No reduced sulfur compounds were detected in any ambient air sample. A number of reduced sulfur compounds were detected in source gas, particularly from the South Quarry and the Flare Inlet. However, as will be discussed in section 6.3, the laboratory MRLs are higher than the odor threshold for many of these compounds.

- Carbon disulfide and hydrogen sulfide are the only two reduced sulfur compounds for which risk-based RSLs have been derived. The laboratory MRLs for carbon disulfide were 10-100 times lower than the residential RSL (730 µg/m^3) and the industrial RSL (3,100 µg/m^3); and over 1,000 times lower than the OSHA PEL (60,000 µg/m^3) or the ACGIH TLV (3,000 µg/m^3).

- It should be noted that the laboratory sample MRLs (range from 8.5 to 9.5 µg/m^3) for hydrogen sulfide were higher than the residential (2.1 µg/m^3) and industrial (8.8 µg/m^3) RSLs; but much lower than the OSHA PEL (28,000 µg/m^3) and the ACGIH TLV (1,400 µg/m^3).

- There are occupational exposure limits for carbon disulfide, ethyl mercaptan, hydrogen sulfide, methyl mercaptan and n-butyl mercaptan. The laboratory sample MRLs were well below the occupational limits for these compounds.

- The laboratory sample MRLs were sufficiently sensitive to detect any reduced sulfur compounds present in ambient air at concentrations approaching occupational exposure levels.

    - As will be further discussed in Section 6.3 of this report, the odor thresholds for the reduced sulfur target analyte compounds are lower than levels that are potentially of concern to public health.

Amines

No amines were detected in any ambient sample and were also not detected in any of the four source gas samples (Table 5).

Carboxylic Acids

Carboxylic acids were not detected in any of the upwind or downwind ambient air samples. Low concentrations of butanoic acid (4.2 µg/m^3) and propionic acid (3.1 µg/m^3) were detected in ambient air at the South Quarry.

- No risk-based screening levels have been derived for the carboxylic acids.
- The laboratory sample MRLs for acetic acid were lower than the OSHA PEL (25,000 µg/m^3) and ACGIH TLV (27,000 µg/m^3). Acetic acid is the only carboxylic acid with occupational exposure levels.
- Carboxylic acids were detected in source gas from both the South Quarry and the Flare Inlet. Many of these compounds have odor thresholds below the laboratory MRLs.

PAHs

Naphthalene (range from 0.031 to 0.049 µg/m^3) and phenanthrene (range from 0.0032 to 0.0041 µg/m^3) were detected at similar low concentrations in upwind, on-landfill, and downwind ambient air. Benzo[a]pyrene and related carcinogenic PAHs associated with incomplete combustion of organic matter were not detected in ambient air or in any of the source gas samples (Table 5).

- The concentrations of all PAHs detected in ambient air from the upwind, on-landfill, and downwind fence-line were lower than the OSHA PEL and ACGIH TLV for naphthalene (50,000 µg/m^3). This occupational exposure limit is applicable to naphthalene and associated "coal tar-pitch volatile" PAHs.
- All detected concentrations of naphthalene were lower than the residential (0.083 µg/m^3) and industrial (0.36 µg/m^3) RSLs.
- The concentrations of naphthalene and associated PAHs detected in ambient air represent local/regional background conditions at the time the samples were collected.
- The presence of naphthalene and associated PAHs in ambient air cannot be attributed to the landfill and is not a concern for the surrounding community.

Dioxins/Dibenzofurans

The same two dioxin/dibenzofuran isomers 1,2,3,4,6,7,8-HpCDD (range 15.7 -18.1 pg) and OCDD (range 52.8 -85.2 pg) were detected at similar low amounts (mass) in upwind, on-landfill and downwind ambient air (Table 9).

- There are no OSHA PELs or ACGIH TLVs for dioxin/dibenzofurans isomers, therefore 2,3,7,8-TCDD TEQs were calculated.

- All detected concentrations of 2,3,7,8-TCDD TEQs (range from 5.00E-10 to 5.88E-10) in ambient air were more than 100 times lower than the residential (7.4E-08 µg/m^3) and 1,000 times lower than the industrial (3.2E-07 µg/m^3) RSLs.

- The low concentrations of 2, 3, 7, 8-TCDD TEQs detected in ambient air represent local/regional background conditions at the time the samples were collected.

    - The average TCDD TEQ concentration in ambient air in the US is 1.11E-08 µg/m^3, and the average in urban areas is 1.5911E-08 µg/m^3 (US EPA 2013).

- The presence of low concentrations of 2, 3, 7, 8-TCDD TEQs in ambient air cannot be attributed to the landfill and are not a concern for the surrounding community.

5.3.3 Source Gas

Analytical results for the source gas samples are provided in Tables 5 and 8.

There are striking differences in the numbers of constituents and the concentrations detected in the four source gas locations. The relatively lower number of constituents detected and lower concentrations of those constituents in source gas from the Neck and North Quarry supports the conclusion that the subsurface reaction is not occurring or is well-controlled in these areas.

The sample results confirm that the subsurface reaction in the South Quarry is still active; and the results from the Flare Inlet reflect all contributions from the gas collection system. Although not directly comparable for reasons explained previously, the composition of the gas collected from the Flare Inlet is similar to the gas collected from under the EVOH at the South Quarry location. This indicates that the South Quarry is the largest contributor to the gases entering the Flare. The facility managers estimate that the South Quarry represents approximately 80% of the gas flow in the collection system entering the Flare.

Hydrogen cyanide, ammonia and amines were not detected in any of the source gas samples.

VOCs, reduced sulfur compounds and carboxylic acids are the constituents of concern detected at the highest concentrations in the South Quarry and the Flare Inlet.

Naphthalene was detected in source gas from the North Quarry, South Quarry and Neck. Benzo[a]pyrene and related cPAHs associated with incomplete combustion of organic matter were not detected in any of the source gas samples. The reaction in the landfill is not producing cPAHs.

OCDD was the only dioxin/dibenzofuran isomer detected in the source gas. As discussed in section 3.3.2, the amounts (mass in pg) detected in the source gas were less than the mass detected in the field blank (31.8 pg), therefore the sample results were validated to non-detect and flagged UJB.

The reaction in the landfill is not contributing dioxins/dibenzofurans to the ambient air on the landfill or in the surrounding community.

6.0 HISTORICAL COMPARISON OF AIR SAMPLING RESULTS – COMPREHENSIVE SAMPLING 2012 TO 2015

6.1 AMBIENT AIR

Tables D1, D2 and D3 in appendix D present a summary of all constituents of concern detected in one or more samples of upwind, downwind and onsite ambient air in 2012, 2013 and 2014. These tables provide historical perspective and can be compared to table 6 which is presented in this report. A historical comparison is useful to identify trends in ambient air conditions over four comprehensive sampling events conducted over a four year period. Benzene is the VOC that is of greatest potential concern for public health; and will be discussed specifically in all sections that follow.

VOCs

Due to the observed temporal variability of the numerous individual compounds detected in ambient air samples, for illustrative purposes year to year comparison of VOCs is made on the basis of total VOCs (tVOCs). The tVOC concentration in ambient air ($\mu g/m^3$) is the sum of the TO-15 target analytes detected in the sample. Total Tentatively Identified Compounds (tTICs) are also presented as an indicator of non-target analytes detected.

It should be noted that the most frequent use of tVOC is for evaluation of indoor air quality where the tVOC concentration can be an indicator of potential sensory irritation (European Collaborative Action, 1997). TVOCs have also been used as a crude measure of exposure by some researchers (Kim et al., 2012). The MDNR AreaRAE monitors also report total VOC concentrations although not based on concentrations of the Method TO-15 target analytes. It is not appropriate to compare tVOC concentrations based on addition of individual TO-15 analyte concentrations to the tVOC concentrations reported by the MDNR AreaRAE monitors.

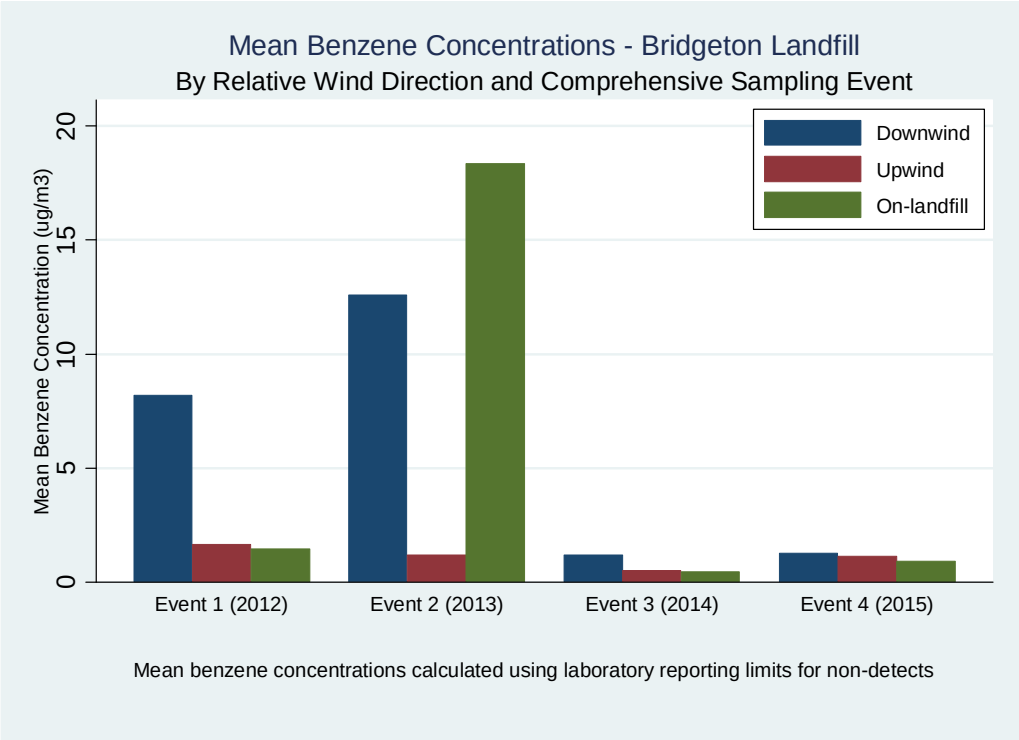
The tVOC concentrations detected in upwind ambient air in 2012, 2013, 2014 and 2015 are shown in the table below. Benzene concentrations are listed in parentheses. Benzene is the VOC present in landfill source gas that is of greatest potential concern for public health; and will be discussed specifically in all sections that follow.

Total VOCs in Ambient Air (µg/m³)			
UPWIND			
Location	**tVOC (Benzene)**	**Total TICs**	**Total VOCs**
2012			
Grassy Knoll 1	20.2 (ND)	19.2	39.4
Grassy Knoll 2	20.8 (ND)	14.9	35.7
Grassy Knoll 3	28.1 (ND)	33.1	61.2
Grassy Knoll 4	3.98 (ND)	5.4	9.4
Grassy Knoll 5	5.1 (ND)	6	11.1
Grassy Knoll 6	4.2 (ND)	5.6	9.8
2013			
Grassy Knoll 1	18.5 (ND)	205.9	224.4
Grassy Knoll 2	13.5 (ND)	123	136.5
Pond	14.4 (ND)	12.6	27
2014			
Grassy Knoll 1	39.5 (0.23)	40.3	79.8
Grassy Knoll 2	25.67 (ND)	294.5	320.17
2015			
Grassy Knoll	269.8 (0.38)	0	269.8
Corner of East Fence & Retention Pond	47.1 (1.9)	44.1	91.2
ONSITE - LANDFILL			
2012			
Amphitheater	39.8 (1.1)	14.9	54.7
Second Tier	26.2 (ND)	22.4	48.6
East Face	58.6 (6.2)	75.6	134.2
2013			
Amphitheater	295.3 (27)	181.8	477.1
Second Tier	86.8 (9.7)	125.2	212
2014			
Flare Station	49.9 (0.42)	65.2	115.1
North Quarry	47.8 (0.28)	31.6	79.4
Neck	33.2 (0.47)	18.8	52
South Quarry	79.9 (0.71)	67.9	147.8
2015			
Flare Station	27.9 (0.6)	9.8	37.7
North Quarry	21.4 (0.8)	7.0	28.4
Neck	129.9 (1.8)	56.7	186.6
South Quarry	46.5 (0.55)	28.3	74.8
DOWNWIND			
2012			
Pond Center	58.5 (10)	58.9	117.4
Pond East	47.3 (10)	42.2	89.5
Pond West	53.8 (16)	34.4	88.2
East Fence #1	34.5 (11)	34.6	69.1

East Fence #2	34.5 (ND)	__	34.5
South Fence	41.3 (6.1)	12.4	53.7
2013			
MSD Lift Station	110.2 (25)	147.8	258
Materialogic East	58 (12)	136.9	194.9
Northwest Auto	21.2 (0.79)	26.4	47.6
2014			
Southeast Corner (7/29)	39.1 (1.7)	40.9	80
East Fence (7/30)	50 (1.6)	34	84
Retention Pond (7/30)	34.8 (0.35)	21.7	56.5
Republic Fueling (7/30)	36.7 (ND)	22.4	59.1
2015			
Corner of East Fence & Retention Pond	46.5 (2.3)	8.4	54.9
East Fence	15.3 (0.52)	9.2	24.5
Grassy Knoll Above Pipe Staging Area	31.3 (0.98)	15.3	46.6

Benzene

Mean (arithmetic average) concentrations of benzene in ambient air at upwind, downwind fence-line and onsite locations are shown graphically below for the four monitoring events conducted as of the date of this report. Mean concentrations were calculated using reported concentrations and laboratory method detection limits for non-detected values.



- Regardless of relative wind direction, the tVOC concentrations exhibit a high degree of daily and yearly variability, which is likely due to temporal variability in the local and regional air mass, and the multitude of sources of VOCs in an urban environment (e.g. vehicle traffic, industrial processes).

- Benzene was detected in three of thirteen upwind samples during the four comprehensive sampling events (range from 0.23 to 1.9 µg/m^3). Upwind samples represent the local/regional ambient air mass moving onto the landfill before passing over the landfill (upwind or background). Low concentrations of benzene are frequently detected in ambient air in urban areas and the concentrations of benzene detected in upwind are consistent with the annual average benzene concentration (1.5 µg/m^3) reported by the St. Louis Community Air Project (US EPA 2005).

- Benzene was detected in 12 of 13 onsite landfill samples (range from 0.28 to 27 µg/m^3). Onsite benzene concentrations have decreased dramatically from 2012 and 2013 (max - 27 µg/m^3 to 2014 and 2015 where the benzene concentrations (range from 0.28 to 1.8 µg/m^3) in downwind ambient samples. Throughout 2014 and 2015, benzene concentrations have remained below the industrial RSL and consistent with the annual average benzene concentration (1.5 µg/m^3) reported by the St. Louis Community Air Project (US EPA 2005).

- Benzene was detected in 14 of 16 downwind samples (range from 0.35 to 25 µg/m^3). Consistent with the onsite landfill results, downwind benzene concentrations have decreased dramatically from 2012 and 2013 (max – 25 µg/m^3) to 2014 and 2015; where the benzene concentrations ranged from 0.35 to 2.3 µg/m^3 in downwind ambient samples. These results are generally equal to industrial RSLs and consistent with the annual average benzene concentration (1.5 µg/m^3) reported by the St. Louis Community Air Project (US EPA 2005).

- Regardless of sample location (onsite, upwind or downwind) benzene concentrations have remained orders of magnitude lower than ACGIH TLVs and OSHA PELs over the four comprehensive sampling events spanning a four year period.

Aldehydes

- Like the VOCs, there can be considerable temporal variability in the concentrations of aldehydes detected in ambient air. Acetaldehyde and formaldehyde were the individual compounds most frequently detected in ambient air samples in 2012, 2013, 2014 and 2015. It should be noted that the conservative RSLs for acetaldehyde and especially for formaldehyde are close to the laboratory method detection limits for these compounds. Consequently, almost any detected concentration of formaldehyde will be higher than the RSL concentrations.

- Upwind

- Acetaldehyde was detected in 13 of 13 upwind samples (range from 0.92 to 19 µg/m^3). Concentrations have declined when comparing results from 2012 to samples collected in 2013, 2014 and 2015. After 2012 acetaldehyde concentrations have remained below industrial RSLs and generally equal to or lower than residential RSLs.

- Formaldehyde was detected in 10 of 13 upwind samples (range from 0.92 to 3.2 µg/m^3). Concentrations have remained relatively consistent over the four comprehensive sampling events. All detected concentrations of formaldehyde were higher than the industrial (0.94 µg/m^3) and/or residential (0.22 µg/m^3) RSLs,

- Onsite Landfill

  - Acetaldehyde was detected in 13 of 13 onsite landfill samples (range from 0.78 to19 µg/m^3). Concentrations have declined when comparing results from 2012 to samples collected in 2013, 2014 and 2015. Throughout 2013, 2014 and 2015 acetaldehyde concentrations (range from 0.78 to4.4 µg/m^3) have remained below industrial RSLs (5.6 µg/m^3) and generally comparable to or lower than residential RSLs (1.3 µg/m^3).

  - Formaldehyde was detected in 12 of 13 onsite landfill samples (range from1.1 to6.1 µg/m^3). Concentrations have remained relatively consistent over the four comprehensive sampling events. All detected concentrations of formaldehyde in onsite landfill samples were higher than the industrial (0.94 µg/m^3) and/or residential (0.22 µg/m^3) RSLs.

- Downwind

  - Acetaldehyde was detected in 17 of 17 downwind samples (range from 0.82 to10 µg/m^3). Concentrations have declined when comparing results from 2012 to samples collected in 2013, 2014 and 2015. Throughout 2013, 2014 and 2015 acetaldehyde concentrations (range from 0.82 to3 µg/m^3) have remained below industrial RSLs (5.6 µg/m^3) and generally equal to or lower than residential RSLs (1.3 µg/m^3).

  - Formaldehyde was detected in 15 of 17 downwind samples (range from 1.1 to6.3 µg/m^3). Concentrations have remained relatively consistent over the four comprehensive sampling events. All detected concentrations of formaldehyde in downwind samples were higher than the industrial (0.94 µg/m^3) and/or residential (0.22 µg/m^3) RSLs.

- Regardless of sample location the concentration of acetaldehyde or formaldehyde did not approach or exceed their respective OSHA PELs or ACGIH TLVs.

- Acetaldehyde and formaldehyde are ubiquitous in ambient air, particularly in urban areas.

PAHs

Historically, acenaphthene, fluoranthene, fluorene, naphthalene, phenanthrene and pyrene were detected at similar low concentrations in ambient air samples collected upwind, downwind and onsite. Only naphthalene and phenanthrene were detected in 2015.

- Naphthalene is the only PAH detected in ambient air for which risk-based RSLs have been derived. All naphthalene concentrations have been below both the industrial and residential RSLs, regardless of sample location and relative wind direction.

- Benzo[a]pyrene and related carcinogenic PAHs associated with incomplete combustion of organic matter were not detected in any sample of ambient air in 2012, 2013, 2014 and 2015.

Dioxins/Dibenzofurans

- 2, 3, 7, 8-TCDD TEQ concentrations were very low and similar in 2012, 2013, 2014 and 2015. All 2, 3, 7, 8-TCDD TEQ concentrations in ambient air were less than both the industrial and residential RSLs.

- The presence of low concentrations of TCDD TEQs in ambient air at downwind locations was consistent with upwind/background samples and cannot be attributed to the landfill.

- The detected low concentrations of TCDD TEQs were not a health concern for the surrounding community in 2012, 2013, 2014 and 2015.

6.2 SOURCE GAS

In 2012 and 2013, samples of landfill source gas under the FML were collected from the same three locations referred to as the Amphitheater, the Second Tier and the East Fence or Backside (Figures 2 and 3). In 2014 and 2015, samples of source gas from under the EVOH were collected from the North Quarry, Neck and South Quarry; and from the source gas entering the Flare (Figure 1). Tables 5 and 8 summarize all constituents of concern that were detected in the landfill source gas in 2015. Table D4 in appendix D summarizes the detected compounds in source gas from 2012, 2013 and 2014.

VOCs

Upon comparing table 8 and table D4, it can be seen that the occurrence of specific VOC target analytes and TICs were highly variable between years and between sampling locations

during the same year. Total VOCs and benzene are used to illustrate year to year comparisons in the following table.

Total VOCs in Source Gas (µg/m³)			
Location	**Total Target Analytes (Benzene)**	**Total TICs**	**Total VOCs**
2012			
Amphitheater	1,646,500 (120,000)	1,064,000	2,710,500
Second Tier	1,062,800 (620,000)	1,361,000	2,423,800
East Face	876,500 (390,000)	1,422,000	2,298,500
2013			
Amphitheater	2,412,100 (370,000)	3,024,000	5,436,100
Second Tier	7,996,000 (2,000,000)	7,180,000	15,176,000
East Face	940,900 (360,000)	3,67,000	4,597,900
2014			
North Quarry	41,801(9,200)	81,200	123,001
Neck	88,632 (40,000)	138,500	227,132
South Quarry	14,262,400 (1,500,000)	71,500,000	85,762,400
Flare Inlet	9,760,300 (880,000)	93,800,000	103,560,300
2015			
North Quarry	2,277 (12)	7,012	9,289
Neck	53,848 (12,000)	163,000	216,848
South Quarry	285,010 (87,000)	375,400	660,410
Flare Inlet	3,460,800 (460,000)	3,417,000	6,877,800

- In 2012, the three reaction areas were producing similar amounts of total VOCs; the highest concentration of benzene was detected in the Second Tier (Neck).
- By 2013, the total amount of VOCs detected in source gas from all three locations had increased relative to 2012. The largest increase in total target analytes, benzene specifically, TICs and total VOCs occurred in the Second Tier (Neck).
- In 2014, the total VOC concentrations and benzene concentrations in source gas from the Neck had decreased significantly compared to the previous two years (Second Tier).
- In 2015, the results of source gas sampling demonstrate a dramatic decrease in total VOC concentrations and benzene concentrations in all source gas locations.
- The source gas from the Flare Inlet represents VOCs from all areas of the gas collection system, which draws from deep within the waste mass.

- Of the three source gas areas sampled in 2014 and 2015, the South Quarry contributes the largest amount of total VOCs entering the Flare.

- The sample results for the Flare Inlet cannot be directly compared to any of the source gas samples collected from beneath the FML in 2012 or 2013 or to the samples collected from beneath the EVOH in 2014 and 2015.

Aldehydes

Although the target analyte list of aldehyde compounds is much shorter than the target analyte list for VOCs, the occurrence and concentrations of individual aldehydes in the source gas is also variable between years and sampling locations. As with the VOCs, a total of the detected concentrations of the individual aldehydes in samples of source gas are used to illustrate year to year comparisons. Total aldehyde concentrations detected in source gas sample from 2012, 2013, 2014 and 2015 are summarized below in µg/m^3, with (acetaldehyde; formaldehyde) concentrations in parentheses.

Total Aldehydes Detected in Source Gas (µg/m^3)	
Location	**Total Aldehydes - (Acetaldehyde; Formaldehyde)**
2012	
Amphitheater	7,880 (1,200; ND)
Second Tier	1,800 (ND; ND)
East Face	4.032 (350; ND)
2013	
Amphitheater	20,740 (3,400; ND)
Second Tier	22,400 (120; ND)
East Face	1,680 (ND; ND)
2014	
North Quarry	49 (49; ND)
Neck	64 (64; ND)
South Quarry	13,730 (1,600; ND)
Flare Inlet	18,778 (3,000; 78)
2015	
North Quarry	45 (45, ND)
Neck	64 (64, ND)
South Quarry	4,869 (130, ND)
Flare Inlet	71,495 (9,500, ND)

- Formaldehyde has only been detected once (Flare gas 2014), suggesting the landfill is not the source of formaldehyde detected in ambient air.

- Acetaldehyde was the only aldehyde detected in source gas from the North Quarry and Neck in 2014 and 2015.

Reduced sulfur compounds

The occurrence and concentrations of individual reduced sulfur compounds is also variable between years and sampling locations. Total reduced sulfur compound concentrations detected in source gas samples from 2012, 2013, 2014 and 2015 are summarized below in µg/m^3. Detected concentrations of hydrogen sulfide are shown in parentheses.

Total Reduced Sulfur Compounds Detected in Source Gas (µg/m^3)	
Location	**Total Reduced Sulfur Compounds – (Hydrogen Sulfide)**
2012	
Amphitheater	271,700 (ND)
Second Tier	650,187 (27)
East Face	655,147 (ND)
2013	
Amphitheater	886,220 (4,500)
Second Tier	1,656,440 (38,000)
East Face	1,162,148 (1,600)
2014	
North Quarry	7,577 (ND)
Neck	4,542 (ND)
South Quarry	1,251,300 (ND)
Flare Inlet	2,898,320 (320)
2015	
North Quarry	ND (ND)
Neck	31,150 (ND)
South Quarry	64,400 (ND)
Flare Inlet	1,396,600 (34,000)

- Total reduced sulfur compounds increased in all three source gas areas from 2012 to 2013.

- In 2014, total reduced sulfur compounds were similar in source gas from the North Quarry and Neck. Concentrations were significantly higher in the South Quarry than in the North Quarry and Neck.

- In 2015, no reduced sulfur compounds were detected at the North Quarry. Concentrations decreased significantly at the South Quarry and increased by an order of magnitude at the Neck compared to July 2014.

    - The sample from the North Quarry represents the total concentration of reduced sulfur compounds in gas from an area that has not been involved in the subsurface reaction.

  - The Neck corresponds to the Second Tier location in 2012 and 2013. There has been a significant decrease in reduced sulfur compounds detected in this location in 2014 and 2015 as compared to 2012 and 2013. This indicates that the subsurface reaction has been controlled in the area proximate to the Neck, resulting in less of an impact in the area of the Neck.

- The sample from the South Quarry location represents reduced sulfur compounds in the gas between the surface of the landfill and the EVOH in the portion of the landfill where the subsurface reaction was most active in 2014 and 2015. The total reduced sulfur concentration of the reaction gas in 2014 is similar to 2013; however the total concentration decreased significantly in 2015.

- The sample from the Flare Inlet represents the reduced sulfur compounds entering the flare from all parts of the gas collection system. As stated previously, approximately 80% of the gas flow to the Flare comes from the reaction in the South Quarry.

- MDNR's ambient air monitoring program includes hydrogen sulfide as a specific constituent of concern; however this compound has never been a major contributor to the total reduced sulfur concentrations in source gas.

  - In 2012, hydrogen sulfide was less than 0.5% of the total reduced sulfur concentration in source gas from the Second Tier/Neck. In 2013, hydrogen sulfide was 0.5% of the reduced sulfur total from the Amphitheater; 2.3% of the total from the Second Tier/Neck and 0.13% of the total from the East Slope.

  - In 2015, hydrogen sulfide was not detected in source gas from the North Quarry, Neck or South Quarry; and contributed approximately 0.02% of the total reduced sulfur compounds in the gas from the Flare Inlet. Similarly, in July 2014, hydrogen sulfide contributed approximately 0.001% of the total reduced sulfur compounds in flare gas.

Carboxylic acids

Like the VOCs, aldehydes and reduced sulfur compounds, the occurrence and concentrations of individual carboxylic acid compounds is variable between years and sampling locations.

Total Carboxylic Acids Detected in Source Gas (µg/m³)	
Location	**Total Carboxylic Acids**
2012	
Amphitheater	184,780
Second Tier	ND
East Face	79,000
2013	
Amphitheater	778,470

Second Tier	1,212,770
East Face	442,900
2014	
North Quarry	ND
Neck	ND
South Quarry	389,250
Flare Inlet	1,888,600
2015	
North Quarry	170
Neck	ND
South Quarry	65,710
Flare Inlet	1,763,000

- Total concentrations of carboxylic acids increased in all three source gas areas from 2012 to 2013. In 2014, no carboxylic acid compounds were detected in source gas from the Neck or North Quarry.

- The concentrations of carboxylic acids in source gas from the South Quarry in 2014 were similar to the total concentrations detected in source gas from the East Face in 2013, but have decreased by a factor of 5 between 2014 and 2015.

- The sample from the Flare Inlet represents the carboxylic acid compounds entering the Flare from all parts of the gas collection system and has remained stable from 2014 to 2015.

PAHs

Total PAH concentrations detected in source gas and naphthalene concentrations in parentheses are shown in the table below.

Total PAHs Detected in Source Gas (µg/m³)	
Location	**Total PAHs (naphthalene)**
2012	
Amphitheater	43.3 (35)
Second Tier	8.8 (7.9)
East Face	13.7 (13)
2013	
Amphitheater	268 (220)
Second Tier	30.3 (30)
East Face	126.7 (120)
2014	
North Quarry	ND
Neck	5.2 (5.1)
South Quarry	301(300)
Flare Inlet	Not Sampled

2015	
North Quarry	0.19 (0.19)
Neck	18 (18)
South Quarry	230 (230)
Flare Inlet	Not Sampled

- Similar low concentrations of total PAHs were detected in all three source gas locations in 2012.

- Total PAH concentrations in source gas from the Amphitheater increased from 2012 to 2013.

- Concentrations of total PAHs in source gas from the Second Tier/Neck increased slightly from 2012 to 2013 and then decreased in 2014 and remained relatively stable in 2015 compared to 2014.

- For all source gas samples, naphthalene was the major contributor to the total concentration of PAHs detected. Naphthalene was the only PAH detected in source gas in 2015.

- ***Benzo[a]pyrene and related carcinogenic PAHs associated with incomplete combustion of organic matter were not detected in any sample of source gas in 2012, 2013, 2014 and 2015.***

Dioxins/Dibenzofurans

- 2,3,7,8-TCDD TEQ concentrations in source gas were within approximately the same order of magnitude for all three source gas areas for the same sampling event.

- In 2015, dioxin/dibenzofuran isomers were not detected above the concentration detected in the field blank (see section 3.3.2 and 5.3.3 for detailed discussion).

6.3 ODOR THRESHOLDS AND THE RELATIONSHIP BETWEEN ODOR AND EXPOSURE TO CONSTITUENTS OF CONCERN

Table 11 presents the lowest published odor threshold for constituents found in source gas and ambient air along with the range of laboratory Minimum Reporting Limits (MRL) for samples collected in 2014. The odor threshold concentrations were obtained from US EPA (1992), Ruth (1986), and AIHA (1997). The characterization of the odor for each individual compound is the description used in the source reference for the odor concentration. The range of concentrations at which people can begin to recognize the distinctive odor of a chemical are frequently associated with occupational environments. For the majority of chemicals, most people can recognize a characteristic odor at concentrations well below concentrations that

are of concern for health. The odor descriptions for the individual compounds are not intended to describe the odor associated with Bridgeton Landfill.

The reduced sulfur compounds as a group have odors that are commonly described as "rotten eggs", "decayed cabbage", "sulfide-like", and "disagreeable". Mercaptans can be perceived at such low concentrations that they are added to natural gas as odorants to warn of gas-leaks. Dimethyl sulfide and dimethyl disulfide were the two sulfur compounds consistently detected at the highest concentrations in the source gas samples from 2012, 2013, 2014 and 2015. Because the odor thresholds for many of the reduced sulfur compounds are below laboratory MRLs, it is reasonable to assume that some of these compounds may be present in ambient air and contribute to odors.

The carboxylic acids as a group have odors that are commonly described as "sour", "perspiration", "body odor", and "cheesy". Because the odor thresholds for many of the carboxylic acid compounds are below laboratory MRLs, it is reasonable to assume that some of these compounds may be present in ambient air and contribute to odors.

The concentrations of the individual VOCs found in ambient air samples from locations on the landfill and downwind at the fence line are lower than the range of corresponding odor thresholds. However, the aggregate of VOCs present in the downwind locations may contribute to the perception of odor.

It should also be noted that a number of the TICs reported by Method TO-15 were present at high concentrations in the source gas from the South Quarry (and the gas from the Flare Inlet) in January 2015. Of particular interest from an odor perspective are compounds related to butanoic acid (e.g. 2-butanol and methylbutyrate). Butanoic acid has the odor of human vomit.

The very low concentrations of naphthalene, related coal-tar pitch volatile PAHs, and dioxins/dibenzofurans found in the ambient air samples are not contributors to the odor. The low concentrations of aldehydes are consistent with background and are not related to the odor.

Odors from the landfill are not continuously present and are not present at the same intensity at any given location in the surrounding community. Although odors have been most frequently observed along the east, southeast corner and south border of the landfill, the odors are not continuous. A review of the MDNR daily odor monitoring reports supports this conclusion.

The presence of an odor is not synonymous with exposure to constituents associated with the reaction gas at concentrations of toxicological concern for public health. As discussed in the immediately preceding section, the groups of compounds that are the major contributors to the odor are the carboxylic acid and reduced sulfur compounds. These compounds have very low odor thresholds, but are also of a very low order of toxicity.

7.0 SUMMARY AND CONCLUSIONS

The comprehensive sampling characterizes chemical constituents of concern present in the landfill source gas and ambient air that may contribute to the odors and/or are of potential concern for public health. The evidence shows that members of the surrounding community are not directly exposed to landfill source gas, but could potentially be exposed to constituents in the source gas if released to the ambient air and move off of the landfill boundaries.

The following conclusions are based on the findings of the four comprehensive sampling events conducted in August 2012, April/May 2013, July 2014 and January 2015.

- Low concentrations of aldehydes, PAHs and dioxins/dibenzofurans were detected in ambient air. The following evidence indicates that the landfill is not the source of these compounds.
    - Concentrations of aldehydes, PAHs and dioxins/dibenzofurans in ambient air on the landfill and at downwind locations were similar to the concentrations in upwind ambient air for all samples collected in 2012, 2013, 2014 and 2015.
    - The concentrations of aldehydes detected in ambient air are within the background range for urban areas, including St. Louis.
    - Benzo[a]pyrene and related carcinogenic PAHs (cPAHs) associated with incomplete combustion of organic matter have not been detected in any sample of source gas or ambient air collected in 2012, 2013, 2014 and 2015.
    - The concentrations of dioxins/dibenzofurans in landfill source gas were similar to ambient background in 2012, 2013, 2014 and 2015.
    - The concentrations of dioxins/dibenzofurans detected in ambient air are within the background range for urban areas and are not a concern for public health.
- The landfill is not a source of ammonia or hydrogen cyanide.
    - Ammonia was detected in ambient air at the Flare Station in 2014, but not in any other sample of ambient air. Ammonia has not been detected in any landfill source gas sample from 2012, 2013, 2014 and 2015.
    - Hydrogen cyanide has not been detected in any sample of ambient air or in any landfill source gas sample from 2012, 2013, 2014 and 2015.
- Mercury has not been detected in any sample of ambient air. Mercury was detected in source gas from the Flare Inlet in 2014 and 2015, but has not been detected in any other landfill source gas sample from 2012, 2013, 2014 and 2015.

- Concentrations of benzene detected in ambient air from locations on the landfill and downwind locations have decreased significantly in 2014 and 2015 as compared to 2012 and 2013.
    - Downwind benzene concentrations have decreased dramatically from 2012 and 2013 (max – 25 µg/m^3) to 2014 and 2015; where the benzene concentrations ranged from 0.35 – 2.3 µg/m^3 in downwind ambient samples. These results are generally equal to industrial RSLs and consistent with the annual average benzene concentration (1.5 µg/m^3) reported by the St. Louis Community Air Project (US EPA 2005).
- Benzene concentrations were below occupational exposure standards in all samples of ambient air from locations on the landfill and downwind in 2012, 2013, 2014 and 2015.
    - The highest benzene concentration detected in any 4-hour (2012 and 2013) or 8-hour (2014 and 2014) ambient air sample from locations on the landfill or downwind locations was 27 µg/m^3 at the Amphitheater on April 16, 2013. All other detected concentrations were lower. This concentration was orders of magnitude lower than the OSHA PEL (32,000 µg/m^3) and the ACGIH TLV (32,000 µg/m^3).
- Benzene concentrations were comparable to the conservative US EPA risk-based Regional Screening Level (RSL) for industrial workers (1.6 µg/m^3; or 0.0005 parts per million) in all 8-hour samples of ambient air from locations on the landfill and downwind fence-line locations in 2014 and 2015. The RSL was derived to correspond to a cancer risk of 1 in 1 million (1E-06) for long-term exposure to an industrial worker (8 hours per day for 250 days per year for 25 years).
    - In 2012 and 2013, concentrations of benzene exceeding the risk-based industrial RSL, but 100 to 1,000 times lower than the OSHA PEL and ACGIH TLV were detected in ambient air from locations on the landfill and downwind locations.
- Higher concentrations of benzene and other VOCs may be present for brief periods (minutes) in locations where intrusive activities into the landfill cause the release of source gas and strong odors.
    - For example, benzene was detected at 370 µg/m^3 in an "instantaneous grab sample" collected on July 29, 2014 during a period of intense odor. The sample was collected within 500 feet downwind of an open excavation on the east face of the landfill.
    - The concentration of benzene detected in the grab sample was lower than the OSHA PEL and the ACGIH TLV for 8-hour workplace exposures.

- The concentrations of benzene detected in 8-hour samples in the same general location downwind of the open excavation on July 29 and July 30, 2014 were 1.7 µg/m^3 in the Southeast Corner; and 1.6 µg/m^3 on the East Fence, respectively.

- The results of these particular samples support the conclusion that even in a location close to the source where intermittent intense odors were present, the time weighted exposure to benzene over 8-hours was comparable to the conservative risk-based RSL for long-term exposures.

- The concentrations of constituents of concern detected in source gas from the Neck in July 2014 and January 2015 were significantly less than detected in samples from this general area, previously referred to as the Second Tier in 2012 and 2013.

  - The concentrations and specific groups of constituents of concern in source gas from the Neck resemble source gas from the North Quarry where the subsurface reaction is not occurring.

- Comparing source gas results from 2012/2013 to results from 2014/2015, there is a decreasing trend in the concentrations of VOCs, aldehydes, reduced sulfur compounds and carboxylic acids detected in source gas from source gas sampling locations on the landfill.

- Benzo[a]pyrene and related carcinogenic PAHs associated with incomplete combustion of organic matter were not detected in any sample of source gas in 2012, 2013, 2014 and 2015.

- Based on the constituents of concern detected in source gas from the South Quarry and the gas entering the Flare in 2014 and 2015, the major groups of compounds contributing to the occasional odors are VOCs, reduced sulfur compounds (e.g. dimethyl sulfide and mercaptans), and carboxylic acids (e.g. butanoic and hexanoic acids).

- The constituents of concern contributing to occasional odors in the community are of low order of toxicity and do not pose a health threat to members of the community.

Recommendations

The findings from the four comprehensive sampling events conducted in August 2012, April/May 2013, July 2014 and January 2015 support the following recommendations.

The remaining sampling event mandated by the Second Amended Order (June 19, 2014) should focus on the following constituents of concern present in the landfill source gas that are likely to be associated with the odor and are of greatest potential concern for public health:

- VOCs and TICs (particularly benzene)

- Reduced sulfur compounds, and
- Carboxylic acids

Continued sampling for those constituents of concern that have never been detected in landfill source gas and/or those constituents that are frequently detected in ambient air as a result of local and regional sources will not provide useful information about potential exposures to the surrounding community that can be attributed (at least in part) to releases of reaction gas from the landfill. Sampling for the following constituents should be discontinued:

- Fixed Gases
- Ammonia
- Mercury and Compounds
- Hydrogen Cyanide
- Aldehydes
- Amines
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans (Dioxins/Dibenzofurans)

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TABLES

Table 1. Comprehensive Sampling Event #4 - Bridgeton Landfill
Summary of Sampling Activities
January 27 through January 29, 2015

Date	Sample Locations									
	Onsite				Perimeter					
	Flare	South Quarry	Neck	North Quarry	Upwind		Downwind			
Aldehydes/Carbonyl Compounds – Method: EPA TO-11a (Lab Report - P1500371) - Trip Blank - 127TB-ALD										
1/27/2015 Sample IDs	127F-Ald	127SQ-Ald	--	--	127U1-Ald (127-Dup01)	--	127D1-Ald	127D2-Ald	--	--
1/28/2015 Sample IDs	**128F-sAld**	**128SQ-sAld**	128N-Ald / **128N-sAld**	128NQ-Ald / **128NQ-sAld**	128U1-Ald	--	128D1-Ald	128D2-Ald	--	--
Hydrogen Cyanide – Method: NIOSH 6010 (Lab Report - P1500475) - Trip Blank - 127TB-HCN										
1/27/2015 Sample IDs	127F-HCN	127SQ-HCN	--	--	127U1-HCN	--	127D1-HCN (127-Dup02)	--	--	--
1/28/2015 Sample IDs	**128F-sHCN (128Dup04)**	**128SQ-sHCN**	128N-HCN / **128N-sHCN**	128NQ-HCN / **128NQ-sHCN**	--	--	--	--	--	--
Amine Compounds – AQL 101 (Lab Report - P1500371) - Trip Blank - 127TB-Amine										
1/27/2015 Sample IDs	127F-AMINE	127SQ-AMINE	--	--	127U1-AMINE	--	127D1-AMINE	127D2-AMINE	--	--
1/28/2015 Sample IDs	**128F-sAMINE**	**128SQ-sAMINE**	128N-Aminef(128Dup05) / **128N-sAmine**	128NQ-Amine / **128NQ-sAmine**	128U1-Amine	--	128D1-Amine	128D2-Amine	--	--
Mercury – Method: NIOSH 6009 (Lab Report - P1500475) - Trip Blank - 127TB-Hg										
1/27/2015 Sample IDs	127F-HG	127SQ-HG	--	--	127U1-HG	--	127D1-HG	--	--	--
1/28/2015 Sample IDs	**128F-sHG**	**128SQ-sHG**	128N-Hg / **128N-sHg**	128NQ-Hg / **128NQ-sHg**	--	--	--	--	--	--
Ammonia – Method: *OSHA ID 188* (Lab Report - P1500371) - Trip Blank - 127TB-NH3										
1/27/2015 Sample IDs	127F-NH32	127SQ-NH32	--	--	127U12-NH3	--	127D12-NH3	127D2-NH3	--	--
1/28/2015 Sample IDs	**128F-sNH3**	**128SQ-sNH3**	128N-NH3 / **128N-sNH3**	128NQ-NH3(128Dup06)/**128NQ-sNH3**	128U1-NH3	--	128D1-NH3	128D2-NH3	--	--
Carboxylic Acid Compounds – Method: CAS AQL 102 (Lab Report - P1500371) - Trip Blank - 127TB-Carbox										
1/27/2015 Sample IDs	127F-CARBOX	127SQ-CARBOX2 (127Dup032)	--	--	127U1-CARBOX	--	127D12-CARBOX	127D22-CARBOX	--	--
1/28/2015 Sample IDs	**128F-sCARBOX**	**128SQ-sCARBOX**	128N-Carbox / **128N-sCarbox**	128NQ-Carbox / **128NQ-sCarbox**	128U1-Carbox	--	128D1-Carbox	128D2-Carbox	--	--
Volatile Organic Compounds (VOCs) – Method: EPA TO15 + TICs – Standard Analyte List (Lab Report - P1500365) - Trip Blank - 127-Summa-B										
1/27/2015 Sample IDs	127F-SUMMA	127SQ-SUMMA	--	--	127U1-SUMMA	--	127D1-SUMMA(127Dup10-Summa)	127D2-SUMMA	--	--
1/28/2015 Sample IDs	**128Fs-Grab**	**128SQs-Grab**	128N-Summa / **128Ns-Grab**	128NQ-Summa / **128NQs-Grab**	128U1-Summa (128Dup11-Summa)	--	128D1-Summa	--	128Grab	--
1/29/2015 Sample IDs	--	--	--	--	--	129Grab3U	--	--	--	129Grab2D
Volatile Organic Compounds (VOCs) –Method: EPA TO15 + TICs - Tentatively Identified Compounds [14] (Lab Report - P1500365) - Trip Blank - 127-Summa-B										
1/27/2015 Sample IDs	127F-SUMMA	127SQ-SUMMA	--	--	127U1-SUMMA	--	127D1-SUMMA(127Dup10-Summa)	127D2-SUMMA	--	--
1/28/2015 Sample IDs	**128Fs-Grab**	**128SQs-Grab**	128N-Summa / **128Ns-Grab**	128NQ-Summa / **128NQs-Grab**	128U1-Summa (128Dup11-Summa)	--	128D1-Summa	--	128Grab	--
1/29/2015 Sample IDs	--	--	--	--	--	129Grab3U	--	--	--	129Grab2D
Reduced Sulfur Compound – ASTM D5504 (Lab Report - P1500365) - Trip Blank - 127-Summa-B										
1/27/2015 Sample IDs	127F-SUMMA	127SQ-SUMMA	--	--	127U1-SUMMA	--	127D1-SUMMA(127Dup10-Summa)	127D2-SUMMA	--	--
1/28/2015 Sample IDs	**128Fs-Grab**	**128SQs-Grab**	128N-Summa / **128Ns-Grab**	128NQ-Summa / **128NQs-Grab**	128U1-Summa (128Dup11-Summa)	--	128D1-Summa	--	128Grab	--
1/29/2015 Sample IDs	--	--	--	--	--	129Grab3U	--	--	--	129Grab2D
Fixed Gases – EPA Method 3Cm [16] (Lab Report - P1500365) - Trip Blank - 127-Summa-B										
1/27/2015 Sample IDs	127F-SUMMA	127SQ-SUMMA	--	--	127U1-SUMMA	--	127D1-SUMMA(127Dup10-Summa)	--	--	--
1/28/2015 Sample IDs	**128Fs-Grab**	**128SQs-Grab**	128N-Summa / **128Ns-Grab**	128NQ-Summa / **128NQs-Grab**	128U1-Summa (128Dup11-Summa)	--	128D1-Summa	--	--	--
1/29/2015 Sample IDs	--	--	--	--	--	129Grab3U	--	--	--	--
Polynuclear Aromatic Hydrocarbons (PAHs) – EPA Method TO-13A (Lab Report - P1500355) - Trip Blank - 129Blank-PAH										
1/27/2015 Sample IDs	128F-PAH	--	--	--	128U1-PAH	--	128D1-PAH	--	--	--
1/29/2015 Sample IDs	--	**128sSQ-PAH**	**128sN-PAH**	**128sNQ-PAH**	--	--	--	--	--	--
Polychlorinated Dibenzo-p-Dioxins, Dibenzofurans – EPA Method TO-9A (Lab Report - P1500356) - Trip Blank - 129Blank-DF										
1/27/2015 Sample IDs	128F-DF	--	--	--	128U1-DF	--	128D1-DF	--	--	--
1/29/2015 Sample IDs	--	**129sSQ-DF**	**129sN-DF**	**129sNQ-DF**	--	--	--	--	--	--

NOTES:
Sample IDs in Bold Red Font denote a source gas sample
The following ammonia samples were collected on January 28, 2015 due to pump failures on January 27, 2015: Flare (ID 127F-NH32), South Quarry (ID 127SQ-NH32), Corner East Fence and Retention Pond (ID 127U12-NH3) and Grassy Knoll obove Pipe Staging Area (ID 127D12-NH3)
The following carboxylic acid samples were collected on January 28, 2015 due to pump failures on January 27, 2015: South Quarry (ID 127SQ-Carbox2, 127Dup032), Grassy Knoll above Pipe Staging Area (ID 127D12-Carbox) and West of Pipe Staging Area (ID 127D22-Carbox)
Trip blanks were analyzed for each laboratory analytical procedure.
"Dup" in Sample ID denotes a duplicate sample

Table 2: Comprehensive Sampling Event #4 –Bridgeton Landfill
Ambient Air Sampling Summary - January 27, 2015
Concentration in Ambient Air – All Units µg/m^3

Analyte	Screening Levels				Sample Locations				
					Onsite		Perimeter		
					Landfill		Upwind	Downwind	
	USEPA Industrial RSL [1]	USEPA Residential RSL [2]	OSHA PEL [3]	ACGIH TLV [4]	Flare Station	South Quarry	Grassy Knoll Lower Level	Corner of East Fence & Retention Pond	East Fence
Aldehydes/Carbonyl Compounds – Method: EPA TO-11a (Lab Report - P1500371)									
				Sample ID	**127F-Ald**	**127SQ-Ald**	**127U1-Ald (127-Dup01)**	**127D1-Ald**	**127D2-Ald**
2,5-Dimethylbenzaldehyde	*NA* [5]	*NA*	*NA*	*NA*	<0.33 [6]	<0.33	<0.28 (<0.29)	<0.33	<0.33
Acetaldehyde	5.6	1.3	360,000	*45,000*	**2.3** [7]	**1.8**	**0.92 (1.2)**	**1.8** [8]	**1.8**
Benzaldehyde	*NA*	*NA*	*NA*	*NA*	<0.33	<0.33	<0.28 (<0.29)	<0.33	<0.33
Butyraldehyde	*NA*	*NA*	*NA*	*NA*	<0.33	<0.33	<0.28 (<0.29)	<0.33	<0.33
Crotonaldehyde, Total	*NA*	*NA*	100	100	<0.33	<0.33	<0.28 (<0.29)	<0.33	<0.33
Formaldehyde	0.94	0.22	1,000	400	**1.2** [9]	**1.1**	**0.93 (0.92)**	**1.8**	**1.1**
Isovaleraldehyde	*NA*	*NA*	*NA*	*NA*	<0.33	<0.33	<0.28 (<0.29)	<0.33	<0.33
m,p-Tolualdehyde	*NA*	*NA*	*NA*	*NA*	<0.65	<0.65	<0.57 (<0.58)	<0.65	<0.65
n-Hexaldehyde	*NA*	*NA*	*NA*	*NA*	**0.68**	**0.45**	**0.56 (0.46)**	**0.44**	<0.33
o-Tolualdehyde	*NA*	*NA*	*NA*	*NA*	<0.33	<0.33	<0.28 (<0.29)	<0.33	<0.33
Propionaldehyde	35	8.3	*NA*	*NA*	<0.33	<0.33	<0.28 (<0.29)	<0.33	<0.33
Valeraldehyde	*NA*	*NA*	*NA*	*NA*	<0.33	<0.33	<0.28 (<0.29)	<0.33	<0.33
Hydrogen Cyanide – Method: NIOSH 6010 (Lab Report - P1500371)									
				Sample ID	**127F-CN**	**127SQ-CN**	**127U1-CN**	**127D1-CN**	**--**
Hydrogen Cyanide	3.5	0.83	11,000	5,000	<15	<15	<13	<14	NS [10]
Amine Compounds – AQL 101 (Lab Report - P1500371)									
				Sample ID	**127F-AMINE**	**127SQ-AMINE**	**127U1-AMINE**	**127D1-AMINE**	**127D2-AMINE**
Diethylamine	*NA*	*NA*	75,000	15,000	<69	<72	<61	<71	<70
Diisopropylamine	*NA*	*NA*	20,000	20,000	<69	<72	<62	<71	<70
Dimethylamine	*NA*	*NA*	18,000	10,000	<69	<72	<62	<72	<70
Dipropylamine	*NA*	*NA*	NA	NA	<69	<73	<62	<72	<71
Ethylamine	*NA*	*NA*	18,000	10,000	<73	<76	<65	<76	<74
Isobutylamine	*NA*	*NA*	NA	NA	<71	<74	<64	<74	<73
Isopropylamine	*NA*	*NA*	12,000	12,000	<70	<73	<62	<72	<71
n-Butylamine	*NA*	*NA*	15,000	15,000	<74	<77	<66	<77	<75
n-Propylamine	*NA*	*NA*	NA	NA	<72	<75	<64	<75	<73
sec-Butylamine	*NA*	*NA*	NA	NA	<70	<73	<63	<72	<71
tert-Butylamine	*NA*	*NA*	NA	NA	<69	<72	<62	<72	<71
Triethylamine	31	7.3	100,000	4,000	<69	<72	<62	<71	<70
Trimethylamine	*NA*	*NA*	NA	NA	<66	<69	<59	<69	<68
Mercury – Method: NIOSH 6009 (Lab Report - P1500371)									
				Sample ID	**127F-HG**	**127SQ-HG**	**127U1-HG**	**127D1-HG (127Dup02)**	**--**
Mercury	1.3	0.31	100	25	<0.24	<0.24	<0.22	<0.25 (<0.25)	NS
Ammonia – Method: *OSHA ID 188* (Lab Report - P1500371) [11]									
				Sample ID	**127F-NH32**	**127SQ-NH32**	**127U12-NH3**	**127D12-NH3**	**127D2-NH3**
Ammonia	440	100	35,000	17,500	<110	<110	<110	<110	<85
Carboxylic Acid Compounds – Method: CAS AQL 102 (Lab Report - P1500371) [12]									
				Sample ID	**127F-CARBOX**	**127SQ-CARBOX2 (127Dup032)**	**127U1-CARBOX**	**127D12-CARBOX**	**127D22-CARBOX**
2-Ethylhexanoic Acid	*NA*	*NA*	*NA*	*NA*	<2.8	<2.8 (<3.0)	<2.7	<2.8	<2.8
2-Methylbutanoic Acid	*NA*	*NA*	*NA*	*NA*	<2.5	<2.6 (<2.7)	<2.5	<2.5	<2.6
2-Methylpentanoic Acid	*NA*	*NA*	*NA*	*NA*	<2.5	<2.6 (<2.7)	<2.5	<2.5	<2.6
2-Methylpropanoic Acid (Isobutyric)	*NA*	*NA*	*NA*	*NA*	<2.5	<2.6 (<2.7)	<2.5	<2.6	<2.6
3-Methylbutanoic Acid (Isovaleric)	*NA*	*NA*	*NA*	*NA*	<2.5	<2.6 (<2.7)	<2.5	<2.5	<2.6
3-Methylpentanoic Acid	*NA*	*NA*	*NA*	*NA*	<2.5	<2.6 (<2.7)	<2.5	<2.6	<2.6
4-Methylpentanoic Acid (Isocaproic)	*NA*	*NA*	*NA*	*NA*	<2.5	<2.6 (<2.7)	<2.5	<2.6	<2.6
Acetic Acid	*NA*	*NA*	25,000	27,000	<20	<21 (<22)	<20	<21	<21
Benzoic Acid	*NA*	*NA*	*NA*	*NA*	<3.1	<3.1 (<3.3)	<3.0	<3.1	<3.1
Butanoic Acid (Butyric)	*NA*	*NA*	*NA*	*NA*	<2.6	**4.2 (4.0)**	<2.5	<2.6	<2.6
Cyclohexanecarboxylic Acid	*NA*	*NA*	*NA*	*NA*	<2.5	<2.6 (<2.7)	<2.5	<2.5	<2.6
Heptanoic Acid (Enanthoic)	*NA*	*NA*	*NA*	*NA*	<2.5	<2.6 (<2.7)	<2.5	<2.5	<2.6
Hexanoic Acid (Caproic)	*NA*	*NA*	*NA*	*NA*	<2.5	<2.6 (<2.7)	<2.5	<2.6	<2.6
Nonanoic Acid (Pelargonic)	*NA*	*NA*	*NA*	*NA*	<2.5	<2.6 (<2.7)	<2.5	<2.6	<2.6
Octanoic Acid (Caprylic)	*NA*	*NA*	*NA*	*NA*	<2.5	<2.6 (<2.7)	<2.5	<2.6	<2.6
Pentanoic Acid (Valeric)	*NA*	*NA*	*NA*	*NA*	<2.6	<2.6 (<2.7)	<2.5	<2.6	<2.6
Propionic Acid (Propanoic)	*NA*	*NA*	*NA*	*NA*	<2.7	**<2.7 (3.1)**	<2.6	<2.7	<2.7
Volatile Organic Compounds (VOCs) – Method: EPA TO15 + TICs – Standard Analyte List (Lab Report - P1500365)									
				Sample ID	**127F-SUMMA**	**127SQ-SUMMA**	**127U1-SUMMA**	**127D1-SUMMA(127Dup10-Summa)**	**127D2-SUMMA**
1,1,1-Trichloroethane	22,000	5,200	1.90E+06	630,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
1,1,2,2-Tetrachloroethane	0.21	0.048	35,000	7,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
1,1,2-Trichloroethane	0.77	0.18	45,000	45,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
1,1-Dichloroethane	7.7	1.8	400,000	400,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
1,1-Dichloroethene	880	210	NA [6]	NA	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
1,2,4-Trichlorobenzene	8.8	2.1	NA	NA	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
1,2,4-Trimethylbenzene	31	7.3	NA	NA	<1.1	<0.71	<0.94	**<0.73 (0.63J)** [13]	<0.69
1,2-Dibromo-3-chloropropane	0.002	0.00017	10	NA	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
1,2-Dibromoethane	0.02	0.0047	150,000	NA	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	NA	NA	7,0E+06	7,0E+06	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
1,2-Dichlorobenzene	880	210	300,000	150,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
1,2-Dichloroethane	0.47	0.11	200,000	40,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
1,2-Dichloropropane	1.2	0.28	350,000	47,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
1,3,5-Trimethylbenzene	NA	NA	NA	NA	<1.1	<0.71	<0.94	**<0.73 (0.53J)**	<0.69
1,3-Butadiene	0.41	0.094	2,000	4,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69

Table 2: Comprehensive Sampling Event #4 –Bridgeton Landfill
Ambient Air Sampling Summary - January 27, 2015
Concentration in Ambient Air – All Units µg/m^3

Analyte	Screening Levels				Sample Locations				
					Onsite		Perimeter		
					Landfill		Upwind	Downwind	
	USEPA Industrial RSL [1]	USEPA Residential RSL [2]	OSHA PEL [3]	ACGIH TLV [4]	Flare Station	South Quarry	Grassy Knoll Lower Level	Corner of East Fence & Retention Pond	East Fence
1,3-Dichlorobenzene	NA	NA	NA	NA	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
1,4-Dichlorobenzene	1.1	0.26	450,000	60,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
1,4-Dioxane	2.5	0.56	360,000	72,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
2-Butanone (MEK)	22,000	5,200	590,000	590,000	<11	**2.5J**	**0.42J**	**0.51J (0.38J)**	**0.43J**
2-Hexanone	130	31	410,000	20,500	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Isopropyl Alcohol	31,000	7,300	980,000	490,000	<11	**1.2J,B** [14]	**4.3J,B**	**0.79J,B(<0.78)**	<6.9
3-Chloro-1-propene	2	0.47	3,000	3,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
4-Ethyltoluene	NA	NA	NA	NA	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
4-Methyl-2-pentanone	13,000	3,100	410,000	80,000	<1.1 UJ [15]	<0.71 UJ	<0.94 UJ	<0.73UJ(<0.78 UJ)	<0.69 UJ
Acetone	140,000	32	2.4E+06	1.20E+06	**4.4J,B**	**6.7J,B**	**4.2J,B**	**4.7J,B (4.1J,B)**	**3.9J,B**
Acetonitrile	260	63	70,000	35,000	**9.1**	**0.8**	**240 D** [16]	**8.1 (<0.78 UJ)**	<0.69
Acrolein	0.088	0.021	250	250	<4.2	<2.8	<3.7	**0.29J (<0.78)**	<2.8
Acrylonitrile	0.18	0.041	4,000	4,000	<1.1	<0.71	<0.94	<0.73J (<0.78)	<0.69
alpha-Pinene	NA	NA	NA	NA	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Benzene	1.6	0.36	32,000	1,600	**0.60J,B**	**0.55J,B**	**0.38J,B**	**2.0 (2.3)**	**0.52J,B**
Benzyl Chloride	0.25	0.057	5,000	5,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Bromodichloromethane	0.33	0.076	NA	NA	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Bromoform	11	2.6	5,000	5,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Bromomethane	22	5.2	80,000c	4,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Carbon Disulfide	3,100	730	60,000	3,000	<11	<7.1	<9.4	<7.3 (<7.8)	<6.9
Carbon Tetrachloride	2	0.47	30,000	15,000	**0.49J**	**0.50J**	**0.49J**	**0.49J (0.47J)**	**0.49J**
Chlorobenzene	220	52	350,000	46,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Chloroethane	44,000	10,000	2.60E+06	260,000	<1.1	<0.71	<0.94	**<0.73 (0.48J)**	<0.69
Chloroform	0.53	0.12	240,000c	48,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Chloromethane	390	94	200,000	100,000	**0.54J**	**0.45J**	**0.50J**	**0.52J (<0.78)**	**0.50J**
cis-1,2-Dichloroethene	NA	NA	800,000	800,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
cis-1,3-Dichloropropene	NA	NA	NA	NA	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Cumene	1,800	420	245,000	245,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Cyclohexane	26,000	6,300	1.05E+06	350,000	<2.1	**0.75J**	<1.9	**<1.5 (1.1J)**	<1.4
Dibromochloromethane	0.45	0.1	NA	NA	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Dichlorodifluoromethane (CFC 12)	440	100	4.95E+06	4.95E+06	**2.1**	**2.3**	**2.3**	**2.1 (2.2)**	**2.3**
d-Limonene	NA	NA	NA	NA	<1.1	**0.20J**	<0.94	<0.73 (<0.78)	<0.69
Ethanol	NA	NA	1.90E+06	1.90E+06	**3.0J**	**9.1**	**1.9J**	**2.6J (2.1J)**	**1.7J**
Ethyl Acetate	310	73	1.40E+06	1.40E+06	**2.4**	**11**	**6.8**	**1.9 J (1.8)**	**2.3**
Ethylbenzene	4.9	1.1	435,000	87,000	<1.1	<0.71	<0.94	**<0.73 (0.40J)**	<0.69
Hexachlorobutadiene	0.56	0.13	NA	200	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
m,p-Xylenes	880	200	870,000	870,000	<2.1	<1.4	<1.9	**0.60J (3.5 J)**	<1.4
Methyl Methacrylate	3,100	730	410,000	205,000	<2.1	<1.4	<1.9	<1.5 (<1.6)	<1.4
Methyl tert-Butyl Ether	47	11	NA	NA	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Methylene Chloride	1,200	100	85,000	170,000	**0.59J**	**0.93**	**3.4**	**0.43J (0.44J)**	**0.41J**
Naphthalene	0.36	0.083	50,000	50,000	<1.1	<0.71	<0.94	**0.50J (<0.78 UJ)**	<0.69
n-Butyl Acetate	NA	NA	710,000	710,000	**0.71J**	<0.71	<0.94	<0.73 (<0.78)	<0.69
n-Heptane	NA	NA	2.00E+06	1.60E+06	**0.38J**	**0.25J**	<0.94	**<0.73 J (1.3 J)**	<0.69
n-Hexane	3,100	730	1.80E+06	180,000	**0.77J**	**0.9**	**0.50J**	**0.66J (1.6 J)**	**0.46J**
n-Nonane	880	210	NA	NA	<1.1	<0.71	<0.94	**<0.73 UJ (2.2 J)**	<0.69
n-Octane	NA	NA	2.35E+06	1.40E+06	<1.1	<0.71	<0.94	**<0.73 UJ (1.9 J)**	<0.69
n-Propylbenzene	4,400	1,000	NA	NA	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
o-Xylene	440	100	435,000	435,000	<1.1	<0.71	<0.94	**<0.73 (0.66J)**	<0.69
Propene	13,000	3,100	NA	NA	<1.1	**0.62J**	**2**	**1.7 (1.5)**	<0.69
Styrene	4,400	1,000	400,000	85,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Tetrachloroethene	47	11	680,000	170,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Tetrahydrofuran (THF)	8,800	2,100	590,000	147,500	<1.1	**0.36J**	<0.94	<0.73 (<0.78)	<0.69
Toluene	22,000	5,200	750,000	75,000	**0.97J**	**5.6**	**0.88J**	**1.8 J (3.3 J)**	**0.45J**
trans-1,2-Dichloroethene	NA	NA	800,000	800,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
trans-1,3-Dichloropropene	NA	NA	NA	NA	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Trichloroethene	3	0.48	500,000	50,000	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Trichlorofluoromethane	3,100	730	5.60E+06	5.60E+06	**1.3**	**1.3**	**1.3**	**1.3 (1.2)**	**1.3**
Trichlorotrifluoroethane	130,000	31,000	7.60E+06	7.60E+06	**0.51J**	**0.50J**	**0.47J**	**0.53J (0.49J)**	**0.55J**
Vinyl Acetate	880	210	NA	35,000	<11	<7.1	<9.4	<7.3 (<7.8)	<6.9
Vinyl Chloride	2.8	0.17	2,500	2,500	<1.1	<0.71	<0.94	<0.73 (<0.78)	<0.69
Volatile Organic Compounds (VOCs) –Method: EPA TO15 + TICs - Tentatively Identified Compounds [17] (Lab Report - P1500365)									
Propane	NA	NA	1.80E+06	NA	**9.8**	--[18]	--	--	**3.6**
Isobutane	NA	NA	NA	NA	--	**3.7**	--	--	--
n-Pentane	4,400	1,000	2.95E+06	2.95E+06	--	**4.6**	--	--	--
Methylcyclohexane	NA	NA	NA	NA	--	**--**	--	ND **(4.2)**	--
Hexamethylcyclotrisiloxane	NA	NA	NA	NA	--	**--**	--	ND **(4.3)**	--
n-Nonanal	NA	NA	NA	NA	--	**2.8**	--	**8.4**	--
Unidentified Siloxane	NA	NA	NA	NA	--	**3.2**	--	--	**5.3**
Unidentified Compound	NA	NA	NA	NA	--	--	--	--	**3**

Table 2: Comprehensive Sampling Event #4 –Bridgeton Landfill
Ambient Air Sampling Summary - January 27, 2015
Concentration in Ambient Air – All Units µg/m^3

Analyte	Screening Levels				Sample Locations				
					Onsite		Perimeter		
					Landfill		Upwind	Downwind	
	USEPA Industrial RSL [1]	USEPA Residential RSL [2]	OSHA PEL [3]	ACGIH TLV [4]	Flare Station	South Quarry	Grassy Knoll Lower Level	Corner of East Fence & Retention Pond	East Fence
Reduced Sulfur Compound – ASTM D5504 (Lab Report - P1500365)									
				Sample ID	**127F-SUMMA**	**127SQ-SUMMA**	**127U1-SUMMA**	**127D1-SUMMA(127Dup10-Summa)**	**127D2-SUMMA**
2,5-Dimethylthiophene	NA	NA	NA	NA	<48	<33	<43	<33 (<36)	<32
2-Ethylthiophene	NA	NA	NA	NA	<48	<33	<43	<33 (<36)	<32
3-Methylthiophene	NA	NA	NA	NA	<42	<28	<38	<29 (<31)	<28
Carbon Disulfide	3,100	730	60,000	3,000	<16	<11	<15	<11 (<12)	<11
Carbonyl Sulfide	NA	NA	NA	NA	<26	<17	<23	<18 (<19)	<17
Diethyl Disulfide	NA	NA	NA	NA	<26	<18	<23	<18 (<19)	<17
Diethyl Sulfide	NA	NA	NA	NA	<39	<26	<34	<27 (<29)	<25
Dimethyl Disulfide	NA	NA	NA	NA	<20	<14	<18	<14 (<15)	<13
Dimethyl Sulfide	NA	NA	NA	NA	<27	<18	<24	<19 (<20)	<18
Ethyl Mercaptan	NA	NA	25,000c	1,270	<27	<18	<24	<19 (<20)	<18
Ethyl Methyl Sulfide	NA	NA	NA	NA	<33	<22	<29	<23 (<24)	<21
Hydrogen Sulfide	8.8	2.1	28,000c	1,400	<15	<9.9	<13	<10 (<11)	<9.6
Isobutyl Mercaptan	NA	NA	NA	NA	<39	<26	<34	<27 (<29)	<25
Isopropyl Mercaptan	NA	NA	NA	NA	<33	<22	<29	<23 (<24)	<21
Methyl Mercaptan	NA	NA	20,000c	1,000	<21	<14	<18	<14 (<15)	<14
n-Butyl Mercaptan	NA	NA	35,000	1,750	<39	<26	<34	<27 (<29)	<25
n-Propyl Mercaptan	NA	NA	NA	NA	<33	<22	<29	<23 (<24)	<21
tert-Butyl Mercaptan	NA	NA	NA	NA	<39	<26	<34	<27 (<29)	<25
Tetrahydrothiophene	NA	NA	NA	NA	<38	<26	<34	<26 (<28)	<25
Thiophene	NA	NA	NA	NA	<36	<24	<32	<25 (<27)	<24
Fixed Gases – EPA Method 3Cm [19] (Lab Report - P1500365)									
				Sample ID	**127F-SUMMA**	**127SQ-SUMMA**	**127U1-SUMMA**	**127D1-SUMMA(127Dup10-Summa)**	**--**
Oxygen + Argon	NA	NA	NA	NA	**22.3**	**22.2**	**22.3**	**22.3 (22.3)**	NS
Nitrogen	NA	NA	NA	NA	**77.7**	**77.7**	**77.6**	**77.7 (77.7)**	NS
Carbon Monoxide	NA	NA	0.005	0.0025	<0.21	<0.14	<0.19	<0.15 (<0.16)	NS
Methane	NA	NA	NA	NA	<0.21	<0.14	<0.19	<0.15 (<0.16)	NS
Carbon Dioxide	NA	NA	0.5	0.5	<0.21	<0.14	<0.19	<0.15 (<0.16)	NS
Hydrogen	NA	NA	NA	NA	<0.21	<0.14	<0.19	<0.15 (<0.16)	NS
Polynuclear Aromatic Hydrocarbons (PAHs) – EPA Method TO-13A (Lab Report - P1500355)									
				Sample ID	**128F-PAH**	**--**	**128U1-PAH**	**128D1-PAH**	**--**
Acenaphthene	NA	NA	NA	NA	<0.0014	NS	<0.0014	<0.0014	NS
Acenaphthylene	NA	NA	NA	NA	<0.0014 L,UJ [20]	NS	<0.0014 L,UJ	<0.0014 L,UJ	NS
Anthracene	NA	NA	NA	NA	<0.0014	NS	<0.0014	<0.0014	NS
Benz(a)anthracene	0.11	0.0092	NA	Lowest [21]	<0.0014	NS	<0.0014	<0.0014	NS
Benzo(a)pyrene	0.011	0.00092	NA	Lowest	<0.0014	NS	<0.0014	<0.0014	NS
Benzo(b)fluoranthene	0.11	0.0092	NA	Lowest	<0.0014	NS	<0.0014	<0.0014	NS
Benzo(g,h,i)perylene	NA	NA	NA	NA	<0.0014	NS	<0.0014	<0.0014	NS
Benzo(k)fluoranthene	0.11	0.0092	NA	Lowest	<0.0014	NS	<0.0014	<0.0014	NS
Chrysene	1.1	0.092	NA	Lowest	<0.0014	NS	<0.0014	<0.0014	NS
Dibenz(a,h)anthracene	0.01	0.00084	NA	Lowest	<0.0014	NS	<0.0014	<0.0014	NS
Fluoranthene	NA	NA	NA	NA	<0.0014	NS	<0.0014	<0.0014	NS
Fluorene	NA	NA	NA	NA	<0.0014	NS	<0.0014	<0.0014	NS
Indeno(1,2,3-cd)pyrene	0.11	0.0092	NA	Lowest	<0.0014	NS	<0.0014	<0.0014	NS
Naphthalene	0.36	0.083	50,000	50,000	**0.049**	NS	**0.031**	**0.047**	NS
Phenanthrene	NA	NA	NA	NA	**0.0041**	NS	**0.0032**	**0.0036**	NS
Pyrene	NA	NA	NA	NA	<0.0014	NS	<0.0014	<0.0014	NS
Polychlorinated Dibenzo-p-Dioxins, Dibenzofurans – EPA Method TO-9A (Lab Report - P1500356)									
				Sample ID	**128F-DF**	**--**	**128U1-DF**	**128D1-DF**	**--**
2,3,7,8-TCDD	3.20E-07	7.40E-08	NA	NA	**5.88E-10**	NS	**5.05E-10**	**5.14E-10**	NS

1. United States Environmental Protection Agency Regional Screening Levels for Industrial Air. (USEPA: January 2015, TR=1E-06, HQ=1)
2. United States Environmental Protection Agency Regional Screening Levels for Residential Air. (USEPA: January 2015, TR=1E-06, HQ=1)
3. Occupational Safety & Health Administration (OSHA) Permissible Exposure Limit
4. American Conference of Governmental Industrial Hygienists- Threshold Limit Value
5. "NA" = Not Available
6. "<": Compound concentration not detected above Method Reporting Limit (MRL).
7. Bold indicates that compound was detected above laboratory detection limits
8. Shading for perimeter sampling locations indicates that the detected concentration exceeds the United States Environmental Protection Agency Regional Screening Level for ***Residential Air***.
9. Shading for onsite sampling locations indicates that the detected concentration exceeds the United States Environmental Protection Agency Regional Screening Level for ***Industrial Air***.
10. "NS" = Not Sampled
11. The following ammonia samples were collected on January 28, 2015 due to pump failures on January 27, 2015: Flare (ID 127F-NH32), South Quarry (ID 127SQ-NH32), Corner of Boenkers Field and Storm Water pond (ID 127U12-NH3) and Grassy Knoll above Pipe Staging Area (ID 127D12-NH3)
12. The following carboxylic acid samples were collected on January 28, 2015 due to pump failures on January 27, 2015: South Quarry (ID 127SQ-Carbox2, 127Dup032), Grassy Knoll above Pipe Staging Area (ID 127D12-Carbox) and West of Pipe Staging Area (ID 127D22-Carbox)
13. J = The result is an estimated concentration that is less than the MRL but greater than or equal to the Method Detection Limit (MDL).
14. B = Compound detected in Trip Blank or Laboratory Method Blank
15. UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
16. D=The reported result is from a dilution
17. Tentatively Identified Compounds – under Method: EPA TO15 + TICs. The reported concentrations for TICs are estimated.
18. "—" = The tentatively identified compound (TIC) was not detected in the sample
19. Units for fixed gases are volume analyte/volume of air %.
19. L=Laboratory control sample recovery outside the specified limits
20. Lowest = Exposures should be kept to the lowest possible level.

Note: Trip Blanks were analyzed for each analyte . No compounds were detected in any trip blank with the exception of: Octachlorodibenzo-p-dioxin (OCDD) was detected in trip blank for Dioxins/Furans (129Blank-DF), Isopropyl alcohol and benzene were detected in trip blank for VOC analysis - EPA TO-15 (127-Summa-B). Analytical results have been ammended with applicable data qualifiers.

Table 3: Comprehensive Sampling Event #4 –Bridgeton Landfill
Ambient Air Sampling Summary - January 28, 2015
Concentration in Ambient Air – All Units µg/m^3

Analyte	Screening Levels				Sample Locations					
					Perimeter				Onsite	
					Downwind			Upwind	Landfill	
	USEPA Industrial RSL [1]	USEPA Residential RSL [2]	OSHA PEL [3]	ACGIH TLV [4]	Grassy Knoll North of Pipe Staging Area	Grassy Knoll North of Asphalt Plant West of Pipe Staging Area	Grab South Quarry	Corner of East Fence & Retention Pond	Neck	North Quarry
Aldehydes/Carbonyl Compounds – Method: EPA TO-11a (Lab Report - P1500371)										
				Sample ID	**128D1-Ald**	**128D2-Ald**	**--**	**128U1-Ald**	**128N-Ald**	**128NQ-Ald**
2,5-Dimethylbenzaldehyde	NA[5]	NA	NA	NA	<0.34 [6]	<0.35	NS [7]	<0.33	<0.33	<0.33
Acetaldehyde	5.6	1.3	360,000	45,000	**1.2**	**1.3** [8]	NS	**1.1**	**1.1**	**1.5**
Benzaldehyde	NA	NA	NA	NA	<0.34	<0.35	NS	<0.33	<0.33	<0.33
Butyraldehyde	NA	NA	NA	NA	<0.34	<0.35	NS	<0.33	<0.33	<0.33
Crotonaldehyde, Total	NA	NA	100	100	<0.34	<0.35	NS	<0.33	<0.33	<0.33
Formaldehyde	0.94	0.22	1,000	400	**1.6**	**1.9**	NS	**1.1**	**1.3** [9]	**1.5**
Isovaleraldehyde	NA	NA	NA	NA	<0.34	<0.35	NS	<0.33	<0.33	<0.33
m,p-Tolualdehyde	NA	NA	NA	NA	<0.67	<0.70	NS	<0.66	<0.66	<0.66
n-Hexaldehyde	NA	NA	NA	NA	**0.48**	**0.68**	NS	**0.62**	**0.55**	**0.48**
o-Tolualdehyde	NA	NA	NA	NA	<0.34	<0.35	NS	<0.33	<0.33	<0.33
Propionaldehyde	35	8.3	NA	NA	<0.34	<0.35	NS	<0.33	<0.33	<0.33
Valeraldehyde	NA	NA	NA	NA	<0.34	<0.35	NS	<0.33	<0.33	<0.33
Hydrogen Cyanide – Method: NIOSH 6010 (Lab Report - P1500371)										
				Sample ID	**--**	**--**	**--**	**--**	**128N-HCN**	**128NQ-HCN**
Hydrogen Cyanide	3.5	0.83	11,000	5,000	NS	NS	NS	NS	<14	<14
Amine Compounds – AQL 101 (Lab Report - P1500371)										
				Sample ID	**128D1-Amine**	**128D2-Amine**	**--**	**128U1-Amine**	**128N-Amine**	**128NQ-Amine**
Diethylamine	NA	NA	75,000	15,000	<69	<68	NS	<68	<69	<65
Diisopropylamine	NA	NA	20,000	20,000	<69	<68	NS	<68	<69	<65
Dimethylamine	NA	NA	18,000	10,000	<69	<68	NS	<68	<69	<66
Dipropylamine	NA	NA	NA	NA	<69	<69	NS	<69	<70	<66
Ethylamine	NA	NA	18,000	10,000	<73	<72	NS	<72	<73	<69
Isobutylamine	NA	NA	NA	NA	<71	<71	NS	<71	<71	<68
Isopropylamine	NA	NA	12,000	12,000	<70	<69	NS	<69	<70	<66
n-Butylamine	NA	NA	15,000	15,000	<74	<73	NS	<73	<74	<70
n-Propylamine	NA	NA	NA	NA	<72	<71	NS	<71	<72	<68
sec-Butylamine	NA	NA	NA	NA	<70	<69	NS	<69	<70	<66
tert-Butylamine	NA	NA	NA	NA	<69	<69	NS	<69	<69	<66
Triethylamine	31	7.3	100,000	4,000	<69	<68	NS	<68	<69	<65
Trimethylamine	NA	NA	NA	NA	<66	<66	NS	<66	<67	<63
Mercury – Method: NIOSH 6009 (Lab Report - P1500371)										
				Sample ID	**--**	**--**	**--**	**--**	**128N-Hg**	**128NQ-Hg**
Mercury	1.3	0.31	100	25	NS	NS	NS	NS	<0.24	<0.24
Ammonia – Method: OSHA ID 188 (Lab Report - P1500371)										
				Sample ID	**128D1-NH3**	**128D2-NH3**	**--**	**128U1-NH3**	**128N-NH3**	**128NQ-NH3**
Ammonia	440	100	35,000	17,500	<100	<110	NS	<100	<100	<110
Carboxylic Acid Compounds – Method: CAS AQL 102 (Lab Report - P1500371)										
				Sample ID	**128D1-Carbox**	**128D2-Carbox**	**--**	**128U1-Carbox**	**128N-Carbox**	**128NQ-Carbox**
2-Ethylhexanoic Acid	NA	NA	NA	NA	<2.8	<2.8	NS	<2.8	<2.8	<2.8
2-Methylbutanoic Acid	NA	NA	NA	NA	<2.5	<2.6	NS	<2.6	<2.6	<2.5
2-Methylpentanoic Acid	NA	NA	NA	NA	<2.5	<2.6	NS	<2.6	<2.6	<2.5
2-Methylpropanoic Acid (Isobutyric)	NA	NA	NA	NA	<2.5	<2.6	NS	<2.6	<2.6	<2.6
3-Methylbutanoic Acid (Isovaleric)	NA	NA	NA	NA	<2.5	<2.5	NS	<2.6	<2.6	<2.5
3-Methylpentanoic Acid	NA	NA	NA	NA	<2.5	<2.6	NS	<2.6	<2.6	<2.5
4-Methylpentanoic Acid (Isocaproic)	NA	NA	NA	NA	<2.5	<2.6	NS	<2.6	<2.6	<2.5
Acetic Acid	NA	NA	25,000	27,000	<20	<21	NS	<21	<21	<20
Benzoic Acid	NA	NA	NA	NA	<3.1	<3.1	NS	<3.1	<3.1	<3.1
Butanoic Acid (Butyric)	NA	NA	NA	NA	<2.6	<2.6	NS	<2.6	<2.6	<2.6
Cyclohexanecarboxylic Acid	NA	NA	NA	NA	<2.5	<2.5	NS	<2.6	<2.6	<2.5
Heptanoic Acid (Enanthoic)	NA	NA	NA	NA	<2.5	<2.6	NS	<2.6	<2.6	<2.5
Hexanoic Acid (Caproic)	NA	NA	NA	NA	<2.5	<2.6	NS	<2.6	<2.6	<2.5
Nonanoic Acid (Pelargonic)	NA	NA	NA	NA	<2.5	<2.6	NS	<2.6	<2.6	<2.5
Octanoic Acid (Caprylic)	NA	NA	NA	NA	<2.5	<2.6	NS	<2.6	<2.6	<2.5
Pentanoic Acid (Valeric)	NA	NA	NA	NA	<2.5	<2.6	NS	<2.6	<2.6	<2.6
Propionic Acid (Propanoic)	NA	NA	NA	NA	<2.7	<2.7	NS	<2.7	<2.7	<2.7
Volatile Organic Compounds (VOCs) – Method: EPA TO15 Standard Analyte List (Lab Report - P1500365)										
				Sample ID	**128D1-Summa**	**--**	**128Grab**	**128U1-Summa (128Dup11-Summa)**	**128N-Summa**	**128NQ-Summa**
1,1,1-Trichloroethane	22,000	5,200	1.90E+06	630,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
1,1,2,2-Tetrachloroethane	0.21	0.048	35,000	7,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
1,1,2-Trichloroethane	0.77	0.18	45,000	45,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
1,1-Dichloroethane	7.7	1.8	400,000	400,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
1,1-Dichloroethene	880	210	NA6	NA	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
1,2,4-Trichlorobenzene	8.8	2.1	NA	NA	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
1,2,4-Trimethylbenzene	31	7.3	NA	NA	<0.66	NS	<1.7	**0.82(<0.67)**	**0.18J** [10]	**0.30J**
1,2-Dibromo-3-chloropropane	0.002	0.00017	10	NA	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
1,2-Dibromoethane	0.02	0.0047	150,000	NA	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	NA	NA	7.00E+06	7.00E+06	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
1,2-Dichlorobenzene	880	210	300,000	150,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
1,2-Dichloroethane	0.47	0.11	200,000	40,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
1,2-Dichloropropane	1.2	0.28	350,000	47,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64

Table 3: Comprehensive Sampling Event #4 –Bridgeton Landfill
Ambient Air Sampling Summary - January 28, 2015
Concentration in Ambient Air – All Units µg/m^3

Analyte	Screening Levels				Sample Locations					
					Perimeter				Onsite	
					Downwind			Upwind	Landfill	
	USEPA Industrial RSL [1]	USEPA Residential RSL [2]	OSHA PEL [3]	ACGIH TLV [4]	Grassy Knoll North of Pipe Staging Area	Grassy Knoll North of Asphalt Plant West of Pipe Staging Area	Grab South Quarry	Corner of East Fence & Retention Pond	Neck	North Quarry
1,3,5-Trimethylbenzene	NA	NA	NA	NA	<0.66	NS	<1.7	**0.73(<0.67)**	<0.60	<0.64
1,3-Butadiene	0.41	0.094	2,000	4,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
1,3-Dichlorobenzene	NA	NA	NA	NA	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
1,4-Dichlorobenzene	1.1	0.26	450,000	60,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
1,4-Dioxane	2.5	0.56	360,000	72,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
2-Butanone (MEK)	22,000	5,200	590,000	590,000	**0.84J**	NS	**2.7J**	**0.43J(0.41J)**	**1.2J**	**0.42J**
2-Hexanone	130	31	410,000	20,500	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
Isopropyl Alcohol	31,000	7,300	980,000	490,000	**0.73J,B** [11]	NS	**1.6J,B**	<6.1(<7.8)	**2.1J,B**	<6.4
3-Chloro-1-propene	2	0.47	3,000	3,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
4-Ethyltoluene	NA	NA	NA	NA	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
4-Methyl-2-pentanone	13,000	3,100	410,000	80,000	<0.66	NS	<1.7 UJ [12]	<0.61 UJ (<0.67)	<0.60	<0.64
Acetone	140,000	32,000	2.4E+06	1.20E+06	**6.6 J**	NS	**8.3 J, B**	**3.7J,B(3.5J,B)**	**8.7**	**4.1J**
Acetonitrile	260	63	70,000	35,000	<0.66	NS	<1.7	<0.61(<0.67)	**0.95**	<0.64
Acrolein	0.088	0.021	250	250	<2.6	NS	<6.9	<2.4(<3.1)	**0.30J**	<2.5
Acrylonitrile	0.18	0.041	4,000	4,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
alpha-Pinene	NA	NA	NA	NA	<0.66	NS	<1.7	<0.61(<0.67)	**0.42J**	<0.64
Benzene	1.6	0.36	32,000	1,600	**0.98 J,B**	NS	**2.4**	**1.9 J (0.65J,B)**	**1.8 J,B**	**0.8 J,B**
Benzyl Chloride	0.25	0.057	5,000	5,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
Bromodichloromethane	0.33	0.076	NA	NA	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
Bromoform	11	2.6	5,000	5,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
Bromomethane	22	5.2	80,000c	4,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
Carbon Disulfide	3,100	730	60,000	3,000	<6.6	NS	<17	<6.1(<7.8)	<6.0	<6.4
Carbon Tetrachloride	2	0.47	30,000	15,000	**0.51J**	NS	<1.7	**0.48J(0.51J)**	**0.51J**	**0.53J**
Chlorobenzene	220	52	350,000	46,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
Chloroethane	44,000	10,000	2.60E+06	260,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
Chloroform	0.53	0.12	240,000c	48,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
Chloromethane	390	94	200,000	100,000	**0.56J**	NS	**0.83J**	**0.49J(0.49J)**	**0.37J**	**0.50J**
cis-1,2-Dichloroethene	NA	NA	800,000	800,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
cis-1,3-Dichloropropene	NA	NA	NA	NA	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
Cumene	1,800	420	245,000	245,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
Cyclohexane	26,000	6,300	1.05E+06	350,000	<1.3	NS	<3.4	**3.4 J (<1.3 UJ)**	**0.70J**	**0.40J**
Dibromochloromethane	0.45	0.1	NA	NA	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
Dichlorodifluoromethane (CFC 12)	440	100	4.95E+06	4.95E+06	**2.3**	NS	**2.1**	**2.2(2.1)**	**2.3**	**2.3**
d-Limonene	NA	NA	NA	NA	<0.66	NS	<1.7	<0.61(<0.67)	**1.4**	<0.64
Ethanol	NA	NA	1.90E+06	1.90E+06	**7.8**	NS	**6.0J**	**1.9J(1.9J)**	**20**	**3.5J**
Ethyl Acetate	310	73	1.40E+06	1.40E+06	**1.3J**	NS	<3.4	**1.5(1.3J)**	**74**	**1.2J**
Ethylbenzene	4.9	1.1	435,000	87,000	**0.37J**	NS	<1.7	**0.52J(<0.67)**	**0.20J**	<0.64
Hexachlorobutadiene	0.56	0.13	NA	200	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
m,p-Xylenes	880	200	870,000	870,000	**1.2J**	NS	<3.4	**5.2 J (<1.3 UJ)**	**0.75J**	**1.1J**
Methyl Methacrylate	3,100	730	410,000	205,000	<1.3	NS	<3.4	1.9 J (<1.3 UJ)	<1.2	<1.3
Methyl tert-Butyl Ether	47	11	NA	NA	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
Methylene Chloride	1,200	100	85,000	170,000	**0.63J**	NS	<1.7	**0.35J(0.38J)**	**0.63**	**0.38J**
Naphthalene	0.36	0.083	50,000	50,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
n-Butyl Acetate	NA	NA	710,000	710,000	<0.66	NS	<1.7	<0.61(<0.67)	**0.32J**	<0.64
n-Heptane	NA	NA	2.00E+06	1.60E+06	**0.85**	NS	<1.7	**4.2 J (0.27)**	**0.64**	**0.48J**
n-Hexane	3,100	730	1.80E+06	180,000	**1.1**	NS	<1.7	**3.5 J (0.70 J)**	**2.5**	**0.94**
n-Nonane	880	210	NA	NA	**0.33J**	NS	<1.7	**3.1(<0.67 UJ)**	**0.27J**	**0.62J**
n-Octane	NA	NA	2.35E+06	1.40E+06	**0.29J**	NS	<1.7	**3.9 J (<0.67 UJ)**	**0.28J**	**0.43J**
n-Propylbenzene	4,400	1,000	NA	NA	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
o-Xylene	440	100	435,000	435,000	**0.33J**	NS	<1.7	**0.85 J (<0.67 UJ)**	**0.23J**	**0.27J**
Propene	13,000	3,100	NA	NA	**1**	NS	**0.48J**	<0.61(<0.67)	**1.3**	<0.64
Styrene	4,400	1,000	400,000	85,000	<0.66	NS	<1.7	0.77(<0.67)	<0.60	<0.64
Tetrachloroethene	47	11	680,000	170,000	<0.66	NS	<1.7	<0.61(<0.67)	**0.30J**	<0.64
Tetrahydrofuran (THF)	8,800	2,100	590,000	147,500	<0.66	NS	**0.84J**	<0.61(<0.67)	<0.60	<0.64
Toluene	22,000	5,200	750,000	75,000	**1.8**	NS	**0.71J**	**6.1 J (0.95 J)**	**5.9**	**1.3**
trans-1,2-Dichloroethene	NA	NA	800,000	800,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
trans-1,3-Dichloropropene	NA	NA	NA	NA	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
Trichloroethene	0.88	0.21	500,000	50,000	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
Trichlorofluoromethane	3,100	730	5.60E+06	5.60E+06	**1.3**	NS	**1.2J**	**1.3(1.3)**	**1.2**	**1.3**
Trichlorotrifluoroethane	130,000	31,000	7.60E+06	7.60E+06	**0.50J**	NS	<1.7	**0.53J(0.51J)**	**0.47J**	**0.53J**
Vinyl Acetate	880	210	NA	35,000	<6.6	NS	<17	<6.1(<6.7)	<6.0	<6.4
Vinyl Chloride	2.8	0.17	2,500	2,500	<0.66	NS	<1.7	<0.61(<0.67)	<0.60	<0.64
Volatile Organic Compounds (VOCs) – Method: EPA TO15 + TICs – Tentatively Identified Compounds [13] (Lab Report - P1500365)										
				Sample ID	**128D1-Summa**	**--**	**128Grab**	**128U1-Summa (128Dup11-Summa)**	**128N-Summa**	**128NQ-Summa**
1,1-Difluoroethane	180,000	4,200	NA	NA	-- [14]	NS	--	--	**21**	--
Chlorodifluoromethane	220,000	5,200	NA	350,000	--	NS	--	--	**8.5**	--
Propane	NA	NA	1.80E+06	NA	--	NS	--	**3.6/3.4**	**4.6**	**4.1**
Isobutane	NA	NA	NA	NA	**2.9**	NS	--	--	**4.1**	--
n-Butane	NA	NA	NA	NA	**4**	NS	--	**3.8/3.0**	**3.5**	**2.9**
n-Pentane	4,400	1,000	2.95E+06	2.95E+06	--	NS	--	**3.1**	**4.4**	--
2-Methylpentane	NA	NA	NA	NA	--	NS	--	**3.4**	--	--
Methylcyclopentane	NA	NA	NA	NA	--	NS	--	**3.6**	--	--
Methylcyclohexane	NA	NA	2.00E+06	1.60E+06	--	NS	--	**12**	--	--
Dimethylcyclohexane isomer	NA	NA	NA	NA	--	NS	--	**3.3**	--	--
Hexamethylcyclotrisiloxane	NA	NA	NA	NA	--	NS	--	**3.9**	--	--
n-Decane	NA	NA	NA	NA	--	NS	--	**2.7**	--	--
n-Nonanal	NA	NA	NA	NA	--	NS	--	--	**2.6**	--
2-Ethylhexylacetate	NA	NA	NA	NA	--	NS	--	--	**4.6**	--
Unidentified Siloxane	NA	NA	NA	NA	--	NS	--	**4.7**	**3.4**	--

Table 3: Comprehensive Sampling Event #4 –Bridgeton Landfill
Ambient Air Sampling Summary - January 28, 2015
Concentration in Ambient Air – All Units µg/m^3

Analyte	Screening Levels				Sample Locations					
					Perimeter				Onsite	
					Downwind			Upwind	Landfill	
	USEPA Industrial RSL [1]	USEPA Residential RSL [2]	OSHA PEL [3]	ACGIH TLV [4]	Grassy Knoll North of Pipe Staging Area	Grassy Knoll North of Asphalt Plant West of Pipe Staging Area	Grab South Quarry	Corner of East Fence & Retention Pond	Neck	North Quarry
Reduced Sulfur Compound – ASTM D5504 (Lab Report - P1500365)										
				Sample ID	128D1-Summa	--	128Grab	128U1-Summa (128Dup11-Summa)	128N-Summa	128NQ-Summa
2,5-Dimethylthiophene	NA	NA	NA	NA	<30	NS	<31	<28 (<31)	<27	<29
2-Ethylthiophene	NA	NA	NA	NA	<30	NS	<31	<28 (<31)	<27	<29
3-Methylthiophene	NA	NA	NA	NA	<26	NS	<27	<24 (<27)	<24	<25
Carbon Disulfide	3,100	730	60,000	3,000	<10	NS	<11	<9.5 (<10)	<9.3	<9.9
Carbonyl Sulfide	NA	NA	NA	NA	<16	NS	<17	<15 (<16)	<15	<16
Diethyl Disulfide	NA	NA	NA	NA	<16	NS	<17	<15 (<17)	<15	<16
Diethyl Sulfide	NA	NA	NA	NA	<24	NS	<25	<22 (<25)	<22	<23
Dimethyl Disulfide	NA	NA	NA	NA	<13	NS	<13	<12 (<13)	<11	<12
Dimethyl Sulfide	NA	NA	NA	NA	<17	NS	<17	<15 (<17)	<15	<16
Ethyl Mercaptan	NA	NA	25,000c	1,270	<17	NS	<17	<15 (<17)	<15	<16
Ethyl Methyl Sulfide	NA	NA	NA	NA	<21	NS	<21	<19 (<21)	<19	<20
Hydrogen Sulfide	8.8	2.1	28,000c	1,400	<9.2	NS	<9.5	<8.5 (<9.3)	<8.3	<8.8
Isobutyl Mercaptan	NA	NA	NA	NA	<24	NS	<25	<22 (<25)	<22	<23
Isopropyl Mercaptan	NA	NA	NA	NA	<21	NS	<21	<19 (<21)	<19	<20
Methyl Mercaptan	NA	NA	20,000c	1,000	<13	NS	<13	<12 (<13)	<12	<12
n-Butyl Mercaptan	NA	NA	35,000	1,750	<24	NS	<25	<22 (<25)	<22	<23
n-Propyl Mercaptan	NA	NA	NA	NA	<21	NS	<21	<19 (<21)	<19	<20
tert-Butyl Mercaptan	NA	NA	NA	NA	<24	NS	<25	<22 (<25)	<22	<23
Tetrahydrothiophene	NA	NA	NA	NA	<24	NS	<25	<22 (<24)	<21	<23
Thiophene	NA	NA	NA	NA	<23	NS	<24	<21 (<23)	<20	<22
Fixed Gases – EPA 3Cm [15] (Lab Report - P1500365)										
				Sample ID	128D1-Summa	--	128Grab	128U1-Summa (128Dup11-Summa)	128N-Summa	128NQ-Summa
Oxygen + Argon	NA	NA	NA	NA	**22.2**	NS	NS	**22.2/22.2**	**22.1**	**22.2**
Nitrogen	NA	NA	NA	NA	**77.7**	NS	NS	**77.8/77.8**	**77.8**	**77.8**
Carbon Monoxide	NA	NA	0.005	0.0025	<0.13	NS	NS	<0.12/<0.13	<0.12	<0.13
Methane	NA	NA	NA	NA	<0.13	NS	NS	<0.12/<0.13	<0.12	<0.13
Carbon Dioxide	NA	NA	0.5	0.5	<0.13	NS	NS	<0.12/<0.13	<0.12	<0.13
Hydrogen	NA	NA	NA	NA	<0.13	NS	NS	<0.12/<0.13	<0.12	<0.13

Note: Trip Blanks were analyzed for each analyte . No compounds were detected in any trip blank with the exception of: Octachlorodibenzo-p-dioxin (OCDD) was detected in trip blank for Dioxins/Furans (129Blank-DF), Isopropyl alcohol and benzene were detected in trip blank for VOC analysis - EPA TO-15 (127-Summa-B). Analytical results have been ammended with applicable data qualifiers.

1. United States Environmental Protection Agency Regional Screening Levels for Industrial Air. (USEPA: January 2015, TR=1E-06, HQ=1)
2. United States Environmental Protection Agency Regional Screening Levels for Residential Air. (USEPA: January 2015, TR=1E-06, HQ=1)
3. Occupational Safety & Health Administration (OSHA) Permissible Exposure Limit
4. American Conference of Governmental Industrial Hygienists- Threshold Limit Value
5. "NA" = Not Available
6. "<": Compound concentration not detected above Method Reporting Limit (MRL).
7. "NS" = Not Sampled
8. Shading for perimeter sampling locations indicates that the detected concentration exceeds the United States Environmental Protection Agency Regional Screening Level for Residential Air.
9. Shading for onsite sampling locations indicates that the detected concentration exceeds the United States Environmental Protection Agency Regional Screening Level for Industrial Air.
10. J = The result is an estimated concentration that is less than the MRL but great than or equal to the Method Detection Limit (MDL).
11. B = Compound detected in Trip Blank or Laboratory Method Blank
12. UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
13. Tentatively Identified Compounds – under Method: EPA TO15 + TICs. The reported concentrations for TICs are estimated.
14. "—" = Compound not detected
15. Units for fixed gases are volume analyte/volume of air %.

Table 4: Comprehensive Sampling Event #4 –Bridgeton Landfill
Ambient Air Sampling Summary - January 29, 2015
Concentration in Ambient Air – All Units µg/m^3

Analyte	Screening Levels				Sample Locations	
					Perimeter	
	USEPA Industrial RSL [1]	USEPA Residential RSL [2]	OSHA PEL [3]	ACGIH TLV [4]	Downwind Grab	Upwind Grab
					Across From MSD Lift Station	Grassy Knoll Upper Level
Volatile Organic Compounds (VOCs) – Method: EPA TO15 Standard Analyte List (Lab Report - P1500365)						
				Sample ID	129Grab2D	129Grab3U
1,1,1-Trichloroethane	22,000	5,200	1.90E+06	630,000	<1.8 [5]	<1.7
1,1,2,2-Tetrachloroethane	0.21	0.048	35,000	7,000	<1.8	<1.7
1,1,2-Trichloroethane	0.77	0.18	45,000	45,000	<1.8	<1.7
1,1-Dichloroethane	7.7	1.8	400,000	400,000	<1.8	<1.7
1,1-Dichloroethene	880	210	NA [6]	NA	<1.8	<1.7
1,2,4-Trichlorobenzene	8.8	2.1	NA	NA	<1.8	<1.7
1,2,4-Trimethylbenzene	31	7.3	NA	NA	<1.8	<1.7
1,2-Dibromo-3-chloropropane	0.002	0.00017	10	NA	<1.8	<1.7
1,2-Dibromoethane	0.02	0.0047	150,000	NA	<1.8	<1.7
1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	NA	NA	7.00E+06	7.00E+06	<1.8	<1.7
1,2-Dichlorobenzene	880	210	300,000	150,000	<1.8	<1.7
1,2-Dichloroethane	0.47	0.11	200,000	40,000	<1.8	<1.7
1,2-Dichloropropane	1.2	0.28	350,000	47,000	<1.8	<1.7
1,3,5-Trimethylbenzene	NA	NA	NA	NA	<1.8	<1.7
1,3-Butadiene	0.41	0.094	2,000	4,000	<1.8	<1.7
1,3-Dichlorobenzene	NA	NA	NA	NA	<1.8	<1.7
1,4-Dichlorobenzene	1.1	0.26	450,000	60,000	<1.8	<1.7
1,4-Dioxane	2.5	0.56	360,000	72,000	<1.8	<1.7
2-Butanone (MEK)	22,000	5,200	590,000	590,000	<18	<17
2-Hexanone	130	31	410,000	20,500	<1.8	<1.7
Isopropyl Alcohol	31,000	7,300	980,000	490,000	<18	<17
3-Chloro-1-propene	2	0.47	3,000	3,000	<1.8	<1.7
4-Ethyltoluene	NA	NA	NA	NA	<1.8	<1.7
4-Methyl-2-pentanone	13,000	3,100	410,000	80,000	<1.8 UJ [7]	<1.7 UJ
Acetone	140,000	32,000	2.4E+06	1.20E+06	**2.8 J,B** [8]	**4.1 J,B**
Acetonitrile	260	63	70,000	35,000	<1.8	<1.7
Acrolein	0.088	0.021	250	250	<7.0	<6.8
Acrylonitrile	0.18	0.041	4,000	4,000	<1.8	<1.7
alpha-Pinene	NA	NA	NA	NA	<1.8	<1.7
Benzene	1.6	0.36	32,000	1,600	**0.87J,B** [9]	<1.7
Benzyl Chloride	0.25	0.057	5,000	5,000	<1.8	<1.7
Bromodichloromethane	0.33	0.076	NA	NA	<1.8	<1.7
Bromoform	11	2.6	5,000	5,000	<1.8	<1.7
Bromomethane	22	5.2	80,000c	4,000	<1.8	<1.7
Carbon Disulfide	3,100	730	60,000	3,000	<18	**0.88J**
Carbon Tetrachloride	2	0.47	30,000	15,000	<1.8	<1.7
Chlorobenzene	220	52	350,000	46,000	<1.8	<1.7
Chloroethane	44,000	10,000	2.60E+06	260,000	<1.8	<1.7
Chloroform	0.53	0.12	240,000c	48,000	<1.8	<1.7
Chloromethane	390	94	200,000	100,000	**0.79J**	**0.76J**
cis-1,2-Dichloroethene	NA	NA	800,000	800,000	<1.8	<1.7
cis-1,3-Dichloropropene	NA	NA	NA	NA	<1.8	<1.7
Cumene	1,800	420	245,000	245,000	<1.8	<1.7
Cyclohexane	26,000	6,300	1.05E+06	350,000	<3.5	<3.4
Dibromochloromethane	0.45	0.1	NA	NA	<1.8	<1.7
Dichlorodifluoromethane (CFC 12)	440	100	4.95E+06	4.95E+06	**2.2**	**2.4**
d-Limonene	NA	NA	NA	NA	<1.8	<1.7
Ethanol	NA	NA	1.90E+06	1.90E+06	<18	<17
Ethyl Acetate	310	73	1.40E+06	1.40E+06	<3.5	<3.4
Ethylbenzene	4.9	1.1	435,000	87,000	<1.8	<1.7
Hexachlorobutadiene	0.56	0.13	NA	200	<1.8	<1.7
m,p-Xylenes	880	200	870,000	870,000	<3.5	<3.4
Methyl Methacrylate	3,100	730	410,000	205,000	<3.5	<3.4
Methyl tert-Butyl Ether	47	11	NA	NA	<1.8	<1.7
Methylene Chloride	1,200	100	85,000	170,000	<1.8	**0.85J**
Naphthalene	0.36	0.083	50,000	50,000	<1.8	<1.7
n-Butyl Acetate	NA	NA	710,000	710,000	<1.8	<1.7
n-Heptane	NA	NA	2.00E+06	1.60E+06	<1.8	<1.7
n-Hexane	3,100	730	1.80E+06	180,000	<1.8	<1.7
n-Nonane	880	210	NA	NA	<1.8	<1.7
n-Octane	NA	NA	2.35E+06	1.40E+06	<1.8	<1.7
n-Propylbenzene	4,400	1,000	NA	NA	<1.8	<1.7
o-Xylene	440	100	435,000	435,000	<1.8	<1.7
Propene	13,000	3,100	NA	NA	<1.8	<1.7
Styrene	4,400	1,000	400,000	85,000	<1.8	<1.7
Tetrachloroethene	47	11	680,000	170,000	<1.8	<1.7
Tetrahydrofuran (THF)	8,800	2,100	590,000	147,500	<1.8	<1.7
Toluene	22,000	5,200	750,000	75,000	<1.8	<1.7
trans-1,2-Dichloroethene	NA	NA	800,000	800,000	<1.8	<1.7
trans-1,3-Dichloropropene	NA	NA	NA	NA	<1.8	<1.7
Trichloroethene	0.88	0.21	500,000	50,000	<1.8	<1.7
Trichlorofluoromethane	3,100	730	5.60E+06	5.60E+06	**1.3J**	**1.3J**
Trichlorotrifluoroethane	130,000	31,000	7.60E+06	7.60E+06	<1.8	<1.7
Vinyl Acetate	880	210	NA	35,000	<18	<17
Vinyl Chloride	2.8	0.17	2,500	2,500	<1.8	<1.7
Volatile Organic Compounds (VOCs) – Method: EPA TO15 + TICs – Tentatively Identified Compounds11 (Lab Report - P1500365)						
				Sample ID	129Grab2D	129Grab3U
Sulfur Dioxide	NA	NA	NA	NA	-- [10]	>261 [10]
Hexamethylcyclotrisiloxane	NA	NA	NA	NA	--	16

Table 4: Comprehensive Sampling Event #4 –Bridgeton Landfill
Ambient Air Sampling Summary - January 29, 2015
Concentration in Ambient Air – All Units µg/m^3

Analyte	Screening Levels				Sample Locations	
					Perimeter	
	USEPA Industrial RSL [1]	USEPA Residential RSL [2]	OSHA PEL [3]	ACGIH TLV [4]	Downwind Grab	Upwind Grab
					Across From MSD Lift Station	Grassy Knoll Upper Level
Reduced Sulfur Compound – ASTM D5504 (Lab Report - P1500365)						
				Sample ID	129Grab2D	129Grab3U
2,5-Dimethylthiophene	NA	NA	NA	NA	<32	<31
2-Ethylthiophene	NA	NA	NA	NA	<32	<31
3-Methylthiophene	NA	NA	NA	NA	<28	<27
Carbon Disulfide	3,100	730	60,000	3,000	<11	<11
Carbonyl Sulfide	NA	NA	NA	NA	<17	<17
Diethyl Disulfide	NA	NA	NA	NA	<17	<17
Diethyl Sulfide	NA	NA	NA	NA	<26	<25
Dimethyl Disulfide	NA	NA	NA	NA	<13	<13
Dimethyl Sulfide	NA	NA	NA	NA	<18	<17
Ethyl Mercaptan	NA	NA	25,000c	1,270	<18	<17
Ethyl Methyl Sulfide	NA	NA	NA	NA	<22	<21
Hydrogen Sulfide	8.8	2.1	28,000c	1,400	<9.8	<9.5
Isobutyl Mercaptan	NA	NA	NA	NA	<26	<25
Isopropyl Mercaptan	NA	NA	NA	NA	<22	<21
Methyl Mercaptan	NA	NA	20,000c	1,000	<14	<13
n-Butyl Mercaptan	NA	NA	35,000	1,750	<26	<25
n-Propyl Mercaptan	NA	NA	NA	NA	<22	<21
tert-Butyl Mercaptan	NA	NA	NA	NA	<26	<25
Tetrahydrothiophene	NA	NA	NA	NA	<25	<25
Thiophene	NA	NA	NA	NA	<24	<23
Fixed Gases – EPA 3Cm 13 (Lab Report - P1500365) [14]						
				Sample ID	129Grab2D	129Grab3U
Oxygen + Argon	NA	NA	NA	NA	21.9	21.9
Nitrogen	NA	NA	NA	NA	78	78
Carbon Monoxide	NA	NA	0.005	0.0025	<0.14	<0.15
Methane	NA	NA	NA	NA	<0.14	<0.15
Carbon Dioxide	NA	NA	0.5	0.5	<0.14	<0.15
Hydrogen	NA	NA	NA	NA	<0.14	<0.15

Note: Trip Blanks were analyzed for each analyte . No compounds were detected in any trip blank with the exception of: Octachlorodibenzo-p-dioxin (OCDD) was detected in trip blank for Dioxins/Furans (129Blank-DF), Isopropyl alcohol and benzene were detected in trip blank for VOC analysis - EPA TO-15 (127-Summa-B). Analytical results have been ammended with applicable data qualifiers.

1. United States Environmental Protection Agency Regional Screening Levels for Industrial Air. (USEPA: May 2014, TR=1E-06, HQ=1)
2. United States Environmental Protection Agency Regional Screening Levels for Residential Air. (USEPA: May 2014, TR=1E-06, HQ=1)
3. Occupational Safety & Health Administration (OSHA) Permissible Exposure Limit
4. American Conference of Governmental Industrial Hygienists- Threshold Limit Value
5. "<": Compound concentration not detected above Method Reporting Limit (MRL).
6. "NA" = Not Available
7. UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
8. J = The result is an estimated concentration that is less than the MRL but great than or equal to the Method Detection Limit (MDL).
9. B = Analyte detected in both the sample and associated method blank.
10. Shading for perimeter sampling locations indicates that the detected concentration exceeds the United States Environmental Protection Agency Regional Screening Level for Residential Air.
11. Tentatively Identified Compounds – under Method: EPA TO15 + TICs. The reported concentrations for TICs are estimated.
12. "—" = Compound not detected
13. "I" = Previous studies have shown that EPA Method TO-15 is not an appropriate method for quantifying Sulfur Dioxide.
14. Units for fixed gases are volume analyte/volume of air %.

Table 5. Comprehensive Sampling Event #4 – Bridgeton Landfill
Source Gas Sampling Summary
Collected January 28 and 29, 2015
Compound Concentration in Source Gas – All Units µg/m^3

Analyte	Sample Locations			
	South Quarry	Neck	North Quarry	Flare Inlet
Aldehydes/Carbonyl Compounds – Method: EPA TO-11a (Lab Report - P1500371)				
Sample ID	**128SQ-sAld**	**128N-sAld**	**128NQ-sAld**	**128F-sAld**
2,5-Dimethylbenzaldehyde	<43 [1]	<43	<43	<87
Acetaldehyde	**130** [2]	**64**	**45**	**9,500**
Benzaldehyde	<43	<43	<43	<87
Butyraldehyde	**480**	<43	<43	**23,000**
Crotonaldehyde, Total	<43	<43	<43	<87
Formaldehyde	<43	<43	<43	<87
Isovaleraldehyde	<43	<43	<43	**26,000**
m,p-Tolualdehyde	**4,200**	<87	<87	**6,800**
n-Hexaldehyde	<43	<43	<43	**95**
o-Tolualdehyde	<43	<43	<43	<87
Propionaldehyde	**59**	<43	<43	**6,100**
Valeraldehyde	<43	<43	<43	<87
Hydrogen Cyanide – Method: NIOSH 6010 (Lab Report - P1500371)				
Sample ID	**128SQ-sHCN**	**128N-sHCN**	**128NQ-sHCN**	**128F-sHCN (128F-Dup04)**
Hydrogen Cyanide	<570	<570	<570	<1,100 (<1,100)
Amine Compounds – AQL 101 (Lab Report - P1500371)				
Sample ID	**128SQ-sAMINE**	**128N-sAMINE (128Dup05)**	**128NQ-sAMINE**	**128F-sAMINE**
Diethylamine	<2,100	<2,100 (<2,100)	<2,100	<4,200
Diisopropylamine	<2,100	<2,100 (<2,100)	<2,100	<4,200
Dimethylamine	<2,100	<2,100 (<2,100)	<2,100	<4,300
Dipropylamine	<2,100	<2,100 (<2,100)	<2,100	<4,300
Ethylamine	<2,300	<2,300 (<2,300)	<2,300	<4,500
Isobutylamine	<2,200	<2,200 (<2,200)	<2,200	<4,400
Isopropylamine	<2,100	<2,100 (<2,100)	<2,100	<4,300
n-Butylamine	<2,300	<2,300 (<2,300)	<2,300	<4,600
n-Propylamine	<2,200	<2,200 (<2,200)	<2,200	<4,400
sec-Butylamine	<2,200	<2,200 (<2,200)	<2,200	<4,300
tert-Butylamine	<2,100	<2,100 (<2,100)	<2,100	<4,300
Triethylamine	<2,100	<2,100 (<2,100)	<2,100	<4,200
Trimethylamine	<2,000	<2,000 (<2,000)	<2,000	<4,100
Mercury – Method: NIOSH 6009 (Lab Report - P1500371)				
Sample ID	**128SQ-sHG**	**128N-sHG**	**128NQ-sHG**	**128F-sHG**
Mercury	<10	<10	<10	**480**
Ammonia – Method: OSHA ID 188 (Lab Report - P1500371)				
Sample ID	**128SQ-sNH3**	**128N-sNH3**	**128NQ-sNH3 (128Dup06)**	**128F-sNH3**
Ammonia	<5,100	<5,100	<5,100 (<5,100)	<10,000
Carboxylic Acid Compounds – Method: CAS AQL 102 (Lab Report - P1500371)				
Sample ID	**128SQ-sCARBOX**	**128N-sCARBOX**	**128NQ-sCARBOX**	**128F-sCARBOX**
2-Ethylhexanoic Acid	<120	<120	<120	<2,300
2-Methylbutanoic Acid	**2,200**	<100	<100	**49,000**
2-Methylpentanoic Acid	**160**	<100	<100	**4,000**
2-Methylpropanoic Acid (Isobutyric)	**9,300**	<110	<110	**110,000**
3-Methylbutanoic Acid (Isovaleric)	**3,200**	<100	<100	**80,000**
3-Methylpentanoic Acid	<110	<110	<110	<2,100
4-Methylpentanoic Acid (Isocaproic)	<110	<110	<110	<2,100
Acetic Acid	**13,000**	<850	<850	**210,000**
Benzoic Acid	<130	<130	<130	<2,500
Butanoic Acid (Butyric)	**24,000**	<110	**170**	**800,000**
Cyclohexanecarboxylic Acid	<100	<100	<100	<2,100
Heptanoic Acid (Enanthoic)	<100	<100	<100	<2,100
Hexanoic Acid (Caproic)	**650**	<110	<110	**130,000**
Nonanoic Acid (Pelargonic)	<110	<110	<110	<2,100
Octanoic Acid (Caprylic)	<100	<100	<100	<2,100
Pentanoic Acid (Valeric)	**2,200**	<110	<110	**200,000**
Propionic Acid (Propanoic)	**11,000**	<110	<110	**180,000**
Volatile Organic Compounds (VOCs) – Method: EPA TO15 – Standard Analyte List (Lab Report - P1500365)				
Sample ID	**128SQs-Grab**	**128Ns-Grab**	**128NQs-Grab**	**128Fs-Grab**
1,1,1-Trichloroethane	<500	<120	<1.6	<4,100
1,1,2,2-Tetrachloroethane	<500	<120	<1.6	<4,100
1,1,2-Trichloroethane	<500	<120	<1.6	<4,100
1,1-Dichloroethane	<500	<120	**1.1J** [3]	<4,100
1,1-Dichloroethene	<500	<120	<1.6	<4,100
1,2,4-Trichlorobenzene	<500	<120	<1.6	<4,100
1,2,4-Trimethylbenzene	**3,800**	**230**	**3.4**	**4,000J**
1,2-Dibromo-3-chloropropane	<500	<120	<1.6	<4,100
1,2-Dibromoethane	<500	<120	<1.6	<4,100
1,2-Dichloro-1,1,2,2-tetrafluoroethane	<500	<120	**28**	<4,100
1,2-Dichlorobenzene	<500	<120	<1.6	<4,100
1,2-Dichloroethane	<500	<120	<1.6	<4,100
1,2-Dichloropropane	<500	<120	<1.6	<4,100
1,3,5-Trimethylbenzene	**1,200**	**720**	**2.7**	**1,500J**
1,3-Butadiene	**740**	**430**	**8.1**	**3,400J**
1,3-Dichlorobenzene	<500	<120	<1.6	<4,100
1,4-Dichlorobenzene	**1,600**	**900**	**1.7**	**2,200J**
1,4-Dioxane	**290J**	<120	<1.6	**5,300**
2-Butanone (MEK)	**27,000**	<1,200	**3.8J**	**600,000**
2-Hexanone	**720**	<120	<1.6	**6,700**
2-Propanol (Isopropyl Alcohol)	**12,000**	<1,200	<16	**140,000**
3-Chloro-1-propene (Allyl Chloride)	<500	<120	<1.6	<4,100
4-Ethyltoluene	**1,000**	**240**	**1.2J**	**1,600J**
4-Methyl-2-pentanone	**2,100**	<120	<1.6 UJ [4]	**18,000**
Acetone	**31,000**	**470J**	**9.9 J,B** [5]	**930,000**

Table 5. Comprehensive Sampling Event #4 – Bridgeton Landfill
Source Gas Sampling Summary
Collected January 28 and 29, 2015
Compound Concentration in Source Gas – All Units µg/m^3

Analyte	Sample Locations			
	South Quarry	Neck	North Quarry	Flare Inlet
Acetonitrile	<500	<120	<1.6	<4,100
Acrolein	<2,000	<470	<6.6	<17,000
Acrylonitrile	<500	<120	<1.6	<4,100
alpha-Pinene	**7,700**	**2,600**	**5.6**	**11,000**
Benzene	**87,000**	**12,000**	**12**	**460,000**
Benzyl Chloride	<500	<120	<1.6	<4,100
Bromodichloromethane	<500	<120	<1.6	<4,100
Bromoform	<500	<120	<1.6	<4,100
Bromomethane	<500	<120	<1.6	<4,100
Carbon Disulfide	<5,000	<1,200	**12J**	<41,000
Carbon Tetrachloride	<500	<120	<1.6	<4,100
Chlorobenzene	**220J**	**860**	**4.2**	<4,100
Chloroethane	**390J**	<120	**8.5**	**2,500J**
Chloroform	<500	<120	**1.1J**	<4,100
Chloromethane	**480J**	**60J**	<1.6	**10,000**
cis-1,2-Dichloroethene	<500	<120	**1.1J**	<4,100
cis-1,3-Dichloropropene	<500	<120	<1.6	<4,100
Cumene	**1,200**	**120**	**2**	**2,800J**
Cyclohexane	<1,000	**310**	**140**	<8,300
Dibromochloromethane	<500	<120	<1.6	<4,100
Dichlorodifluoromethane (CFC 12)	<500	**88J**	**140**	<4,100
d-Limonene	**12,000**	**530**	**1.8**	**8,300**
Ethanol	**4,700J**	<1,200	<16	**500,000**
Ethyl Acetate	<1,000	<240	<3.3	**130,000**
Ethylbenzene	**5,000**	**640**	**3.4**	**19,000**
Hexachlorobutadiene	<500	<120	<1.6	<4,100
m,p-Xylenes	**9,400**	**2,100**	**6.8**	**31,000**
Methyl Methacrylate	<1,000	<240	<3.3	<8,300
Methyl tert-Butyl Ether	<500	**110J**	<1.6	<4,100
Methylene Chloride	<500	<120	<1.6	<4,100
Naphthalene	<500	<120	<1.6	<4,100
n-Butyl Acetate	**1,100**	<120	<1.6	**42,000**
n-Heptane	**800**	**640**	**56**	**4,200**
n-Hexane	**950**	**1,100**	**100**	**4,100J**
n-Nonane	**2,600**	**1,100**	**1.6J**	**8,300**
n-Octane	**2,400**	**1,300**	**4.9**	**11,000**
n-Propylbenzene	**770**	<120	**0.99J**	<4,100
o-Xylene	**4,000**	**2,600**	**4**	**9,900**
Propene	**25,000**	**21,000**	**1,500 D °**	**94,000**
Styrene	**250J**	<120	<1.6	<4,100
Tetrachloroethene	<500	<120	**1.5J**	<4,100
Tetrahydrofuran (THF)	**28,000**	**1,900**	<1.6	**340,000**
Toluene	**9,600**	**1,800**	**2.5**	**60,000**
trans-1,2-Dichloroethene	<500	<120	<1.6	<4,100
trans-1,3-Dichloropropene	<500	<120	<1.6	<4,100
Trichloroethene	<500	<120	<1.6	<4,100
Trichlorofluoromethane	<500	<120	**6.8**	<4,100
Trichlorotrifluoroethane	<500	<120	<1.6	<4,100
Vinyl Acetate	<5,000	<1,200	<16	<41,000
Vinyl Chloride	<500	<120	**200**	<4,100
Volatile Organic Compounds (VOCs) – Method: EPA TO15 – Tentatively Identified Compounds * (Lab Report - P1500365)				
Sample ID	**128SQs-Grab**	**128Ns-Grab**	**128NQs-Grab**	**128Fs-Grab**
Propane	-- °	**4,100**	**830**	--
Dimethyl Ether	**15,000**	**4,100**	--	**140,000**
Isobutane	--	--	**1,400**	--
2-Methyl-1-propene	**29,000**	**24,000**	**1,000**	**95,000**
n-Butane	--	**12,000**	**950**	--
C4H8 Alkene	**10,000**	**15,000**	**350**	**55,000**
C4H8 Alkene	**10,000**	**11,000**	**250**	**57,000**
2-Methylbutane	--	--	**400**	--
Furan	**70,000**	**14,000**	--	--
n-Pentane	--	--	**310**	--
Dimethyl Sulfide	**90,000**	**44,000**	--	**1,300,000**
C5H10 Alkene	**7,300**	**6,200**	**220**	--
2,2-Dimethylbutane	--	--	**270**	--
1-Propanol	--	--	--	**79,000**
Cyclopentene	**13,000**	**6,500**	--	--
2-Methylpentane	--	--	**230**	--
C6H12 Alkene	--	**2,800**	--	--
3-Methylpentane	--	--	**160**	--
2-Butanol	**11,000**	--	--	**100,000**
2-Methylfuran	**66,000**	**8,200**	--	**390,000**
Methyl Propionate	--	--	--	**380,000**
2-Pentanone	--	--	--	**56,000**
3-Methylhexane	--	--	**260**	--
Hexamethyldisiloxane	--	--	**170**	--
Methyl Butyrate	**11,000**	--	--	**530,000**
Dimethyl disulfide	**11,000**	--	--	**120,000**
Methyl isovalerate	--	--	--	**60,000**
3-Ethylcyclohexene	**6,600**	--	--	--
Methyl valerate	--	--	--	**55,000**
Camphene	--	**4,700**	--	--
unknown	--	--	**160**	--
n-Decane	**6,500**	--	--	--
p-Isopropyltoluene	**19,000**	--	--	--

Table 5. Comprehensive Sampling Event #4 – Bridgeton Landfill
Source Gas Sampling Summary
Collected January 28 and 29, 2015
Compound Concentration in Source Gas – All Units µg/m^3

Analyte	Sample Locations			
	South Quarry	Neck	North Quarry	Flare Inlet
4-Isopropyltoluene + 4-Methyldecane	--	**3,400**	--	--
unknown	--	**3,000**	--	--
Unidentified Siloxane	--	--	**52**	--
Reduced Sulfur Compound – ASTM D5504 (Lab Report - P1500365)				
Sample ID	**128SQs-Grab**	**128Ns-Grab**	**128NQs-Grab**	**128Fs-Grab**
2,5-Dimethylthiophene	<300	<65	<30	<2,800
2-Ethylthiophene	<300	<65	<30	<2,800
3-Methylthiophene	<260	<57	<26	<2,500
Carbon Disulfide	<100	<22	<10	<960
Carbonyl Sulfide	<160	<35	<16	<1,500
Diethyl Disulfide	<160	<35	<16	<1,500
Diethyl Sulfide	<240	<52	<24	<2,300
Dimethyl Disulfide	**9,800**	**2,400**	<13	**79,000**
Dimethyl Sulfide	**51,000**	**28,000**	<17	**990,000**
Ethyl Mercaptan	<170	<36	<17	**1,900**
Ethyl Methyl Sulfide	**730**	**120**	<20	**7,300**
Hydrogen Sulfide	<91	<20	<9.1	**34,000**
Isobutyl Mercaptan	<240	<52	<24	<2,300
Isopropyl Mercaptan	<200	<44	<20	<1,900
Methyl Mercaptan	**730**	<28	<13	**260,000**
n-Butyl Mercaptan	**300**	<52	<24	**3,100**
n-Propyl Mercaptan	<200	<44	<20	<1,900
tert-Butyl Mercaptan	<240	<52	<24	<2,300
Tetrahydrothiophene	**240**	<51	<24	**3,300**
Thiophene	**1,600**	**630**	<23	**18,000**
Fixed Gases – EPA 3Cm [9] (Lab Report - P1500365)				
Sample ID	**128SQs-Grab**	**128Ns-Grab**	**128NQs-Grab**	**128Fs-Grab**
Oxygen + Argon	**18.6**	**3.26**	**7.63**	**9.46**
Nitrogen	**67.4**	**46.5**	**59**	**35.1**
Carbon Monoxide	<0.13	<0.14	<0.13	<0.12
Methane	**5.02**	**21.5**	**18.9**	**8.87**
Carbon Dioxide	**8.13**	**28.7**	**14.4**	**36.6**
Hydrogen	**0.873**	<0.14	<0.13	**9.81**
Polynuclear Aromatic Hydrocarbons - Method: EPA TO13a Modified (Lab Report - P1500355)				
Sample ID	**129sSQ-PAH**	**129sN-PAH**	**129sNQ-PAH**	**NS**
Naphthalene	**230 D**	**18 D**	**0.19**	NS [10]
Acenaphthylene	<0.18 L [11],UJ	<0.018 L, UJ	<0.017 L, UJ	NS
Acenaphthene	<0.18	<0.018	<0.017	NS
Fluorene	<0.18	<0.018	<0.017	NS
Phenanthrene	<0.18	<0.018	<0.017	NS
Anthracene	<0.18	<0.018	<0.017	NS
Fluoranthene	<0.18	<0.018	<0.017	NS
Pyrene	<0.18	<0.018	<0.017	NS
Benz(a)anthracene	<0.18	<0.018	<0.017	NS
Chrysene	<0.18	<0.018	<0.017	NS
Benzo(b)fluoranthene	<0.18	<0.018	<0.017	NS
Benzo(k)fluoranthene	<0.18	<0.018	<0.017	NS
Benzo(a)pyrene	<0.18	<0.018	<0.017	NS
Indeno(1,2,3-cd)pyrene	<0.18	<0.018	<0.017	NS
Dibenz(a,h)anthracene	<0.18	<0.018	<0.017	NS
Benzo(g,h,i)perylene	<0.18	<0.018	<0.017	NS
Polychlorinated Dibenzo-p-Dioxins, Dibenzofurans – EPA Method TO-9A (Lab Report - P1500356)				
Sample ID	**129sSQ-DF**	**129sN-DF**	**129sNQ-DF**	**NS**
2,3,7,8-TCDD	0.00E+00	0.00E+00	0.00E+00	NS

Note: Trip Blanks were analyzed for each analyte . No compounds were detected in any trip blank with the exception of: Octachlorodibenzo-p-dioxin (OCDD) was detected in trip blank for Dioxins/Furans (129Blank-DF), Isopropyl alcohol and benzene were detected in trip blank for VOC analysis - EPA TO-15 (127-Summa-B). Analytical results have been ammended with applicable data qualifiers.

1. "<" indicates concentration was not detected above Method Reporting Limit (MRL).
2. Bold indicates that compound was detected above laboratory detection limits
3. J = The result is an estimated concentration that is less than the MRL but great than or equal to the Method Detection Limit (MDL).
4. UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
5. B = Analyte detected in both the sample and associated method blank.
6. D=The reported result is from a dilution
7. The reported concentrations for TICs are estimated
8. "--" = Compound not detected
9. Units for fixed gases are volume analyte/volume of air %.
10. "NS" = Not Sampled
11. L=Laboratory control sample recovery outside the specified limits

Table 6: Comprehensive Sampling Event #4 –Bridgeton Landfill
Ambient Air 8 Hour TWA Summary of Detected Compounds
Concentration in Ambient Air – All Units µg/m^3

Analyte	Screening Levels				Sample Locations									
					Onsite				Perimeter					
					Landfill				Upwind		Downwind			
	USEPA Industrial RSL [1]	USEPA Residential RSL [2]	OSHA PEL [3]	ACGIH TLV [4]	Flare Station	South Quarry	Neck	North Quarry	Grassy Knoll Lower Level	Corner of East Fence & Retention Pond	Corner of East Fence & Retention Pond	East Fence	Grassy Knoll North of Pipe Staging Area	Grassy Knoll North of Asphalt Plant West of Pipe Staging Area
Aldehydes/Carbonyl Compounds – Method: EPA TO-11a (Lab Report - P1500371)														
				Sample ID	127F-Ald	127SQ-Ald	128N-Ald	128NQ-Ald	127U1-Ald (127-Dup01)	128U1-Ald	127D1-Ald	127D2-Ald	128D1-Ald	128D2-Ald
Acetaldehyde	5.6	1.3	360,000	*45,000*	**2.3** [5]	**1.8**	**1.1**	**1.5**	**0.92 (1.2)**	**1.1**	**1.8**	**1.8**	**1.2**	**1.3**
Formaldehyde	0.94	0.22	1,000	400	**1.2**	**1.1**	**1.3**	**1.5**	**0.93 (0.92)**	**1.1**	**1.8**	**1.1**	**1.6**	**1.9**
n-Hexaldehyde	*NA* [6]	*NA*	*NA*	*NA*	**0.68**	**0.45**	**0.55**	**0.48**	**0.56 (0.46)**	**0.62**	**0.44**	-- [7]	**0.48**	**0.68**
Carboxylic Acid Compounds – Method: CAS AQL 102 (Lab Report - P1500371)														
				Sample ID	127F-CARBOX	127SQ-CARBOX2 (127Dup032)	128N-CARBOX	128NQ-CARBOX	127U1-CARBOX	128U1-CARBOX	127D12-CARBOX	127D22-CARBOX	128D1-Carbox	128D2-Carbox
Butanoic Acid (Butyric)	*NA*	*NA*	*NA*	*NA*	--	**4.2 (4.0)**	**--**	**--**	--	--	--	--	--	--
Propionic Acid (Propanoic)	*NA*	*NA*	*NA*	*NA*	--	**-- (3.1)**	**--**	**--**	--	--	--	--	--	--
Volatile Organic Compounds (VOCs) – Method: EPA TO15 + TICs – Standard Analyte List (Lab Report - P1500365)														
				Sample ID	127F-SUMMA	127SQ-SUMMA	128N-Summa	128NQ-Summa	127U1-SUMMA	128U1-Summa (128Dup11-Summa)	127D1-SUMMA(127Dup10-Summa)	127D2-SUMMA	128D1-Summa	--
1,2,4-Trimethylbenzene	31	7.3	NA	NA	--	--	**0.18J** [8]	**0.30J**	--	**0.82(<0.67)**	<0.73 **(0.63J)**	--	--	NS [9]
1,3,5-Trimethylbenzene	NA	NA	NA	NA	--	--	--	--	--	**0.73(<0.67)**	<0.73 **(0.53J)**	--	--	NS
2-Butanone (MEK)	22,000	5,200	590,000	590,000	--	**2.5J**	**1.2J**	**0.42J**	**0.42J**	**0.43J(0.41J)**	**0.51J (0.38J)**	**0.43J**	**0.84J**	NS
Isopropyl Alcohol	31,000	7,300	980,000	490,000	--	**1.2J**	**2.1J**	**--**	**4.3J**	**--**	**0.79J (**<0.78**)**	--	**0.73J**	NS
Acetone	140,000	32	2.4E+06	1.20E+06	**4.4J**	**6.7J**	**8.7**	**4.1J**	**4.2J,B**	**3.7J(3.5J,MB)**	**4.7J (4.1J)**	**3.9J**	**6.6**	NS
Acetonitrile	260	63	70,000	35,000	**9.1**	**0.8**	**0.95**	**--**	**240 D** [10,11]	**--**	**8.1 (**<0.78**)**	--	--	NS
Acrolein	0.088	0.021	250	250	--	--	**0.30J**	--	--	--	**0.29J (**<0.78**)**	--	--	NS
alpha-Pinene	NA	NA	NA	NA	**--**	**--**	**0.42J**	--	**--**	--	**--**	**--**	--	NS
Benzene	1.6	0.36	32,000	1,600	**0.60J**	**0.55J**	**1.8** [12]	**0.8**	**0.38J**	**1.9(0.65J,B** [13]**)**	**2.0 (2.3)**	**0.52J**	**0.98**	NS
Carbon Tetrachloride	2	0.47	30,000	15,000	**0.49J**	**0.50J**	**0.51J**	**0.53J**	**0.49J**	**0.48J(0.51J)**	**0.49J (0.47J)**	**0.49J**	**0.51J**	NS
Chloroethane	44,000	10,000	2.60E+06	260,000	--	--	**--**	**--**	--	**--**	<0.73 **(0.48J)**	--	--	NS
Chloromethane	390	94	200,000	100,000	**0.54J**	**0.45J**	**0.37J**	**0.50J**	**0.50J**	**0.49J(0.49J)**	**0.52J (**<0.78**)**	**0.50J**	**0.56J**	NS
Cyclohexane	26,000	6,300	1.05E+06	350,000	--	**0.75J**	**0.70J**	**0.40J**	--	**3.4(<1.3)**	<1.5 **(1.1J)**	--	--	NS
Dichlorodifluoromethane (CFC 12)	440	100	4.95E+06	4.95E+06	**2.1**	**2.3**	**2.3**	**2.3**	**2.3**	**2.2(2.1)**	**2.1 (2.2)**	**2.3**	**2.3**	NS
d-Limonene	NA	NA	NA	NA	--	**0.20J**	**1.4**	**--**	--	--	--	--	--	NS
Ethanol	NA	NA	1.90E+06	1.90E+06	**3.0J**	**9.1**	**20**	**3.5J**	**1.9J**	**1.9J(1.9J)**	**2.6J (2.1J)**	**1.7J**	**7.8**	NS
Ethyl Acetate	310	73	1.40E+06	1.40E+06	**2.4**	**11**	**74**	**1.2J**	**6.8**	**1.5(1.3J)**	**1.9 (1.8)**	**2.3**	**1.3J**	NS
Ethylbenzene	4.9	1.1	435,000	87,000	--	--	**0.20J**	--	--	**0.52J(<0.67)**	<0.73 **(0.40J)**	--	**0.37J**	NS
m,p-Xylenes	880	200	870,000	870,000	--	--	**0.75J**	**1.1J**	--	**5.2(<1.3)**	**0.60J (3.5)**	--	**1.2J**	NS
Methylene Chloride	1,200	100	85,000	170,000	**0.59J**	**0.93**	**0.63**	**0.38J**	**3.4**	**0.35J (0.44J)**	**0.43J (0.44J)**	**0.41J**	**0.63J**	NS
Naphthalene	0.36	0.083	50,000	50,000	--	--	**--**	**--**	--	**--**	**0.50J (**<0.78**)**	--	**--**	NS
n-Butyl Acetate	NA	NA	710,000	710,000	**0.71J**	--	**0.32J**	--	--	--	--	--	--	NS
n-Heptane	NA	NA	2.00E+06	1.60E+06	**0.38J**	**0.25J**	**0.64**	**0.48J**	--	**4.2 (1.3)**	<0.73 **(1.3)**	--	**0.85**	NS
n-Hexane	3,100	730	1.80E+06	180,000	**0.77J**	**0.9**	**2.5**	**0.94**	**0.50J**	**3.5 (1.6)**	**0.66J (1.6)**	**0.46J**	**1.1**	NS
n-Nonane	880	210	NA	NA	--	--	**0.27J**	**0.62J**	--	**3.1 (2.2)**	<0.73 **(2.2)**	--	**0.33J**	NS
n-Octane	NA	NA	2.35E+06	1.40E+06	--	--	**0.28J**	**0.43J**	--	**3.9 (1.9)**	<0.73 **(1.9)**	--	**0.29J**	NS
o-Xylene	440	100	435,000	435,000	--	--	**0.23J**	**0.27J**	--	**0.85 (0.66J)**	<0.73 **(0.66J)**	--	**0.33J**	NS
Propene	13,000	3,100	NA	NA	--	**0.62J**	**1.3**	**--**	**2**	**--**	**1.7 (1.5)**	--	**1**	NS
Tetrachloroethene	47	11	680000	170000	**--**	**--**	**0.30J**	**--**	**--**	**--**	**--**	--	--	NS
Tetrahydrofuran (THF)	8,800	2,100	590000	147500	**--**	**0.36J**	**--**	**--**	**--**	**--**	**--**	--	--	NS
Toluene	22,000	5,200	750,000	75,000	**0.97J**	**5.6**	**5.9**	**1.3**	**0.88J**	**6.1(0.95)**	**1.8 (3.3)**	**0.45J**	**1.8**	NS
Trichlorofluoromethane	3,100	730	5.60E+06	5.60E+06	**1.3**	**1.3**	**1.2**	**1.3**	**1.3**	**1.3(1.3)**	**1.3 (1.2)**	**1.3**	**1.3**	NS
Trichlorotrifluoroethane	130,000	31,000	7.60E+06	7.60E+06	**0.51J**	**0.50J**	**0.47J**	**0.53J**	**0.47J**	**0.53J(0.51J)**	**0.53J (0.49J)**	**0.55J**	**0.50J**	NS

Table 6: Comprehensive Sampling Event #4 –Bridgeton Landfill
Ambient Air 8 Hour TWA Summary of Detected Compounds
Concentration in Ambient Air – All Units µg/m^3

Analyte	Screening Levels				Sample Locations									
					Onsite				Perimeter					
					Landfill				Upwind		Downwind			
	USEPA Industrial RSL [1]	USEPA Residential RSL [2]	OSHA PEL [3]	ACGIH TLV [4]	Flare Station	South Quarry	Neck	North Quarry	Grassy Knoll Lower Level	Corner of East Fence & Retention Pond	Corner of East Fence & Retention Pond	East Fence	Grassy Knoll North of Pipe Staging Area	Grassy Knoll North of Asphalt Plant West of Pipe Staging Area
Volatile Organic Compounds (VOCs) –Method: EPA TO15 + TICs - Tentatively Identified Compounds [14] (Lab Report - P1500365)														
1,1-Difluoroethane	180,000	4,200	NA	NA	--	--	**21**	--	--	--	--	--	**12**	NS
Chlorodifluoromethane	220,000	5,200	NA	350,000	--	--	**8.5**	--	--	--	--	--	--	NS
Propane	NA	NA	1.80E+06	NA	**9.8**	--[14]	**4.6**	**4.1**	--	**3.6/3.4**	--	**3.6**	--	NS
Isobutane	NA	NA	NA	NA	--	**3.7**	**4.1**	--	--	--	--	--	**2.9**	NS
n-Butane	NA	NA	NA	NA	--	--	**3.5**	**2.9**	--	**3.8/3.0**	--	--	**4**	NS
n-Pentane	4,400	1,000	2.95E+06	2.95E+06	--	--	**4.4**	--	--	**3.1**	--	--	--	NS
2-Methylpentane	NA	NA	NA	NA	--	--	--	--	--	**3.4**	--	--	--	NS
Methylcyclopentane	NA	NA	NA	NA	--	--	--	--	--	**3.6**	--	--	--	NS
Methylcyclohexane	NA	NA	2.00E+06	1.60E+06	--	--	--	--	--	**12**	--	--	--	NS
Dimethylcyclohexane isomer	NA	NA	NA	NA	--	--	--	--	--	**3.3**	--	--	--	NS
Hexamethylcyclotrisiloxane	NA	NA	NA	NA	--	--	--	--	--	**3.9**	--	--	--	NS
n-Decane	NA	NA	NA	NA	--	--	--	--	--	**2.7**	--	--	--	NS
n-Pentane	4,400	1,000	2.95E+06	2.95E+06	--	**4.6**	--	--	--	--	--	--	--	NS
n-Nonanal	NA	NA	NA	NA	--	**2.8**	**2.6**	--	--	--	**8.4**	--	--	NS
2-Ethylhexylacetate	NA	NA	NA	NA	--	--	**4.6**	--	--	--	--	--	--	NS
Unidentified Siloxane	NA	NA	NA	NA	--	**3.2**	**3.4**	--	--	**4.7**	--	**5.3**	--	NS
Unidentified Compound	NA	NA	NA	NA	--	--	--	--	--	--	--	**3**	--	NS
Fixed Gases – EPA Method 3Cm [15] (Lab Report - P1500365)														
				Sample ID	**127F-SUMMA**	**127SQ-SUMMA**	**128N-Summa**	**128NQ-Summa**	**127U1-SUMMA**	**128U1-Summa (128Dup11-Summa)**	**127D1-SUMMA(127Dup10-Summa)**	**127D2-SUMMA**	**128D1-Summa**	**--**
Oxygen + Argon	NA	NA	NA	NA	**22.3**	**22.2**	**22.1**	**22.2**	**22.3**	**22.2/22.2**	**22.3/22.3**	NS	**22.2**	NS
Nitrogen	NA	NA	NA	NA	**77.7**	**77.7**	**77.8**	**77.8**	**77.6**	**77.8/77.8**	**77.7/77.7**	NS	**77.7**	NS
Carbon Monoxide	NA	NA	0.005	0.0025	--	--	--	--	--	--	--	NS	--	NS
Methane	NA	NA	NA	NA	--	--	--	--	--	--	--	NS	--	NS
Carbon Dioxide	NA	NA	0.5	0.5	--	--	--	--	--	--	--	NS	--	NS
Hydrogen	NA	NA	NA	NA	--	--	--	--	--	--	--	NS	--	NS
Polynuclear Aromatic Hydrocarbons (PAHs) – EPA Method TO-13A (Lab Report - P1500355)														
				Sample ID	**128F-PAH**	**--**	**--**	**--**	**128U1-PAH**	**--**	**128D1-PAH**	**--**	**--**	**--**
Naphthalene	0.36	0.083	50,000	50,000	**0.049**	NS	NS	NS	**0.031**	NS	**0.047**	NS	NS	NS
Phenanthrene	NA	NA	NA	NA	**0.0041**	NS	NS	NS	**0.0032**	NS	**0.0036**	NS	NS	NS
Polychlorinated Dibenzo-p-Dioxins, Dibenzofurans – EPA Method TO-9A (Lab Report - P1500356)														
				Sample ID	**128F-DF**	**128SQ-DF**	**--**	**--**	**128U1-DF**	**--**	**128D1-DF**	**128D2-DF**	--	--
2,3,7,8-TCDD	3.20E-07	7.40E-08	NA	NA	**5.88E-10**	NS	NS	NS	**5.06E-10**	NS	**5.14E-10**	NS	NS	NS

Note: Hydrogen Cyanide, Amine Compounds, Mercury, Ammonia and Reduced Sulfur Compounds were not detected in any ambient time weighted sample collected during this sampling event.

1. United States Environmental Protection Agency Regional Screening Levels for Industrial Air. (USEPA: January 2015, TR=1E-06, HQ=1)
2. United States Environmental Protection Agency Regional Screening Levels for Residential Air. (USEPA: January 2015, TR=1E-06, HQ=1)
3. Occupational Safety & Health Administration (OSHA) Permissible Exposure Limit
4. American Conference of Governmental Industrial Hygienists- Threshold Limit Value
5. Bold indicates that compound was detected above laboratory detection limits
6. "NA" = Not Available
7. "--": Compound concentration not detected above Method Reporting Limit (MRL).
8. J = The result is an estimated concentration that is less than the MRL but great than or equal to the Method Detection Limit (MDL).
9. "NS" = Not Sampled
10. Shading for perimeter sampling locations indicates that the detected concentration exceeds the United States Environmental Protection Agency Regional Screening Level fo***Residential Air***.
11. D = The reported result is from a dilution
12. Shading for onsite sampling locations indicates that the detected concentration exceeds the United States Environmental Protection Agency Regional Screening Level fo***Industrial Air***.
13. B = Compound detected in Trip Blank or Laboratory Method Blank
14. Tentatively Identified Compounds – under Method: EPA TO15 + TICs. The reported concentrations for TICs are estimated.
15. Units for fixed gases are volume analyte/volume of air %.

Table 7: Comprehensive Sampling Event #4 – Bridgeton Landfill
Ambient Air Grab Sample Summary of Detected Compounds
January 28 and 29, 2015
Concentration in Ambient Air – All Units µg/m^3

Analyte	Screening Levels				Sample Locations		
					Perimeter		
					Downwind Grab		Upwind Grab
	USEPA Industrial RSL [1]	USEPA Residential RSL [2]	OSHA PEL [3]	ACGIH TLV [4]	Grab South Quarry	Across From MSD Lift Station	Grassy Knoll Upper Level
Volatile Organic Compounds (VOCs) – Method: EPA TO15 Standard Analyte List (Lab Report - P1500365)							
				Sample ID	128Grab	129Grab2D	129Grab3U
2-Butanone (MEK)	22,000	5,200	590,000	5.90E+05	**2.7J** [8,9]	**--** [7]	**--**
Isopropyl Alcohol	31,000	7,300	980,000	4.90E+05	**1.6J**	**--**	**--**
Acetone	140,000	32,000	2.4E+06	1.20E+06	**8.3**	**2.8 J,B**	**4.1 J,B**
Benzene	1.6	0.36	32,000	1,600	**2.4**	**0.87J** [8]	--
Carbon Disulfide	3,100	730	60,000	3,000	--	--	**0.88J**
Chloromethane	390	94	200,000	100,000	**0.83J**	**0.79J**	**0.76J**
Dichlorodifluoromethane (CFC 12)	440	100	4.95E+06	4.95E+06	**2.1**	**2.2**	**2.4**
Ethanol	NA [7]	NA	1.90E+06	1.90E+06	**6.0J**	**--**	**--**
Methylene Chloride	1,200	100	85,000	170,000	--	--	**0.85J**
Propene	13,000	3,100	NA	NA	**0.48J**	**--**	**--**
Tetrahydrofuran (THF)	8,800	2,100	5.90E+05	1.48E+05	**0.84J**	**--**	**--**
Toluene	22,000	5,200	7.50E+05	7.50E+04	**0.71J**	**--**	**--**
Trichlorofluoromethane	3,100	730	5.60E+06	5.60E+06	**1.2J**	**1.3J**	**1.3J**
Volatile Organic Compounds (VOCs) – Method: EPA TO15 + TICs – Tentatively Identified Compounds11 (Lab Report - P1500365)							
				Sample ID	128Grab	129Grab2D	129Grab3U
Sulfur Dioxide	NA	NA	NA	NA	--	--	>261 [10]
Hexamethylcyclotrisiloxane	NA	NA	NA	NA	--	--	16
Fixed Gases – EPA 3Cm [11] (Lab Report - P1500365)							
				Sample ID	128Grab	129Grab2D	129Grab3U
Oxygen + Argon	NA	NA	NA	NA	--	**21.9**	**21.9**
Nitrogen	NA	NA	NA	NA	--	**78**	**78**
Carbon Monoxide	NA	NA	0.005	0.0025	--	--	--
Methane	NA	NA	NA	NA	--	--	--
Carbon Dioxide	NA	NA	0.5	0.5	--	--	--
Hydrogen	NA	NA	NA	NA	--	--	--

NOTE: Reduced sulfur compounds were not detected

1. United States Environmental Protection Agency Regional Screening Levels for Industrial Air. (USEPA: January 2015, TR=1E-06, HQ=1)
2. United States Environmental Protection Agency Regional Screening Levels for Residential Air. (USEPA: January 2015, TR=1E-06, HQ=1)
3. Occupational Safety & Health Administration (OSHA) Permissible Exposure Limit
4. American Conference of Governmental Industrial Hygienists- Threshold Limit Value
5. Bold indicates that compound was detected above laboratory detection limits
6. J = The result is an estimated concentration that is less than the MRL but greater than or equal to the Method Detection Limit (MDL).
7. "—" = Compound not detected
8. Shading for perimeter sampling locations indicates that the detected concentration exceeds the United States Environmental Protection Agency Regional Screening Level for Residential Air.
9. "NA" = Not Available
10. "I" = Previous studies have shown that EPA Method TO-15 is not an appropriate method for quantifying Sulfur Dioxide.
11. Units for fixed gases are volume analyte/volume of air %.

Table 8. Comprehensive Sampling Event #4 – Bridgeton Landfill
Source Gas Summary of Detected Compounds
January 28 and 29, 2015
Source Gas – All Units µg/m^3

Analyte	Sample Locations			
	South Quarry	Neck	North Quarry	Flare Inlet
Aldehydes/Carbonyl Compounds – Method: EPA TO-11a (Lab Report - P1500371)				
Sample ID	**128SQs-Ald**	**128Ns-Ald**	**128NQs-Ald**	**128Fs-Ald**
Acetaldehyde	130 [1]	64	45	9,500
Butyraldehyde	480	-- [2]	--	23,000
Isovaleraldehyde	--	--	--	26,000
m,p-Tolualdehyde	4,200	--	--	6,800
n-Hexaldehyde	--	--	--	95
Propionaldehyde	59	--	--	6,100
Mercury – Method: NIOSH 6009 (Lab Report - P1500371)				
Sample ID	**128SQs-HG**	**128Ns-HG**	**128NQs-HG**	**128Fs-HG**
Mercury	--	--	--	480
Carboxylic Acid Compounds – Method: CAS AQL 102 (Lab Report - P1500371)				
Sample ID	**128SQs-CARBOX**	**128Ns-CARBOX**	**128NQs-CARBOX**	**128Fs-CARBOX**
2-Methylbutanoic Acid	2,200	--	--	49,000
2-Methylpentanoic Acid	160	--	--	4,000
2-Methylpropanoic Acid (Isobutyric)	9,300	--	--	110,000
3-Methylbutanoic Acid (Isovaleric)	3,200	--	--	80,000
Acetic Acid	13,000	--	--	210,000
Butanoic Acid (Butyric)	24,000	--	170	800,000
Hexanoic Acid (Caproic)	650	--	--	130,000
Pentanoic Acid (Valeric)	2,200	--	--	200,000
Propionic Acid (Propanoic)	11,000	--	--	180,000
Volatile Organic Compounds (VOCs) – Method: EPA TO15 – Standard Analyte List (Lab Report - P1500365)				
Sample ID	**128SQs-Grab**	**128Ns-Grab**	**128NQs-Grab**	**128Fs-Grab**
1,1-Dichloroethane	--	--	1.1J [3]	--
1,2,4-Trimethylbenzene	3,800	230	3.4	4,000J
1,2-Dichloro-1,1,2,2-tetrafluoroethane	--	--	28	--
1,3,5-Trimethylbenzene	1,200	720	2.7	1,500J
1,3-Butadiene	740	430	8.1	3,400J
1,4-Dichlorobenzene	1,600	900	1.7	2,200J
1,4-Dioxane	290J	--	--	5,300
2-Butanone (MEK)	27,000	--	3.8J	600,000
2-Hexanone	720	--	--	6,700
2-Propanol (Isopropyl Alcohol)	12,000	--	--	140,000
4-Ethyltoluene	1,000	240	1.2J	1,600J
4-Methyl-2-pentanone	2,100	--	--	18,000
Acetone	31,000	470J	9.9 J,B	930,000
alpha-Pinene	7,700	2,600	5.6	11,000
Benzene	87,000	12,000	12	460,000
Carbon Disulfide	--	--	12J	--
Chlorobenzene	220J	860	4.2	--
Chloroethane	390J	--	8.5	2,500J
Chloroform	--	--	1.1J	--
Chloromethane	480J	60J	--	10,000
cis-1,2-Dichloroethene	--	--	1.1J	--
Cumene	1,200	120	2	2,800J
Cyclohexane	--	310	140	--
Dichlorodifluoromethane (CFC 12)	--	88J	140	--
d-Limonene	12,000	530	1.8	8,300
Ethanol	4,700J	--	--	500,000
Ethyl Acetate	--	--	--	130,000
Ethylbenzene	5,000	640	3.4	19,000
m,p-Xylenes	9,400	2,100	6.8	31,000
Methyl tert-Butyl Ether	--	110J	--	--
n-Butyl Acetate	1,100	--	--	42,000
n-Heptane	800	640	56	4,200
n-Hexane	950	1,100	100	4,100J
n-Nonane	2,600	1,100	1.6J	8,300
n-Octane	2,400	1,300	4.9	11,000
n-Propylbenzene	770	--	0.99J	--
o-Xylene	4,000	2,600	4	9,900
Propene	25,000	21,000	1,500 D	94,000
Styrene	250J	--	--	--
Tetrachloroethene	--	--	1.5J	--
Tetrahydrofuran (THF)	28,000	1,900	--	340,000
Toluene	9,600	1,800	2.5	60,000
Trichlorofluoromethane	--	--	6.8	--
Vinyl Chloride	--	--	200	--

Table 8. Comprehensive Sampling Event #4 – Bridgeton Landfill
Source Gas Summary of Detected Compounds
January 28 and 29, 2015
Source Gas – All Units µg/m^3

Analyte	Sample Locations			
	South Quarry	Neck	North Quarry	Flare Inlet
Volatile Organic Compounds (VOCs) – Method: EPA TO15 – Tentatively Identified Compounds" (Lab Report - P1500365)				
Sample ID	**128SQs-Grab**	**128Ns-Grab**	**128NQs-Grab**	**128Fs-Grab**
Propane	--	**4,100**	**830**	--
Dimethyl Ether	**15,000**	**4,100**	--	**140,000**
Isobutane	--	--	**1,400**	--
2-Methyl-1-propene	**29,000**	**24,000**	**1,000**	**95,000**
n-Butane	--	**12,000**	**950**	--
C4H8 Alkene	**10,000**	**15,000**	**350**	**55,000**
C4H8 Alkene	**10,000**	**11,000**	**250**	**57,000**
2-Methylbutane	--	--	**400**	--
Furan	**70,000**	**14,000**	--	--
n-Pentane	--	--	**310**	--
Dimethyl Sulfide	**90,000**	**44,000**	--	**1,300,000**
C5H10 Alkene	**7,300**	**6,200**	**220**	--
2,2-Dimethylbutane	--	--	**270**	--
1-Propanol	--	--	--	**79,000**
Cyclopentene	**13,000**	**6,500**	--	--
2-Methylpentane	--	--	**230**	--
C6H12 Alkene	--	**2,800**	--	--
3-Methylpentane	--	--	**160**	--
2-Butanol	**11,000**	--	--	**100,000**
2-Methylfuran	**66,000**	**8,200**	--	**390,000**
Methyl Propionate	--	--	--	**380,000**
2-Pentanone	--	--	--	**56,000**
3-Methylhexane	--	--	**260**	--
Hexamethyldisiloxane	--	--	**170**	--
Methyl Butyrate	**11,000**	--	--	**530,000**
Dimethyl disulfide	**11,000**	--	--	**120,000**
Methyl isovalerate	--	--	--	**60,000**
3-Ethylcyclohexene	**6,600**	--	--	--
Methyl valerate	--	--	--	**55,000**
Camphene	--	**4,700**	--	--
unknown	--	--	**160**	--
n-Decane	**6,500**	--	--	--
p-Isopropyltoluene	**19,000**	--	--	--
4-Isopropyltoluene + 4-Methyldecane	--	**3,400**	--	--
unknown	--	**3,000**	--	--
Unidentified Siloxane	--	--	**52**	--
Reduced Sulfur Compound – ASTM D5504 (Lab Report - P1500365)				
Sample ID	**128SQs-Grab**	**128Ns-Grab**	**128NQs-Grab**	**128Fs-Grab**
Dimethyl Disulfide	**9,800**	**2,400**	--	**79,000**
Dimethyl Sulfide	**51,000**	**28,000**	--	**990,000**
Ethyl Mercaptan	--	--	--	**1,900**
Ethyl Methyl Sulfide	**730**	**120**	--	**7,300**
Hydrogen Sulfide	--	--	--	**34,000**
Methyl Mercaptan	**730**	--	--	**260,000**
n-Butyl Mercaptan	**300**	--	--	**3,100**
Tetrahydrothiophene	**240**	--	--	**3,300**
Thiophene	**1,600**	**630**	--	**18,000**
Fixed Gases – EPA 3Cm " (Lab Report - P1500365)				
Sample ID	**128SQs-Grab**	**128Ns-Grab**	**128NQs-Grab**	**128Fs-Grab**
Oxygen + Argon	**18.6**	**3.26**	**7.63**	**9.46**
Nitrogen	**67.4**	**46.5**	**59**	**35.1**
Carbon Monoxide	--	--	--	--
Methane	**5.02**	**21.5**	**18.9**	**8.87**
Carbon Dioxide	**8.13**	**28.7**	**14.4**	**36.6**
Hydrogen	**0.872**	--	--	**9.81**
Polynuclear Aromatic Hydrocarbons - Method: EPA TO13a Modified (Lab Report - P1500355)				
Sample ID	**128sSQ-PAH**	**128sN-PAH**	**128sNQ-PAH**	**128sF-PAH**
Naphthalene	**230**	**18**	**0.19**	NS "
Polychlorinated Dibenzo-p-Dioxins, Dibenzofurans – EPA Method TO-9A (Lab Report - P1500356)				
Sample ID	**128sSQ-DF**	**128sN-DF**	**128sNQ-DF**	**128sF-DF**
2,3,7,8-TCDD	0	0	0	NS

Note: Hydrogen Cyanide, Amine compounds and Ammonia were not detected in any source gas sample.

1. Bold indicates that compound was detected above laboratory detection limits
2. "--" = Compound not detected
3. J = The result is an estimated concentration that is less than the MRL but greater than or equal to the Method Detection Limit (MDL).
4. The reported concentrations for TICs are estimated
5. Units for fixed gases are volume analyte/volume of air %.
6. "NS" = Not Sampled

Table 9: Comprehensive Sampling Event #4 –Bridgeton Landfill
Ambient Dioxin/Dibenzofuran Sampling Results and 2,3,7,8-TCDD Equivalent Concentration
All Units µg/m3

Analyte	TEF [1]	Mass (pg) [2]	Data Qualifier	TEQ [3]	Air volume (L)	TCDD Concentration (µg/m^3) [4]
Ambient Upwind Sample (Sample ID - 128U1-DF) - Grassy Knoll Lower Level						
2,3,7,8-TCDD	1	<6.22	--	ND	3.50E+05	ND
1,2,3,7,8-PeCDD	1	<7.89	--	ND	3.50E+05	ND
1,2,3,4,7,8-HxCDD	0.1	<6.44	--	ND	3.50E+05	ND
1,2,3,6,7,8-HxCDD	0.1	<5.85	--	ND	3.50E+05	ND
1,2,3,7,8,9-HxCDD	0.1	<5.7	--	ND	3.50E+05	ND
1,2,3,4,6,7,8-HpCDD	0.01	16	--	0.16	3.50E+05	4.58E-10
OCDD	0.0003	55.9	NJ [8],B	0.0168	3.50E+05	4.80E-11
2,3,7,8-TCDF	0.1	<8.92	--	ND	3.50E+05	ND
1,2,3,7,8-PeCDF	0.03	<6.06	--	ND	3.50E+05	ND
2,3,4,7,8-PeCDF	0.3	<6.21	--	ND	3.50E+05	ND
1,2,3,4,7,8-HxCDF	0.1	<5.16	--	ND	3.50E+05	ND
1,2,3,6,7,8-HxCDF	0.1	<4.64	--	ND	3.50E+05	ND
1,2,3,7,8,9-HxCDF	0.1	<6.22	--	ND	3.50E+05	ND
2,3,4,6,7,8-HxCDF	0.1	<5.21	--	ND	3.50E+05	ND
1,2,3,4,6,7,8-HpCDF	0.01	<5.85	--	ND	3.50E+05	ND
1,2,3,4,7,8,9-HpCDF	0.01	<7.82	--	ND	3.50E+05	ND
OCDF	0.0003	<10.9	--	ND	3.50E+05	ND
Total TCDD TEQ				0.17677		5.05E-10
Ambient Downwind Sample (Sample ID - 128D1-DF) - Corner of Boenker's Field Fence and Retention Pond						
2,3,7,8-TCDD	1	<7.21	--	ND	3.36E+05	ND
1,2,3,7,8-PeCDD	1	<7.28	--	ND	3.36E+05	ND
1,2,3,4,7,8-HxCDD	0.1	<6.05	--	ND	3.36E+05	ND
1,2,3,6,7,8-HxCDD	0.1	<5.49	--	ND	3.36E+05	ND
1,2,3,7,8,9-HxCDD	0.1	<5.35	--	ND	3.36E+05	ND
1,2,3,4,6,7,8-HpCDD	0.01	15.7	--	0.157	3.36E+05	4.67E-10
OCDD	0.0003	52.8	NJ,B	0.0158	3.36E+05	4.71E-11
2,3,7,8-TCDF	0.1	<8.57	--	ND	3.36E+05	ND
1,2,3,7,8-PeCDF	0.03	<7.26	--	ND	3.36E+05	ND
2,3,4,7,8-PeCDF	0.3	<7.43	--	ND	3.36E+05	ND
1,2,3,4,7,8-HxCDF	0.1	<3.94	--	ND	3.36E+05	ND
1,2,3,6,7,8-HxCDF	0.1	<3.54	--	ND	3.36E+05	ND
1,2,3,7,8,9-HxCDF	0.1	<4.74	--	ND	3.36E+05	ND
2,3,4,6,7,8-HxCDF	0.1	<3.98	--	ND	3.36E+05	ND
1,2,3,4,6,7,8-HpCDF	0.01	<3.48	--	ND	3.36E+05	ND
1,2,3,4,7,8,9-HpCDF	0.01	<4.64	--	ND	3.36E+05	ND
OCDF	0.0003	<7.8	--	ND	3.36E+05	ND
Total TCDD TEQ				0.17284		5.14E-10
Ambient Sample by Flare (Sample ID - 128F-DF) - Flare Station						
2,3,7,8-TCDD	1	<8.56	--	ND	3.52E+05	ND
1,2,3,7,8-PeCDD	1	<5.34	--	ND	3.52E+05	ND
1,2,3,4,7,8-HxCDD	0.1	<4.18	--	ND	3.52E+05	ND
1,2,3,6,7,8-HxCDD	0.1	<3.79	--	ND	3.52E+05	ND
1,2,3,7,8,9-HxCDD	0.1	<3.7	--	ND	3.52E+05	ND
1,2,3,4,6,7,8-HpCDD	0.01	18.1	--	0.181	3.52E+05	5.15E-10
OCDD	0.0003	85.2	NJ,B	0.0256	3.52E+05	7.27E-11
2,3,7,8-TCDF	0.1	<9.41	--	ND	3.52E+05	ND
1,2,3,7,8-PeCDF	0.03	<3.72	--	ND	3.52E+05	ND
2,3,4,7,8-PeCDF	0.3	<3.8	--	ND	3.52E+05	ND
1,2,3,4,7,8-HxCDF	0.1	<2.75	--	ND	3.52E+05	ND
1,2,3,6,7,8-HxCDF	0.1	<2.47	--	ND	3.52E+05	ND
1,2,3,7,8,9-HxCDF	0.1	<3.32	--	ND	3.52E+05	ND
2,3,4,6,7,8-HxCDF	0.1	<2.78	--	ND	3.52E+05	ND
1,2,3,4,6,7,8-HpCDF	0.01	<3.78	--	ND	3.52E+05	ND
1,2,3,4,7,8,9-HpCDF	0.01	<5.05	--	ND	3.52E+05	ND
OCDF	0.0003	<9.54	--	ND	3.52E+05	ND
Total TCDD TEQ				0.20656		5.88E-10

1 TEF: World Health Organization Toxicity Equivalence Factor, Non-Detects coded to 0.

2. pg: Picograms

3. TEQ: TCDD Toxicity Equivalent Mass, TEF Adjusted Mass (Equation Mass * TEF)

4. 2,3,7,8-TCDD Equivalent Concentration (Equation: ((TEQ (pg)/Volume of Air(L)) * 1000 L/m^3) / 1,000,000 pg/ug))

5. ND: Not Detected

7. "B" = The analyte was detected in the method, field, and/or trip blank.

8. "NJ" = The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

NOTE: OCDD was detected in Trip Blank (31.8 pg), Associated sample results below the blank concentration are validated to non-detect and flagged "UJB". Sample results greater than the blank concentration are flagged "NJB". The detection limit is changed to the blank concentration. Sample results greater than 10 times the blank concentration required no qualifying.

Table 10: Comprehensive Sampling Event #4 –Bridgeton Landfill
Source Gas Dioxin/Dibenzofuran Sampling Results and 2,3,7,8-TCDD Equivalent Concentration
All Units µg/m3

Analyte	TEF [1]	Mass (pg) [2]	Data Qualifier	TEQ [3]	Air volume (L)	TCDD Concentration (µg/m^3) [4]
Source Gas Sample - (Sample ID - 129sSQ-DF) - South Quarry						
2,3,7,8-TCDD	1	<8.21 [5]	--	ND [6]	2.85E+04	ND
1,2,3,7,8-PeCDD	1	<11.7	--	ND	2.85E+04	ND
1,2,3,4,7,8-HxCDD	0.1	<9.05	--	ND	2.85E+04	ND
1,2,3,6,7,8-HxCDD	0.1	<8.23	--	ND	2.85E+04	ND
1,2,3,7,8,9-HxCDD	0.1	<8.01	--	ND	2.85E+04	ND
1,2,3,4,6,7,8-HpCDD	0.01	<11.2	--	ND	2.85E+04	ND
OCDD	0.0003	<31.8 [7]	UJ,B [8,9]	ND	2.85E+04	ND
2,3,7,8-TCDF	0.1	<10.4	--	ND	2.85E+04	ND
1,2,3,7,8-PeCDF	0.03	<7.43	--	ND	2.85E+04	ND
2,3,4,7,8-PeCDF	0.3	<7.6	--	ND	2.85E+04	ND
1,2,3,4,7,8-HxCDF	0.1	<6.9	--	ND	2.85E+04	ND
1,2,3,6,7,8-HxCDF	0.1	<6.2	--	ND	2.85E+04	ND
1,2,3,7,8,9-HxCDF	0.1	<8.32	--	ND	2.85E+04	ND
2,3,4,6,7,8-HxCDF	0.1	<6.96	--	ND	2.85E+04	ND
1,2,3,4,6,7,8-HpCDF	0.01	<7.76	--	ND	2.85E+04	ND
1,2,3,4,7,8,9-HpCDF	0.01	<10.4	--	ND	2.85E+04	ND
OCDF	0.0003	<13.4	--	ND	2.85E+04	ND
Total TCDD TEQ				0		0.00E+00
Source Gas Sample - (Sample ID - 129sNQ-DF) - North Quarry						
2,3,7,8-TCDD	1	<8.21	--	ND	2.87E+04	ND
1,2,3,7,8-PeCDD	1	<11.7	--	ND	2.87E+04	ND
1,2,3,4,7,8-HxCDD	0.1	<9.05	--	ND	2.87E+04	ND
1,2,3,6,7,8-HxCDD	0.1	<8.23	--	ND	2.87E+04	ND
1,2,3,7,8,9-HxCDD	0.1	<8.01	--	ND	2.87E+04	ND
1,2,3,4,6,7,8-HpCDD	0.01	<11.2	--	ND	2.87E+04	ND
OCDD	0.0003	<31.8	UJ,B	ND	2.87E+04	ND
2,3,7,8-TCDF	0.1	<10.4	--	ND	2.87E+04	ND
1,2,3,7,8-PeCDF	0.03	<7.43	--	ND	2.87E+04	ND
2,3,4,7,8-PeCDF	0.3	<7.6	--	ND	2.87E+04	ND
1,2,3,4,7,8-HxCDF	0.1	<6.9	--	ND	2.87E+04	ND
1,2,3,6,7,8-HxCDF	0.1	<6.2	--	ND	2.87E+04	ND
1,2,3,7,8,9-HxCDF	0.1	<8.32	--	ND	2.87E+04	ND
2,3,4,6,7,8-HxCDF	0.1	<6.96	--	ND	2.87E+04	ND
1,2,3,4,6,7,8-HpCDF	0.01	<7.76	--	ND	2.87E+04	ND
1,2,3,4,7,8,9-HpCDF	0.01	<10.4	--	ND	2.87E+04	ND
OCDF	0.0003	<13.4	--	ND	2.87E+04	ND
Total TCDD TEQ				0		0.00E+00
Source Gas Sample -(Sample ID - 129sN-DF) - Neck						
2,3,7,8-TCDD	1	<5.72	--	ND	2.77E+04	ND
1,2,3,7,8-PeCDD	1	<6.74	--	ND	2.77E+04	ND
1,2,3,4,7,8-HxCDD	0.1	<8.03	--	ND	2.77E+04	ND
1,2,3,6,7,8-HxCDD	0.1	<7.29	--	ND	2.77E+04	ND
1,2,3,7,8,9-HxCDD	0.1	<7.1	--	ND	2.77E+04	ND
1,2,3,4,6,7,8-HpCDD	0.01	<7.18	--	ND	2.77E+04	ND
OCDD	0.0003	<31.8	UJ,B	ND	2.77E+04	ND
2,3,7,8-TCDF	0.1	<5.79	--	ND	2.77E+04	ND
1,2,3,7,8-PeCDF	0.03	<6.36	--	ND	2.77E+04	ND
2,3,4,7,8-PeCDF	0.3	<6.51	--	ND	2.77E+04	ND
1,2,3,4,7,8-HxCDF	0.1	<5.08	--	ND	2.77E+04	ND
1,2,3,6,7,8-HxCDF	0.1	<4.56	--	ND	2.77E+04	ND
1,2,3,7,8,9-HxCDF	0.1	<6.12	--	ND	2.77E+04	ND
2,3,4,6,7,8-HxCDF	0.1	<5.13	--	ND	2.77E+04	ND
1,2,3,4,6,7,8-HpCDF	0.01	<5.73	--	ND	2.77E+04	ND
1,2,3,4,7,8,9-HpCDF	0.01	<7.66	--	ND	2.77E+04	ND
OCDF	0.0003	<9.63	--	ND	2.77E+04	ND
Total TCDD TEQ						0.00E+00

1 TEF: World Health Organization Toxicity Equivalence Factor, Non-Detects coded to 0.

2. pg: Picograms

3. TEQ: TCDD Toxicity Equivalent Mass, TEF Adjusted Mass (Equation Mass * TEF)

4. 2,3,7,8-TCDD Equivalent Concentration (Equation: ((TEQ (pg)/Volume of Air(L)) * 1000 L/m^3) / 1,000,000 pg/ug))

5. " <": Not Detected

6. ND: None Detect

7. OCDD was detected in Trip Blank (31.8 pg), Associated sample results below the blank concentration are validated to non-detect and flagged "UJB". The detection limit is changed to the blank concentration.

7. "UJ" = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

8. "B" = The analyte was detected in the method, field, and/or trip blank.

Table 11. Comprehensive Sampling Event #4 –Bridgeton Landfill
Odor Thresholds for Select Analytes in Ambient and Source Gas Air Samples
January 27 through 29, 2015

Analyte	Odor Threshold	Laboratory MRL (range)	Characterization of Odor
Volatile Organic Compounds			
1,2,4-Trimethylbenzene	11,798[3)]	0.61-1.1	
1,3,5-Trimethylbenzene	10,815[3)]	0.61-1.1	
1,3-Butadiene	220[1)]	0.61-1.1	Aromatic, rubber
1,4-Dichlorobenzene	722[3)]	0.61-1.1	Mothballs
1,4-Dioxane	10.8[2)]	0.61-1.1	Ether-like
2-Butanone (MEK)	750[1)]	6.1-1.1	Sweet
2-Propanol	105,697[3)]	6.1-1.1	Rubbing alcohol
4-methyl-2-pentanone	410[2)]	0.61-1.1	Sweet, sharp
Acetone	47,500[2)]	6.1-1.1	Sweet minty, chemical
Benzene	4,500[2)]	0.61-1.1	Sweet solvent
Chlorobenzene	980[2)]	0.61-1.1	Almond-like, shoe polish
Cumene	39.2[2)]	0.61-1.1	Sharp
Cyclohexane	1,435[2)]	1.4-2.8	Sweet aromatic
Ethanol	342[2)]	6.1-1.1	Sweet alcohol
Ethyl acetate	1.0[1)]	1.4-2.8	Fruity, pleasant
Ethylbenzene	400[1)]	0.61-1.1	Oily solvent
m,p-Xylenes	1,000[1)]	0.61-1.1	
Naphthalene	50[1)]	0.61-1.1	Mothballs
n-Butyl acetate	2,993[3)]	0.61-1.1	Sweet banana
n-Heptane	200,000[2)]	0.61-1.1	Gasoline
n-Nonane	3,412,500[2)]	0.61-1.1	
n-Octane	725,000[2)]	0.61-1.1	Gasoline
o-Xylene	1,000[1)]	0.61-1.1	
Propene	39,584[3)]	0.61-1.1	Grassy, aromatic
Styrene	430[2)]	0.61-1.1	Solvent, rubbery
Tetrahydrofuran	7,375[2)]	0.61-1.1	Ether-like
Toluene	1,000[1)]	0.61-1.1	Rubbery mothballs
Tentatively Identified Compounds			
Dimethyl sulfide	2.5[2)]	NA	Decayed cabbage
Methyl acetate	412[2)]	NA	Sweet ester
2-Methylfuran	90,450[2)]	NA	
1-Butanol	2,638[3)]	NA	Sweet alcohol
2-Pentanone	27,125[3)]	NA	
Methyl butyrate	52.8[2)]	NA	Body odor
Dimethyl disulfide	0.1[2)]	5.2-7.5	
Aldehydes			
Acetaldehyde	0.2[2)]	0.28-0.35	
Butyraldehyde	13.62)	0.28-0.35	
Isovaleraldehyde	NP	0.28-0.35	
m,p-Tolualdehyde	13.6[2)]	0.28-0.35	
n-Hexaldehyde	NP	0.28-0.35	

Table 11. Comprehensive Sampling Event #4 –Bridgeton Landfill
Odor Thresholds for Select Analytes in Ambient and Source Gas Air Samples
January 27 through 29, 2015

Analyte	Odor Threshold	Laboratory MRL (range)	Characterization of Odor
Propionaldehyde	10[1)]	0.28-0.35	
Reduced Sulfur Compounds			
Dimethyl disulfide	0.1[2)]	11	
Dimethyl sulfide	2.5[2)]	15	Decayed cabbage
Ethyl mercaptan	0.0032[2)]	15	Garlic
Ethyl methyl sulfide	48.7[2)]	19	
Hydrogen sulfide	0.7[2)]	8.3	Rotten eggs
Methyl mercaptan	0.04[2)]	12	Sulfide-like
n-Butyl mercaptan	1.6[2)]	22	
Tetrahydrothiophene	NP	21	
Thiophene	2.6[2)]	20	Aromatic
Carboxylic Acid Compounds			
2-Methylbutanoic Acid	52.8[2)]	2.5	
2-Methylpentanoic Acid	NP	2.5	
2-Methylpropanoic Acid	NP	2.5	
3-Methylbutanoic Acid	52.8[2)]	2.5	Body odor
Acetic Acid	2,500[2)]	21	Sour, vinegar
Butanoic Acid	1.0[2)]	2.7	Sour, perspiration, human vomit
Hexanoic (Caproic) Acid	NP	2.5	Cheesy
Pentanoic (Valeric) Acid	2.6[2)]	2.6	Pungent, sweaty
Propionic Acid	200[3)]	2.8	Sour
PAHs			
Naphthalene	50[1)]	0.011-0.015	Mothballs
Acenaphthene	505[2)]	0.011-0.015	
Fluorene	6,000[2)]	0.011-0.015	

1. US EPA, Reference Guide to Odor Thresholds for Hazardous Air Pollutants Listed in the Clean Air Act Amendments of 1990, EPA/600/R-92/047, March 1992
2. Ruth, J.H., Odor Thresholds and Irritation Levels of Several Chemical Substances: A Review, Am. Ind. Hyg. Assoc. J. 47:A-142 through A-151, March 1986
3. American Industrial Hygiene Association, Odor Thresholds for Chemicals with Established Occupational Health Standards, 1997 edition
4. NP Not Published
5. NA Not Applicable

FIGURES

W:\0-GIS\182608020 - Bridgeton Landfill LLC\Figure 1 (Jan 2015 Bridgeton Landfill LLC Sampling Locations) (2015-04-15)11x17 Portrait.mxd

Stantec

1500 LAKE SHORE DRIVE, SUITE 100
COLUMBUS, OHIO 43204
PHONE: (614) 486-4383

FOR:
BRIDGETON LANDFILL, LLC
13570 ST. CHARLES ROCK ROAD
BRIDGETON, MISSOURI 63044

JANUARY 2015
AIR AND LANDFILL
GAS SAMPLING LOCATIONS

FIGURE: 1

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
182608020	AI	NI	DG	05/21/15

W:\0-GIS\182608020 - Bridgeton Landfill LLC\Figure 2 (July 2014 Bridgeton Landfill LLC Sampling Locations) (2014-9-26)\11x17 Portrait.mxd

Stantec

1500 LAKE SHORE DRIVE, SUITE 100
COLUMBUS, OHIO 43204
PHONE: (614) 486-4383

FOR:
BRIDGETON LANDFILL, LLC
13570 ST. CHARLES ROCK ROAD
BRIDGETON, MISSOURI 63044

JULY 2014
AIR AND LANDFILL
GAS SAMPLING LOCATIONS

FIGURE: 2

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
182608020	AI	NI	DG	10/13/14

W:\0-GIS\182608020 - Bridgeton Landfill LLC\Figure 3 (April-May 2013 Bridgeton Landfill LLC Sampling Locations) (2014-9-26)\11x17 Portrait.mxd

Stantec

1500 LAKE SHORE DRIVE, SUITE 100
COLUMBUS, OHIO 43204
PHONE: (614) 486-4383

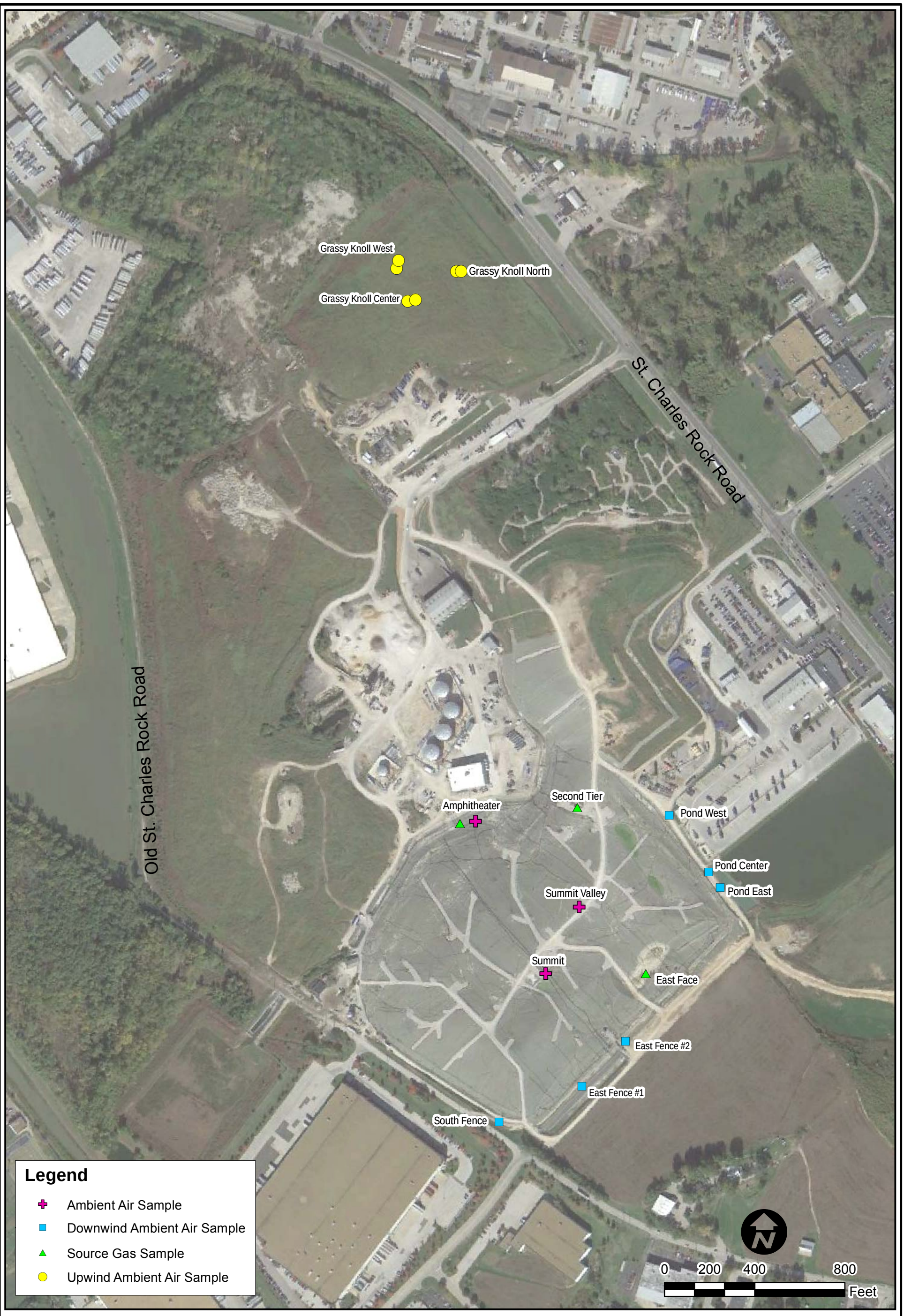
FOR:
BRIDGETON LANDFILL, LLC
13570 ST. CHARLES ROCK ROAD
BRIDGETON, MISSOURI 63044

APRIL - MAY 2013
AIR AND LANDFILL
GAS SAMPLING LOCATIONS

FIGURE:
3

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
182608020	AI	NI	DG	10/14/14

W:\0-GIS\182608020 - Bridgeton Landfill LLC\Figure 4 (Bridgeton Landfill LLC August 2012 Sampling Locations) (2014-9-26)\11x17 Portrait.mxd



Stantec
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FOR:
BRIDGETON LANDFILL, LLC
13570 ST. CHARLES ROCK ROAD
BRIDGETON, MISSOURI 63044

AUGUST 2012
AIR AND LANDFILL
GAS SAMPLING LOCATIONS

FIGURE: 4

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
182608020	AI	NI	DG	10/13/14

Photo #1 Source Gas Sampling Flux-box.

Photo #2 Source gas sampling sorbent tubes & low flow PSPs connected via Teflon tubing to the airtight barbed fittings in the flux box.

Photo #3 Sorbent tube and low flow PSP connected to the piping components leading to the flare.

Photo #4 Collection of a grab canister sample from the sampling port on the flux-box.

Photo #5 High volume sampling of source gas from under the EVOH.

Photo #6 Sampling apparatus used to collect the upwind ambient air samples.

APPENDIX A – SAMPLE SUMMARY TABLES JANUARY 27 THROUGH 29, 2015

Table A-1: 4th Comprehensive Bridgeton Landfill Sampling Event (January 27, 2015) Summary of Sampling Procedures/Calibration/Methods

Upwind Location 1 - Grassy Knoll Lower Level

Sample ID	Sample Date	Start Time	Stop Time	Duration	Compound	Analytical Method	Canister ID	Regulator ID	Start Pres	End Pres	Pump ID	Pre-Cal	Post-Cal	mean flow	PD	Total Volume	Total Volume COC
				Minutes					psi	psi		ml/min	ml/min	ml/min	%	ml	liters
127U1-SUMMA	1/27/2015	9:55	17:45	470	VOCs	TO-15 + TICs	as00301	sfc00041	-28	-12	NA	NA	NA	NA	NA	NA	NA
					Reduced Sulfur	ASTM D5504											
					Fixed Gases	EPA 3C m											
127U1-ALD	1/27/2015	9:55	14:26	271	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b20927b	1240	1350	1295.0	8.1%	350,945	350.9
127-Dup01	1/27/2015	9:55	14:26	271	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b20612b	1220	1340	1280.0	9.0%	346,880	346.9
127U1-HCN	1/27/2015	9:55	14:26	271	Hydrogen Cyanide	NIOSH 6010	NA	NA	NA	NA	b20580b	61	61	61.0	0.0%	16,531	16.5
127U1-Amine	1/27/2015	9:55	14:26	271	Amines	AQL 101	NA	NA	NA	NA	b20585b	61	63	62.0	3.2%	16,802	16.8
127U1-Hg	1/27/2015	9:55	14:26	271	Mercury	NIOSH 6009	NA	NA	NA	NA	b20257b	201	205	203.0	2.0%	55,013	55.0
127U1-NH3	1/27/2015	fault	fault	--	Ammonia	OSHA ID 188	NA	NA	NA	NA	b20938b	503	fault	--	--	--	--
127U1-CARBOX	1/27/2015	12:15	16:26	251	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b20073b	399	408	403.5	2.2%	101,279	101.3
128U1-DF	1/28/2015	9:17	9:21	1444	Dioxins/furans	EPA TO 9a	1085	302-27-005	NA	NA		44	42	43.0	-4.8%	349,709	
128U1-PAH	1/28/2015	9:22	9:21	1439	PAHs	EPA TO 13	1060	hx201	NA	NA		31	35	33.0	11.4%	358,164	

High Flow: Pre and Post readings for high flow PUF samples were magnehlic readings, mean flow rates were determined from calibration curves. Mean flow units = L/min, Total Volume Units = Liters

Downwind Location 1 - Corner of Boenker's Field Fence and Retention Pond

Sample ID	Sample Date	Start Time	Stop Time	Duration	Compound	Analytical Method	Canister ID	Regulator ID	Start Pres	End Pres	Pump ID	Pre-Cal	Post-Cal	mean flow	PD	Total Volume	Total Volume COC
				Minutes					psi	psi		ml/min	ml/min	ml/min	%		
127D1-SUMMA	1/27/2015	10:44	18:27	463	VOCs	TO-15 + TICs	as00506	sfc00023	-29	-7.5	NA	NA	NA	NA	NA	NA	NA
					Reduced Sulfur	ASTM D5504											
					Fixed Gases	EPA 3C m											
127Dup10-Summa	1/27/2015	10:44	18:27	463	VOCs	TO-15 + TICs	as00161	sfc00060	-29	-8	NA	NA	NA	NA	NA	NA	NA
					Reduced Sulfur	ASTM D5504											
					Fixed Gases	EPA 3C m											
					Reduced Sulfur	ASTM D5504											
					Fixed Gases	EPA 3C m											
127D1-ALD	1/27/2015	11:22	15:22	240	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b20265b	1210	1340	1275.0	9.7%	306,000	306
127D1-HCN	1/27/2015	11:22	15:22	240	Hydrogen Cyanide	NIOSH 6010	NA	NA	NA	NA	b20071b	61	62	61.5	1.6%	14,760	15
127D1-Amine	1/27/2015	11:22	15:22	240	Amines	AQL 101	NA	NA	NA	NA	b19863b	60	61	60.5	1.6%	14,520	15
127D1-Hg	1/27/2015	11:22	15:22	240	Mercury	NIOSH 6009	NA	NA	NA	NA	b20076b	200	204	202.0	2.0%	48,480	48
127Dup02	1/27/2015	11:22	15:22	240	Mercury	NIOSH 6009	NA	NA	NA	NA	b20069b	200	208	204.0	3.8%	48,960	49
127D1-NH3	1/27/2015	fault	fault	--	Ammonia	OSHA ID 188	NA	NA	NA	NA	b20942b	500	fault	--	--	--	--
127D1-CARBOX	1/27/2015	fault	fault	--	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b20990b	399	fault	--	--	--	--
128D1-DF	1/28/2015	10:42	10:47	1445	Dioxins/furans	EPA TO 9a	1075	302-27-013	NA	NA		48	44	46	-9.1%	336,049	
128D1-PAH	1/28/2015	10:48	10:47	1439	PAHs	EPA TO 13	1068	hx016	NA	NA		55	55	55	0.0%	350,774	

High Flow: Pre and Post readings for high flow PUF samples were magnehlic readings, mean flow rates were determined from calibration curves. Mean flow units = L/min, Total Volume Units = Liters

Downwind Location 2 -Boenker's Field Fenceline

Sample ID	Sample Date	Start Time	Stop Time	Duration	Compound	Analytical Method	Canister ID	Regulator ID	Start Pres	End Pres	Pump ID	Pre-Cal	Post-Cal	mean flow	PD	Total Volume	Total Volume COC
				Minutes					psi	psi		ml/min	ml/min	ml/min	%		
127D2-Summa	1/27/2015	10:48	18:32	464	VOCs	TO-15 + TICs	as00224	sfc00046	-29	-6.5	NA	NA	NA	NA	NA	NA	NA
					Reduced Sulfur	ASTM D5504											
127D2-ALD	1/27/2015	11:28	15:28	240	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b21008b	1230	1320	1275.0	6.8%	306,000	306
127D2-Amine	1/27/2015	11:28	15:28	240	Amines	AQL 101	NA	NA	NA	NA	b19879b	61	62	61.5	1.6%	14,760	15
127D2-NH3	1/27/2015	11:28	15:28	240	Ammonia	OSHA ID 188	NA	NA	NA	NA	b20932b	499	516	507.5	3.3%	121,800	122
127D2-CARBOX	1/27/2015	fault	fault	--	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b20918b	399	fault	--	--	--	--

Table A-1: 4th Comprehensive Bridgeton Landfill Sampling Event (January 27, 2015) Summary of Sampling Procedures/Calibration/Methods

Landfill - Flare

Sample ID	Sample Date	Start Time	Stop Time	Duration	Compound	Analytical Method	Canister ID	Regulator ID	Start Pres	End Pres	Pump ID	Pre-Cal	Post-Cal	mean flow	PD	Total Volume	Total Volume COC
				Minutes					psi	psi		ml/min	ml/min	ml/min	%	ml	liters
127F-SUMMA	1/27/2015	10:26	18:23	477	VOCs	TO-15 + TICs	as00866	sfc00057	-30	-14	NA	NA	NA	NA	NA	NA	NA
					Reduced Sulfur	ASTM D5504											
					Fixed Gases	EPA 3C m											
127F-ALD	1/27/2015	11:10	15:15	245	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b20594b	1210	1300	1255.0	6.9%	307,475	307.5
127F-HCN	1/27/2015	11:10	15:15	245	Hydrogen Cyanide	NIOSH 6010	NA	NA	NA	NA	b19877b	62	55	58.5	-12.7%	14,333	14.3
127F-Amine	1/27/2015	11:10	15:15	245	Amines	AQL 101	NA	NA	NA	NA	b20065b	60	63	61.5	4.8%	15,068	15.1
127F-Hg	1/27/2015	11:10	15:15	245	Mercury	NIOSH 6009	NA	NA	NA	NA	b19876b	203	200	201.5	-1.5%	49,368	49.4
127F-NH3	1/27/2015	fault	fault	--	Ammonia	OSHA ID 188	NA	NA	NA	NA	b20971b	497	fault	--	--	--	--
127F-CARBOX	1/27/2015	11:10	15:15	245	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b20618b	400	416	408.0	3.8%	99,960	100.0
127Dup03	1/27/2015	fault	fault	--	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b20929b	400	fault	--	--	--	--
128F-DF	*1/28/2015*	*9:48*	*9:48*	*1440*	*Dioxins/furans*	*EPA TO 9a*	*1095*	*302-27-004*	*NA*	*NA*		*37*	*37*	*37*	*0.0%*	*351,525*	
128F-PAH	*1/28/2015*	*9:53*	*9:48*	*1435*	*PAHs*	*EPA TO 13*	*1113*	*hx004*	*NA*	*NA*		*46*	*45*	*45.5*	*-2.2%*	*347,413*	

High Flow: Pre and Post readings for high flow PUF samples were magnehlic readings, mean flow rates were determined from calibration curves. Mean flow units = L/min, Total Volume Units = Liters

Landfill - South Quarry

Sample ID	Sample Date	Start Time	Stop Time	Duration	Compound	Analytical Method	Canister ID	Regulator ID	Start Pres	End Pres	Pump ID	Pre-Cal	Post-Cal	mean flow	PD	Total Volume	Total Volume COC
				Minutes					psi	psi		ml/min	ml/min	ml/min	%		
127SQ-SUMMA	1/27/2015	10:16	18:10	474	VOCs	TO-15 + TICs	as00544	sfc00029	-29	-7	NA	NA	NA	NA	NA	NA	NA
					Reduced Sulfur	ASTM D5504											
					Fixed Gases	EPA 3C m											
127SQ-ALD	1/27/2015	11:41	15:41	240	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b20276b	1200	1350	1275.0	11.1%	306,000	306,000
127SQ-HCN	1/27/2015	11:41	15:41	240	Hydrogen Cyanide	NIOSH 6010	NA	NA	NA	NA	b20063b	60	57	58.5	-5.3%	14,040	14,040
127SQ-Amine	1/27/2015	11:41	15:41	240	Amines	AQL 101	NA	NA	NA	NA	b20075b	63	57	60.0	-10.5%	14,400	14,400
127SQ-Hg	1/27/2015	11:41	15:41	240	Mercury	NIOSH 6009	NA	NA	NA	NA	b20062b	200	209	204.5	4.3%	49,080	49,080
127SQ-NH3	1/27/2015	fault	fault	--	Ammonia	OSHA ID 188	NA	NA	NA	NA	b20999b	499	fault	--	--	--	--
127SQ-CARBOX	1/27/2015	fault	fault	--	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b20968b	400	fault	--	--	--	--

Quality Control Samples

127-SUMMA-B	1/27/2015	--	16:00	NA	VOCs	TO-15 + TICs	as00124		-29.71	NA	NA	NA	NA		NA	NA	NA
					Reduced Sulfur	ASTM D5504											
					Fixed Gases	EPA 3C m											
127TB-ALD	1/27/2015	--	16:00	--	Aldehydes	EPA TO 11a	Trip Blank										
127TB-CN	1/27/2015	--	16:00	--	Hydrogen Cyanide	NIOSH 6010	Trip Blank										
127TB-Amine	1/27/2015	--	16:00	--	Amines	AQL 101	Trip Blank										
127TB-Hg	1/27/2015	--	16:00	--	Mercury	NIOSH 6009	Trip Blank										
127TB-NH3	1/27/2015	--	16:00	--	Ammonia	OSHA ID 188	Trip Blank										
127TB-CARBOX	1/27/2015	--	16:00	0:00	Carboxylic Acids	AQL 102	Trip Blank										
129BLANK-DF	1/29/2015	--	16:00	--	*Dioxins/furans*	EPA TO 9a	302-27-003 Trip blank										
129BLANK-PAH	1/29/2015	--	16:00	--	*PAHs*	EPA TO 13	hx135 Trip blank										

Upwind sample for NH3 not collected due to pump fault, collected on 1/28/2015 (sample ID: 127U12-NH3)

Downwind sample for NH3 not collected due to pump fault, collected on 1/28/2015 (sample ID: 127D12-NH3)

Downwind -1 sample for Carboxylic Acids not collected due to pump fault, collected on 1/28/2015 (sample ID: 127D12-CARBOX)

Downwind-2 sample for Carboxylic Acids not collected due to pump fault, collected on 1/28/2015 (sample ID: 127D22-CARBOX)

Onsite landfill flare station sample for Ammonia not collected due to pump fault, collected on 1/28/2015 (sample ID: 127F-NH32)

The duplicate sample for carboxylic acids was not collected due to pump fault, collected at South Quarry on 1/28/2015 (Sample ID: Dup032)

Onsite landfill south quarry sample for Ammonia not collected due to pump fault, collected on 1/28/2015 (sample ID: 127F-NH32)

Onsite landfill south quarry sample for Carboxylic Acids not collected due to pump fault, collected on 1/28/2015 (sample ID: 127F-Carbox2)

Table A-2: 4th Comprehensive Bridgeton Landfill Sampling Event (January 28, 2015) Summary of Sampling Procedures/Calibration/Methods

Upwind Location 1 -Corner of Boenker's Field and Retention Pond

Sample ID	Sample Date	Start Time	Stop Time	Duration	Compound	Analytical Method	Canister ID	Regulator ID	Start Pres	End Pres	Pump ID	Pre-Cal	Post-Cal	mean flow	PD	Total Volume	Total Volume COC
				Minutes					psi	psi		ml/min	ml/min	ml/min	%	ml	liters
128U1-SUMMA	1/28/2015	7:12	15:12	480	VOCs	TO-15 + TICs	as00763	sfc00009	-30		NA	NA	NA	NA	NA	NA	NA
					Reduced Sulfur	ASTM D5504											
					Fixed Gases	EPA 3C m											
128Dup11-Summa	1/28/2015	7:12	15:12	480	VOCs	TO-15 + TICs	as00728	sfc00043	-30		NA	NA	NA	NA	NA	NA	NA
					Reduced Sulfur	ASTM D5504											
					Fixed Gases	EPA 3C m											
128U1-ALD	1/28/2015	9:42	13:45	243	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b20594b	1220	1260	1240.0	3.2%	301,320	301.3
128U1-Amine	1/28/2015	9:42	13:45	243	Amines	AQL 101	NA	NA	NA	NA	b20065b	60	65	62.5	7.7%	15,188	15.2
128U1-NH3	1/28/2015	9:42	13:45	243	Ammonia	OSHA ID 188	NA	NA	NA	NA	b20586b	400	410	405.0	2.4%	98,415	98.4
127U12-NH3	1/28/2015	16:05	20:00	235	Ammonia	OSHA ID 188	NA	NA	NA	NA	b20586b	410	404	407.0	-1.5%	95,645	95.6
128U1-CARBOX	1/28/2015	9:42	13:45	243	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b20582b	400	408	404.0	2.0%	98,172	98.2

Downwind Location 1 - Grassy Knoll North of Pipe Staging Area

Sample ID	Sample Date	Start Time	Stop Time	Duration	Compound	Analytical Method	Canister ID	Regulator ID	Start Pres	End Pres	Pump ID	Pre-Cal	Post-Cal	mean flow	PD	Total Volume	Total Volume COC
				Minutes					psi	psi		ml/min	ml/min	ml/min	%		
128D1-SUMMA	1/28/2015	6:55	14:55	480	VOCs	TO-15 + TICs	as00696	sfc00001	-30		NA	NA	NA	NA	NA	NA	NA
					Reduced Sulfur	ASTM D5504											
					Fixed Gases	EPA 3C m											
128D1-ALD	1/28/2015	9:30	13:35	245	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b20927b	1210	1210	1210.0	0.0%	296,450	296.5
128D1-Amine	1/28/2015	9:30	13:35	245	Amines	AQL 101	NA	NA	NA	NA	b20075b	60	63	61.5	4.8%	15,068	15.1
128D1-NH3	1/28/2015	9:30	13:35	245	Ammonia	OSHA ID 188	NA	NA	NA	NA	b20257b	400	408	404.0	2.0%	98,980	99.0
127D12-NH3	1/28/2015	16:00	19:55	235	Ammonia	OSHA ID 188	NA	NA	NA	NA	b200716	423	403	413.0	-5.0%	97,055	97.1
128D1-CARBOX	1/28/2015	9:30	13:35	245	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b20069b	401	416	408.5	3.6%	100,083	100.1
127D12-CARBOX	1/28/2015	16:00	19:55	235	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b20070b	430	412	421.0	-4.4%	98,935	98.9

Downwind Location 2 -Grassy Knoll North of Asphalt Plane West of Pipe Staging Area

Sample ID	Sample Date	Start Time	Stop Time	Duration	Compound	Analytical Method	Canister ID	Regulator ID	Start Pres	End Pres	Pump ID	Pre-Cal	Post-Cal	mean flow	PD	Total Volume	Total Volume COC
				Minutes					psi	psi		ml/min	ml/min	ml/min	%		
128D2-ALD	1/28/2015	10:35	14:32	237	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b20276b	1210	1200	1205.0	-0.8%	285,585	285.6
128D2-Amine	1/28/2015	10:35	14:32	237	Amines	AQL 101	NA	NA	NA	NA	b19879b	61	67	64.0	9.0%	15,168	15.2
128D2-NH3	1/28/2015	10:35	14:32	237	Ammonia	OSHA ID 188	NA	NA	NA	NA	b20071b	400	423	411.5	5.4%	97,526	97.5
128D2-CARBOX	1/28/2015	10:35	14:32	237	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b20070b	401	430	415.5	6.7%	98,474	98.5
127D22-CARBOX	1/28/2015	16:08	20:06	238	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b20073b	412	409	410.5	-0.7%	97,699	97.7

Table A-2: 4th Comprehensive Bridgeton Landfill Sampling Event (January 28, 2015) Summary of Sampling Procedures/Calibration/Methods

Landfill - Neck

Sample ID	Sample Date	Start Time	Stop Time	Duration	Compound	Analytical Method	Canister ID	Regulator ID	Start Pres	End Pres	Pump ID	Pre-Cal	Post-Cal	mean flow	PD	Total Volume	Total Volume COC
				Minutes					psi	psi		ml/min	ml/min	ml/min	%	ml	liters
128N-SUMMA	1/28/2015	7:05	15:05	480	VOCs	TO-15 + TICs	as00598	sfc00045	-30		NA	NA	NA	NA	NA	NA	NA
					Reduced Sulfur	ASTM D5504											
					Fixed Gases	EPA 3C m											
128N-ALD	1/28/2015	9:53	13:55	242	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b21008b	1230	1280	1255.0	3.9%	303,710	303.7
128N-HCN	1/28/2015	9:53	13:55	242	Hydrogen Cyanide	NIOSH 6010	NA	NA	NA	NA	b19877b	61	65	63.0	6.2%	15,246	15.2
128N-Amine	1/28/2015	9:53	13:55	242	Amines	AQL 101	NA	NA	NA	NA	b20585b	61	63	62.0	3.2%	15,004	15.0
128N-Hg	1/28/2015	9:53	13:55	242	Mercury	NIOSH 6009	NA	NA	NA	NA	b20076b	202	212	207.0	4.7%	50,094	50.1
128N-NH3	1/28/2015	9:53	13:55	242	Ammonia	OSHA ID 188	NA	NA	NA	NA	b20062b	401	410	405.5	2.2%	98,131	98.1
128N-CARBOX	1/28/2015	9:53	13:55	242	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b20073b	399	412	405.5	3.2%	98,131	98.1

Landfill - North Quarry

Sample ID	Sample Date	Start Time	Stop Time	Duration	Compound	Analytical Method	Canister ID	Regulator ID	Start Pres	End Pres	Pump ID	Pre-Cal	Post-Cal	mean flow	PD	Total Volume	Total Volume COC
				Minutes					psi	psi		ml/min	ml/min	ml/min	%		
128NQ-SUMMA	1/28/2015	7:17	15:17	480	VOCs	TO-15 + TICs	as00798	sfc00039	-27		NA	NA	NA	NA	NA	NA	NA
					Reduced Sulfur	ASTM D5504											
					Fixed Gases	EPA 3C m											
128NQ-ALD	1/28/2015	10:00	14:02	242	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b20265b	1230	1290	1260.0	4.7%	304,920	304.9
128NQ-HCN	1/28/2015	10:00	14:02	242	Hydrogen Cyanide	NIOSH 6010	NA	NA	NA	NA	b20063b	61	67	64.0	9.0%	15,488	15.5
128NQ-Amine	1/28/2015	10:00	14:02	242	Amines	AQL 101	NA	NA	NA	NA	b19863b	62	69	65.5	10.1%	15,851	15.9
128NQ-Hg	1/28/2015	10:00	14:02	242	Mercury	NIOSH 6009	NA	NA	NA	NA	b19876b	200	215	207.5	7.0%	50,215	50.2
128NQ-NH3	1/28/2015	10:08	14:02	234	Ammonia	OSHA ID 188	NA	NA	NA	NA	b20580b	400	424	412.0	5.7%	96,408	96.4
128NQ-CARBOX	1/28/2015	10:00	14:02	242	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b20618b	400	423	411.5	5.4%	99,583	99.6

Landfill - South Quarry

Sample ID	Sample Date	Start Time	Stop Time	Duration	Compound	Analytical Method	Canister ID	Regulator ID	Start Pres	End Pres	Pump ID	Pre-Cal	Post-Cal	mean flow	PD	Total Volume	Total Volume COC
				Minutes					psi	psi		ml/min	ml/min	ml/min	%		
127SQ-NH32	1/28/2015	15:09	19:02	233	Ammonia	OSHA ID 188	NA	NA	NA	NA	b20257b	400	408	404.0	2.0%	94,132	94.1
127SQ-CARBOX2	1/28/2015	15:09	19:02	233	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b20069b	401	416	408.5	3.6%	95,181	95.2
127Dup032	1/28/2015	15:09	19:02	233	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b20582b	400	408	404.0	2.0%	94,132	94.1
128Grab	1/28/2015		17:30	1	VOCs	TO-15 + TICs	1ss00168	na	-14.3	--	NA	NA	NA	NA	NA	NA	NA
					Reduced Sulfur	ASTM D5504											

Landfill - Flare

Sample ID	Sample Date	Start Time	Stop Time	Duration	Compound	Analytical Method	Canister ID	Regulator ID	Start Pres	End Pres	Pump ID	Pre-Cal	Post-Cal	mean flow	PD	Total Volume	Total Volume COC
				Minutes					psi	psi		ml/min	ml/min	ml/min	%		
127F-NH32	1/28/2015	15:02	18:58	236	Ammonia	OSHA ID 188	NA	NA	NA	NA	b20062b	401	410	405.5	2.2%	95,698	95,698

Table A-3: 4th Comprehensive Bridgeton Landfill Sampling Event Source Gas Summary of Sampling Procedures/Calibration/Methods

2015 Comprehensive Monitoring Event - Landfill - Neck

Sample ID	Sample Date	Start Time	Stop Time	Duration	Compound	Analytical Method	Canister ID	Regulator ID	Start Pres	End Pres	Pump ID	Pre-Cal	Post-Cal	mean flow	PD	Total Volume	Total Volume COC
				Minutes					psi	psi		ml/min	ml/min	ml/min	%		
128Ns-GRAB	1/28/2015	16:23	16:24	1	VOCs	TO-15 + TICs	1ss00036	NA	--	--	NA	NA	NA	NA	NA	NA	NA
					Reduced Sulfur	ASTM D5504											
					Fixed Gases	EPA 3C m											
128N-sALD	1/28/2015	16:52	16:54	2	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b16609b	1160	1150	1155.0	-0.9%	2,310	2,310
128N-sHCN	1/28/2015	16:29	16:35	6	Hydrogen Cyanide	NIOSH 6010	NA	NA	NA	NA	b20074b	61	61	61.0	0.0%	366	366
128N-sAmine	1/28/2015	16:34	16:42	8	Amines	AQL 101	NA	NA	NA	NA	b20074b	61	61	61.0	0.0%	488	488
128Dup05	1/28/2015	NA	NA	8	Amines	AQL 101	NA	NA	NA	NA	b20074b	61	61	61.0	0.0%	488	488
128N-sHg	1/28/2015	16:55	17:01	6	Mercury	NIOSH 6009	NA	NA	NA	NA	b19862b	200	199	199.5	-0.5%	1,197	1,197
128N-sNH3	1/28/2015	17:01	17:05	4	Ammonia	OSHA ID 188	NA	NA	NA	NA	20932b	499	507	503.0	1.6%	2,012	2,012
128N-sCARBOX	1/28/2015	17:06	17:12	6	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b17183b	400	403	401.5	0.7%	2,409	2,409

2015 Comprehensive Monitoring Event - Landfill - North Quarry

Sample ID	Sample Date	Start Time	Stop Time	Duration	Compound	Analytical Method	Canister ID	Regulator ID	Start Pres	End Pres	Pump ID	Pre-Cal	Post-Cal	mean flow	PD	Total Volume	Total Volume COC
				Minutes					psi	psi		ml/min	ml/min	ml/min	%		
128NQs-GRAB	1/28/2015	14:09	14:10	1	VOCs	TO-15 + TICs	1ss00069	NA	--	--	NA	NA	NA	NA	NA	NA	NA
					Reduced Sulfur	ASTM D5504											
					Fixed Gases	EPA 3C m											
128NQ-sALD	1/28/2015	14:31	14:33	2	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b16609b	1160	1150	1155.0	-0.9%	2,310	2,310
128NQ-sHCN	1/28/2015	14:14	14:20	6	Hydrogen Cyanide	NIOSH 6010	NA	NA	NA	NA	b20074b	61	61	61.0	0.0%	366	366
128NQ-sAmine	1/28/2015	14:21	14:29	8	Amines	AQL 101	NA	NA	NA	NA	b20074b	61	61	61.0	0.0%	488	488
128NQ-sHg	1/28/2015	14:35	14:41	6	Mercury	NIOSH 6009	NA	NA	NA	NA	b19862b	200	199	199.5	-0.5%	1,197	1,197
128NQ-sNH3	1/28/2015	14:42	14:46	4	Ammonia	OSHA ID 188	NA	NA	NA	NA	20932b	499	507	503.0	1.6%	2,012	2,012
128Dup06	1/28/2015			4	Ammonia	OSHA ID 188	NA	NA	NA	NA	20932b	499	507	503.0	1.6%	2,012	2,012
128NQ-sCARBOX	1/28/2015	14:54	15:00	6	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b17183b	400	403	401.5	0.7%	2,409	2,409

2015 Comprehensive Monitoring Event - Landfill - South Quarry

Sample ID	Sample Date	Start Time	Stop Time	Duration	Compound	Analytical Method	Canister ID	Regulator ID	Start Pres	End Pres	Pump ID	Pre-Cal	Post-Cal	mean flow	PD	Total Volume	Total Volume COC
				Minutes					psi	psi		ml/min	ml/min	ml/min	%		
128SQs-GRAB	1/28/2015	17:21	17:22	1	VOCs	TO-15 + TICs	1ss00175	NA	--	--	NA	NA	NA	NA	NA	NA	NA
					Reduced Sulfur	ASTM D5504											
					Fixed Gases	EPA 3C m											
128SQ-sALD	1/28/2015	17:38	17:40	2	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b16609b	1160	1150	1155.0	-0.9%	2,310	2,310
128SQ-sHCN	1/28/2015	17:22	17:28	6	Hydrogen Cyanide	NIOSH 6010	NA	NA	NA	NA	b20074b	61	61	61.0	0.0%	366	366
128SQ-sAmine	1/28/2015	17:30	17:38	8	Amines	AQL 101	NA	NA	NA	NA	b20074b	61	61	61.0	0.0%	488	488
128SQ-sHg	1/28/2015	17:41	17:47	6	Mercury	NIOSH 6009	NA	NA	NA	NA	b19862b	200	199	199.5	-0.5%	1,197	1,197
128SQ-sNH3	1/28/2015	17:48	17:52	4	Ammonia	OSHA ID 188	NA	NA	NA	NA	20932b	499	507	503.0	1.6%	2,012	2,012
128SQ-sCARBOX	1/28/2015	17:53	17:59	6	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b17183b	400	403	401.5	0.7%	2,409	2,409

2015 Comprehensive Monitoring Event - Landfill - Flare

Sample ID	Sample Date	Start Time	Stop Time	Duration	Compound	Analytical Method	Canister ID	Regulator ID	Start Pres	End Pres	Pump ID	Pre-Cal	Post-Cal	mean flow	PD	Total Volume	Total Volume COC
				Minutes					psi	psi		ml/min	ml/min	ml/min	%		
128Fs-GRAB	1/28/2015	13:17	13:18	1	VOCs	TO-15 + TICs	1ss00181	NA	--	--	NA	NA	NA	NA	NA	NA	NA
					Reduced Sulfur	ASTM D5504											
					Fixed Gases	EPA 3C m											
128F-sALD	1/28/2015	13:38	13:39	1	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b16609b	1160	1150	1155.0	-0.9%	1,155	1,155
128F-sHCN	1/28/2015	13:24	13:27	3	Hydrogen Cyanide	NIOSH 6010	NA	NA	NA	NA	b20074b	61	61	61.0	0.0%	183	183
128F-Dup04	1/28/2015	na	na	3	Hydrogen Cyanide	NIOSH 6010	NA	NA	NA	NA	b20074b	61	61	61.0	0.0%	183	183
128F-sAmine	1/28/2015	13:32	13:36	4	Amines	AQL 101	NA	NA	NA	NA	b20074b	61	61	61.0	0.0%	244	244
128F-sHg	1/28/2015	13:40	13:43	3	Mercury	NIOSH 6009	NA	NA	NA	NA	b19862b	200	199	199.5	-0.5%	598	598
128F-sNH3	1/28/2015	13:44	13:46	2	Ammonia	OSHA ID 188	NA	NA	NA	NA	20932b	499	507	503.0	1.6%	1,006	1,006
128F-sCARBOX	1/28/2015	13:49	13:52	3	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b17183b	400	403	401.5	0.7%	1,205	1,205

Table A-4: 4th Comprehensive Bridgeton Landfill Sampling Event (January 29, 2015) Summary of Source Gas Dioxin/Dibenzofuran Sampling Procedures/Calibration/Methods																	
Sample ID	**Sample Date**	**Start Time**	**Stop Time**	Duration	**Compound**	**Analytical Method**	**Canister ID**	**Regulator ID**	**Start Pres**	**End Pres**	**Can Vol**	**Pre-Cal**	**Post-Cal**	**mean flow**	**PD**	**Total Volume**	**Location**
				Minutes					**psi**	**psi**	**L**	**ml/min**	**ml/min**	**ml/min**	**%**		
129Grab2D	1/29/2015	10:59	11:00	1	VOCs	TO-15 + TICs	1ss00088	NA	-14.3		1 L	NA	NA	**NA**	NA	NA	MSD Lift
					Reduced Sulfur	ASTM D5504											
129Grab3U	1/29/2015	11:19	11:20	1	VOCs	TO-15 + TICs	1ss00024	NA	-14.3		1 L	NA	NA		NA	NA	Grassy Knoll
					Reduced Sulfur	ASTM D5504											
129sN-DF	1/29/2015	*9:55*	11:53	118	*Dioxins/furans*	*EPA TO 9a*	302-27-012	1075	NA	NA	NA	48	46	**47.0**		***27,711***	NECK
129sN-PAH	1/29/2015	*9:55*	11:53	118	*PAHs*	*EPA TO 13*	hx028	1068	NA	NA	NA	55	53	**54.0**		***28,526***	NECK
129sNQ-DF	1/29/2015	*9:25*	11:31	126	*Dioxins/furans*	*EPA TO 9a*	302-27-006	1095	NA	NA	NA	37	36	**36.5**		***28,680***	NORTH QUARRY
129sNQ-PAH	1/29/2015	*9:26*	11:31	125	*PAHs*	*EPA TO 13*	hx081	1113	NA	NA	NA	46	45	**45.5**		***30,262***	NORTH QUARRY
129sSQ-DF	1/29/2015	*10:17*	12:17	120	*Dioxins/furans*	*EPA TO 9a*	302-27-007	1085	NA	NA	NA	44	38	**41.0**		***28,508***	SOUTH QUARRY
129sSQ-PAH	1/29/2015	*10:17*	12:17	120	*PAHs*	*EPA TO 13*	hx067	1060	NA	NA	NA	31	17	**24.0**		***27,340***	SOUTH QUARRY
129Blank-DF	1/29/2015			0	*Dioxins/furans*	*EPA TO 9a*			NA	NA	NA						BLANK
129Blank-PAH	1/29/2015			0	*PAHs*	*EPA TO 13*			NA	NA	NA						BLANK
High Flow: Pre and Post readings for high flow PUF samples were magnehlic readings, mean flow rates were determined from calibration curves. Mean flow units = L/min, Total Volume Units = Liters																	

APPENDIX B – LABORATORY ANALYTICAL RESULTS

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LABORATORY REPORT

February 17, 2015

Deborah Gray
Stantec Consulting Services, Inc.
1500 Lake Shore Drive Suite 100
Columbus, OH 43204

RE: Bridgeton / 182608020

Dear Deborah:

Enclosed are the results of the samples submitted to our laboratory on January 30, 2015. The samples were sent out for partial analysis to our Salt lake City facility. Please find their report (Work Order: 34-1503475) attached. For your reference, these analyses have been assigned our service request number P1500371.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 8:55 am, Feb 17, 2015

For Samantha Henningsen
Project Manager

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Client: Stantec Consulting Services, Inc. Service Request No: P1500371
Project: Bridgeton / 182608020

CASE NARRATIVE

The samples were received intact under chain of custody on January 30, 2015 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Aldehyde Analysis

The DNPH silica gel tube samples were analyzed for aldehydes according to EPA Method TO-11A using high performance liquid chromatography (HPLC). This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP scope of accreditation.

Amine Analysis

The Alumina tube samples were analyzed for amines using a gas chromatograph equipped with a nitrogen phosphorus detector (NPD). This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP scope of accreditation.

The upper control criterion was exceeded for Trimethylamine in the Continuing Calibration Verification (CCV) analyzed on February 4, 2015. Since the apparent problem equates to a potential high bias and the field samples analyzed in this sequence did not contain the analyte in question, the data quality has not been affected. No corrective action was required.

Ammonia Analysis

The Anasorb 747 tube samples were prepared in accordance with OSHA ID-188 and analyzed for ammonia in air by Ion Selective Electrode per OSHA ID-164. This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP scope of accreditation.

Carboxylic Acids Analysis

The Silica gel tube samples were analyzed for carboxylic acids using combined gas chromatography/mass spectrometry (GC/MS) in accordance with laboratory operating procedures. This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP scope of accreditation.

The minimum criterion for Cyclohexanecarboxylic Acid was not met in the Continuing Calibration Verification (CCV) analyzed on February 5, 2015 and February 11, 2015. The minimum criterion for Heptanoic Acid, Cyclohexanecarboxylic Acid and Octanoic Acid were not met in the Continuing Calibration Verification (CCV) analyzed on February 6, 2015. In accordance with ALS standard operating procedures, a Method Reporting Limit (MRL) check standard containing the analytes of concern was analyzed each day of analysis. The MRL check

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Client: Stantec Consulting Services, Inc. Service Request No: P1500371
Project: Bridgeton / 182608020

CASE NARRATIVE

standard verified that instrument sensitivity was adequate to detect the analytes at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compounds in question and the compounds were not detected in the field samples, the data quality has not been significantly affected. This procedure is a quantitative confirmation of non-detect results at or below the MRL. No further corrective action was necessary.

The upper control criterion was exceeded for Acetic Acid, 2-Methylpropanoic Acid and Benzoic Acid in the Duplicate Laboratory Control Sample analyzed on January 11, 2015. However, the Laboratory Control Sample (LCS) was within control limits. Since the error associated with the elevated recovery equates to a high bias, the sample data has not been significantly affected. The data has been flagged accordingly.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjlabs.com/search-accredited-labs	L14-2
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	838341
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	CA200007
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-14-5
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272014-4
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Stantec Consulting Services, Inc. Service Request: P1500371
Project ID: Bridgeton / 182608020

Date Received: 1/30/2015
Time Received: 07:45

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	TO-11A - Carbonyls	Amines - Amines	Carbox Acids - Carboxy Acids	OSHA ID-164 Modified - Ammonia
127U1-ALD	P1500371-001	Air	1/27/2015	14:26	X			
127U1-Amine	P1500371-003	Air	1/27/2015	14:26		X		
127U1-CARBOX	P1500371-005	Air	1/27/2015	16:26			X	
127D1-ALD	P1500371-006	Air	1/27/2015	15:22	X			
127D1-Amine	P1500371-008	Air	1/27/2015	15:22		X		
127D2-ALD	P1500371-010	Air	1/27/2015	15:28	X			
127D2-Amine	P1500371-011	Air	1/27/2015	15:28		X		
127D2-NH3	P1500371-012	Air	1/27/2015	15:28				X
127F-ALD	P1500371-013	Air	1/27/2015	15:15	X			
127F-Amine	P1500371-015	Air	1/27/2015	15:15		X		
127F-CARBOX	P1500371-017	Air	1/27/2015	15:15			X	
127SQ-ALD	P1500371-018	Air	1/27/2015	15:41	X			
127SQ-Amine	P1500371-020	Air	1/27/2015	15:41		X		
128U1-ALD	P1500371-022	Air	1/28/2015	13:45	X			
128U1-Amine	P1500371-023	Air	1/28/2015	13:45		X		
128U1-NH3	P1500371-024	Air	1/28/2015	13:45				X
128U1-CARBOX	P1500371-025	Air	1/28/2015	13:45			X	
128D1-ALD	P1500371-026	Air	1/28/2015	13:35	X			
128D1-Amine	P1500371-027	Air	1/28/2015	13:35		X		
128D1-NH3	P1500371-028	Air	1/28/2015	13:35				X
128D1-CARBOX	P1500371-029	Air	1/28/2015	13:35			X	
128D2-ALD	P1500371-030	Air	1/28/2015	14:32	X			
128D2-Amine	P1500371-031	Air	1/28/2015	14:32		X		
128D2-NH3	P1500371-032	Air	1/28/2015	14:32				X
128D2-CARBOX	P1500371-033	Air	1/28/2015	14:32			X	
128N-ALD	P1500371-034	Air	1/28/2015	13:55	X			
128N-Amine	P1500371-036	Air	1/28/2015	13:55		X		
128N-NH3	P1500371-038	Air	1/28/2015	13:55				X
128N-CARBOX	P1500371-039	Air	1/28/2015	13:55			X	
128NQ-ALD	P1500371-040	Air	1/28/2015	14:02	X			
128NQ-Amine	P1500371-042	Air	1/28/2015	14:02		X		
128NQ-NH3	P1500371-044	Air	1/28/2015	14:02				X
128NQ-CARBOX	P1500371-045	Air	1/28/2015	14:02			X	
127SQ-NH32	P1500371-046	Air	1/28/2015	19:02				X
127SQ-CARBOX2	P1500371-047	Air	1/28/2015	19:02			X	
127F-NH32	P1500371-048	Air	1/28/2015	18:58				X
127U12-NH3	P1500371-049	Air	1/28/2015	20:00				X
127D12-NH3	P1500371-050	Air	1/28/2015	19:55				X
127D22-CARBOX	P1500371-051	Air	1/28/2015	20:06			X	
127D12-CARBOX	P1500371-052	Air	1/28/2015	19:55			X	

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Stantec Consulting Services, Inc. Service Request: P1500371
Project ID: Bridgeton / 182608020

Date Received: 1/30/2015
Time Received: 07:45

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	TO-11A - Carbonyls	Amines - Amines	Carbox Acids - Carboxy Acids	OSHA ID-164 Modified - Ammonia
127TB-ALD	P1500371-053	Air	1/27/2015	00:00	X			
128TB-Amine	P1500371-055	Air	1/28/2015	00:00		X		
127TB-NH3	P1500371-057	Air	1/27/2015	00:00				X
127TB-CARBOX	P1500371-058	Air	1/27/2015	00:00			X	
128N-sALD	P1500371-059	Air	1/28/2015	16:54	X			
128N-sAmine	P1500371-061	Air	1/28/2015	16:42		X		
128N-sNH3	P1500371-063	Air	1/28/2015	17:05				X
128N-sCARBOX	P1500371-064	Air	1/28/2015	17:12			X	
128NQ-sALD	P1500371-065	Air	1/28/2015	14:33	X			
128NQ-sAmine	P1500371-067	Air	1/28/2015	14:29		X		
128NQ-sNH3	P1500371-069	Air	1/28/2015	14:46				X
128NQ-sCARBOX	P1500371-070	Air	1/28/2015	15:00			X	
128SQ-sALD	P1500371-071	Air	1/28/2015	17:40	X			
128SQ-sAmine	P1500371-073	Air	1/28/2015	17:38		X		
128SQ-sNH3	P1500371-075	Air	1/28/2015	17:52				X
128SQ-sCARBOX	P1500371-076	Air	1/28/2015	17:59			X	
128F-sALD	P1500371-077	Air	1/28/2015	13:39	X			
128F-sAmine	P1500371-079	Air	1/28/2015	13:36		X		
128F-sNH3	P1500371-081	Air	1/28/2015	13:46				X
128F-sCARBOX	P1500371-082	Air	1/28/2015	13:52			X	
127-Dup01	P1500371-083	Air	1/27/2015	00:00	X			
127Dup032	P1500371-085	Air	1/28/2015	00:00			X	
128Dup05	P1500371-087	Air	1/28/2015	00:00		X		
128Dup06	P1500371-088	Air	1/28/2015	00:00				X

P1500371

Chain of Custody Record & Analytical Service Request

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone: (805) 526-7161 Fax: (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) Please Circle:
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) ***10 Day (Standard)***

ALS Project No.

Company Name & Address (Reporting Information) Stantec Consulting 1500 Lake Shore Drive Columbus Ohio	Project Name Bridgeton Project Number 182608020	ALS Contact: Samantha Henningsen
Project Manager Deb.Gray@Stantec.com	P.O. # / Billing Information Amy Hargrove/Bridgeton LF	
Phone 614-643-4362 Fax		
Email Address for Result Reporting Deb.Gray@Stantec.com Chris.lalonde@stantec.com	Sampler (Print & Sign) NI/CJL	

Client Sample ID	Laboratory ID #	Tube ID	Date Collected	Sampling Pump Flow (mL/min)	Sampling Start Time	Sampling End Time	Sample Volume	EPA TO 11a	NIOSH 6010	AQL 101	NIOSH 6009	OSHA ID 188	AQL 102	Comments e.g. Actual Preservative or specific instructions
								Analysis Method/Analytes						
127U1-ALD	1		1/27/2015	1295	9:55	14:26	350,945	X						271
127U1-CN	2		1/27/2015	61	9:55	14:26	16,531		X					271
127U1-Amine	3		1/27/2015	62	9:55	14:26	16,802			X				271
127U1-Hg	4		1/27/2015	203	9:55	14:26	55,013				X			271
127U1-CARBOX	5		1/27/2015	403.5	12:15	16:26	101,279						X	251
127D1-ALD	6		1/27/2015	1275	11:22	15:22	306,000	X						240
127D1-CN	7		1/27/2015	61.5	11:22	15:22	14,760		X					240
127D1-Amine	8		1/27/2015	60.5	11:22	15:22	14,520			X				240
127D1-Hg	9		1/27/2015	202	11:22	15:22	48,480				X			240
127D2-ALD	10		1/27/2015	1275	11:28	15:28	306,000	X						240
127D2-Amine	11		1/27/2015	61.5	11:28	15:28	14,760			X				240
127D2-NH3	12		1/27/2015	507.5	11:28	15:28	121,800					X		240
Intentionally Blank	XX													

Report Tier Levels - please select
Tier I - (Results/Default if not specified) _____ Tier III (Data Validation Package) 10% Surcharge __X
Tier II (Results + QC) _____ Tier IV (client specified) _____
EDD required ***Yes*** Type: _____

Project Requirements (MRLs, QAPP)
Wet Ice
3°

	Date:	Time:	Received by: (Signature)	Time:
Relinquished by: (Signature) FED EX	11/29/15	1700	FED EX	
Relinquished by: (Signature) FED EX	Date:	Time:	Received by: (Signature) 1/30/15	Time: 0745
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:

Cooler / Blank Temperature _____ °C

Chain of Custody Record & Analytical Service Request

P1500371

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone: (805) 526-7161 Fax: (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) Please Circle:
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) **10 Day (Standard)**

ALS Project No.

Company Name & Address (Reporting Information)
Stantec Consulting
1500 Lake Shore Drive
Columbus Ohio

Project Name: Bridgeton
Project Number: 182608020

ALS Contact: Samantha Henningsen

Project Manager: Deb.Gray@Stantec.com
Phone: 614-643-4362 Fax:
Email Address for Result Reporting: Deb.Gray@Stantec.com Chris.lalonde@stantec.com

P.O. # / Billing Information: Amy Hargrove/Bridgeton LF
Sampler (Print & Sign): NI/CJL

Client Sample ID	Laboratory ID #	Tube ID	Date Collected	Sampling Pump Flow (mL/min)	Sampling Start Time	Sampling End Time	Sample Volume	Analysis Method/Analytes: EPA TO 11a	NIOSH 6010	AQL 101	NIOSH 6009	OSHA ID 188	AQL 102	Comments e.g. Actual Preservative or specific instructions
127F-ALD	13		1/27/2015	1255	11:10	15:15	307,475	X						245
127F-CN	14		1/27/2015	58.5	11:10	15:15	14,333		X					245
127F-Amine	15		1/27/2015	61.5	11:10	15:15	15,068			X				245
127F-Hg	16		1/27/2015	201.5	11:10	15:15	49,368				X			245
127F-CARBOX	17		1/27/2015	408	11:10	15:15	99,960						X	245
127SQ-ALD	18		1/27/2015	1275	11:41	15:41	306,000	X						240
127SQ-CN	19		1/27/2015	58.5	11:41	15:41	14,040		X					240
127SQ-Amine	20		1/27/2015	60	11:41	15:41	14,400			X				240
127SQ-Hg	21		1/27/2015	204.5	11:41	15:41	49,080				X			240
128U1-ALD	22		1/28/2015	1240	9:42	13:45	301,320	X						243
128U1-Amine	23		1/28/2015	62.5	9:42	13:45	15,188			X				243
128U1-NH3	24		1/28/2015	405	9:42	13:45	98,415					X		243
128U1-CARBOX	25		1/28/2015	404	9:42	13:45	98,172						X	243
Intentionally Blank														
Intentionally Blank														

Report Tier Levels - please select
Tier I - (Results/Default if not specified) ____ Tier III (Data Validation Package) 10% Surcharge __X
Tier II (Results + QC) ____ Tier IV (client specified) ____
EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:
	1/29/15	1100	FED EX	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:
FED EX				1/30/15 1045
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:

Cooler / Blank Temperature ____ °C

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone: (805) 526-7161 Fax: (805) 526-7270

Chain of Custody Record & Analytical Service Request

P1520371

Requested Turnaround Time in Business Days (Surcharges) Please Circle:
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) **10 Day (Standard)**

ALS Project No.

Company Name & Address (Reporting Information) Stantec Consulting 1500 Lake Shore Drive Columbus Ohio	Project Name Bridgeton Project Number 182608020	ALS Contact: Samantha Henningsen
Project Manager Deb.Gray@Stantec.com	P.O. # / Billing Information Amy Hargrove/Bridgeton LF	
Phone 614-643-4362 Fax		
Email Address for Result Reporting Deb.Gray@Stantec.com Chris.lalonde@stantec.com	Sampler (Print & Sign) NI/CJL	

Client Sample ID	Laboratory ID #	Tube ID	Date Collected	Sampling Pump Flow (mL/min)	Sampling Start Time	Sampling End Time	Sample Volume	Analysis Method/Analytes: EPA TO 11a	NIOSH 6010	AQL 101	NIOSH 6009	OSHA ID 188	AQL 102	Comments e.g. Actual Preservative or specific instructions
128D1-ALD	26		1/28/2015	1210	9:30	13:35	296,450	X						245
128D1-Amine	27		1/28/2015	61.5	9:30	13:35	15,068			X				245
128D1-NH3	28		1/28/2015	404	9:30	13:35	98,980					X		245
128D1-CARBOX	29		1/28/2015	408.5	9:30	13:35	100,083						X	245
128D2-ALD	30		1/28/2015	1205	10:35	14:32	285,585	X						237
128D2-Amine	31		1/28/2015	64	10:35	14:32	15,168			X				237
128D2-NH3	32		1/28/2015	411.5	10:35	14:32	97,526					X		237
128D2-CARBOX	33		1/28/2015	415.5	10:35	14:32	98,474						X	237
128N-ALD	34		1/28/2015	1255	9:53	13:55	303,710	X						242
128N-CN	35		1/28/2015	63	9:53	13:55	15,246		X					242
128N-Amine	36		1/28/2015	62	9:53	13:55	15,004			X				242
128N-Hg	37		1/28/2015	207	9:53	13:55	50,094				X			242
128N-NH3	38		1/28/2015	405.5	9:53	13:55	98,131					X		242
128N-CARBOX	39		1/28/2015	405.5	9:53	13:55	98,131						X	242
Intentionally Blank														

Report Tier Levels - please select
Tier I - (Results/Default if not specified) _____
Tier II (Results + QC) _____
Tier III (Data Validation Package) 10% Surcharge __X
Tier IV (client specified) _____

EDD required Yes / No
Type: _____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date: 1/29/15	Time: 1700	Received by: (Signature) FED EX	Time:	
Relinquished by: (Signature) FED EX	Date: /	Time:	Received by: (Signature)	Time: 0945	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:	Cooler / Blank Temperature ____ °C

P1500371

ALS Environmental

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone: (805) 526-7161 Fax: (805) 526-7270

Chain of Custody Record & Analytical Service Request

Requested Turnaround Time in Business Days (Surcharges) Please Circle:
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) ***10 Day (Standard)***

ALS Project No.

Company Name & Address (Reporting Information)
Stantec Consulting
1500 Lake Shore Drive
Columbus Ohio

Project Name: Bridgeton
Project Number: 182608020

ALS Contact: Samantha Henningsen

Project Manager: Deb.Gray@Stantec.com
Phone: 614-643-4362 Fax:
Email Address for Result Reporting: Deb.Gray@Stantec.com Chris.lalonde@stantec.com

P.O. # / Billing Information: Amy Hargrove/Bridgeton LF
Sampler (Print & Sign): NI/CJL

Client Sample ID	Laboratory ID #	Tube ID	Date Collected	Sampling Pump Flow (mL/min)	Sampling Start Time	Sampling End Time	Sample Volume	Analysis Method/Analytes: EPA TO 11a	NIOSH 6010	AQL 101	NIOSH 6009	OSHA ID 188	AQL 102	Comments e.g. Actual Preservative or specific instructions
128NQ-ALD	40		1/28/2015	1260	10:00	14:02	304,920	X						242
128NQ-CN	41		1/28/2015	64	10:00	14:02	15,488		X					242
128NQ-Amine	42		1/28/2015	65.5	10:00	14:02	15,851			X				242
128NQ-Hg	43		1/28/2015	207.5	10:00	14:02	50,215				X			242
128NQ-NH3	44		1/28/2015	412	10:08	14:02	96,408					X		234
128NQ-CARBOX	45		1/28/2015	411.5	10:00	14:02	99,583						X	242
127SQ-NH32	46		1/28/2015	404	15:09	19:02	94,132					X		233
127SQ-CARBOX2	47		1/28/2015	408.5	15:09	19:02	95,181						X	233
127F-NH32	48	lot 9132	1/28/2015	405.5	15:02	18:58	95,698					X		236
127U12-NH3	49	lot 9132	1/28/2015	407	16:05	20:00	95,645					X		235
127D12-NH3	50		1/28/2015	413	16:00	19:55	97,055					X		235
127D22-CARBOX	51		1/28/2015	410.5	16:08	20:06	97,699						X	238
127D12-CARBOX	52		1/28/2015	421	16:00	19:55	98,935						X	235
Intentionally Blank														

Report Tier Levels - please select
Tier I - (Results/Default if not specified) _____ Tier III (Data Validation Package) 10% Surcharge __X
Tier II (Results + QC) _____ Tier IV (client specified) _____

EDD required Yes / No
Type: _____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:
	1/29/15	1400	FED EX	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:
				1/30/15 0745
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:

Cooler / Blank Temperature _____ °C

4-01-10-01

Chain of Custody Record & Analytical Service Request

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone: (805) 526-7161 Fax: (805) 526-7270

P1500371

Requested Turnaround Time In Business Days (Surcharges) Please Circle:
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) *10 Day (Standard)*

ALS Project No.

Company Name & Address (Reporting Information)	Stantec Consulting 1500 Lake Shore Drive Columbus Ohio
Project Name	Bridgeton
Project Number	182608020
Project Manager	Deb.Gray@Stantec.com
P.O. # / Billing Information	Amy Hargrove/Bridgeton LF
Phone / Fax	614-643-4362 /
Email Address for Result Reporting	Deb.Gray@Stantec.com Chris.lalonde@stantec.com
Sampler (Print & Sign)	NI/CJL
ALS Contact:	Samantha Henningsen

Client Sample ID	Laboratory ID #	Tube ID	Date Collected	Sampling Pump Flow (mL/min)	Sampling Start Time	Sampling End Time	Sample Volume	Analysis Method/Analytes: EPA TO 11a	NIOSH 6010	AQL 101	NIOSH 6009	OSHA ID 188	AQL 102	Comments e.g. Actual Preservative or specific instructions
127TB-ALD	53		1/27/2015	NA	NA	NA	NA	X						Trip Blank
127TB-CN	54		1/27/2015	NA	NA	NA	NA		X					Trip Blank
128TB-Amine	55		1/28/2015	NA	NA	NA	NA			X				Trip Blank
127TB-Hg	56		1/27/2015	NA	NA	NA	NA				X			Trip Blank
127TB-NH3	57		1/27/2015	NA	NA	NA	NA					X		Trip Blank
127TB-CARBOX	58		1/27/2015	NA	NA	NA	NA						X	Trip Blank
128N-sALD	59		1/28/2015	1155	16:52	16:54	2,310	X						2
128N-sHCN	60		1/28/2015	61	16:29	16:35	366		X					6
128N-sAmine	61		1/28/2015	61	16:34	16:42	488			X				8
128N-sHg	62		1/28/2015	199.5	16:55	17:01	1,197				X			6
128N-sNH3	63		1/28/2015	503	17:01	17:05	2,012					X		4
128N-sCARBOX	64		1/28/2015	401.5	17:06	17:12	2,409						X	6
Intentionally Blank														
Intentionally Blank														

Report Tier Levels - please select
Tier I - (Results/Default if not specified) _____
Tier II (Results + QC) _____
Tier III (Data Validation Package) 10% Surcharge __X
Tier IV (client specified) _____

EDD required Yes / No
Type: _____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date: 1/29/15	Time: 1700	Received by: (Signature) FED EX	Time:	
Relinquished by: (Signature) FED EX	Date:	Time:	Received by: (Signature) 1/30/15	Time: 0745	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:	Cooler / Blank Temperature ____°C

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone: (805) 526-7161 Fax: (805) 526-7270

Chain of Custody Record & Analytical Service Request

P1500371

Requested Turnaround Time in Business Days (Surcharges) Please Circle: 1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day (Standard)

ALS Project No.

Company Name & Address (Reporting Information): Stantec Consulting, 1500 Lake Shore Drive, Columbus Ohio

Project Name: Bridgeton

Project Number: 182608020

ALS Contact: Samantha Henningsen

Project Manager: Deb.Gray@Stantec.com

P.O. # / Billing Information: Amy Hargrove/Bridgeton LF

Phone: 614-643-4362

Fax:

Email Address for Result Reporting: Deb.Gray@Stantec.com Chris.lalonde@stantec.com

Sampler (Print & Sign): NI/CJL

Client Sample ID	Laboratory ID #	Tube ID	Date Collected	Sampling Pump Flow (mL/min)	Sampling Start Time	Sampling End Time	Sample Volume	EPA TO 11a	NIOSH 6010	AQL 101	NIOSH 6009	OSHA ID 188	AQL 102	Comments e.g. Actual Preservative or specific instructions
128NQ-sALD	65		1/28/2015	1155	14:31	14:33	2,310	X						2
128NQ-sHCN	66		1/28/2015	61	14:14	14:20	366		X					6
128NQ-sAmine	67		1/28/2015	61	14:21	14:29	488			X				8
128NQ-sHg	68		1/28/2015	199.5	14:35	14:41	1,197				X			6
128NQ-sNH3	69		1/28/2015	503	14:42	14:46	2,012					X		4
128NQ-sCARBOX	70		1/28/2015	401.5	14:54	15:00	2,409						X	6
128SQ-sALD	71		1/28/2015	1155	17:38	17:40	2,310	X						2
128SQ-sHCN	72		1/28/2015	61	17:22	17:28	366		X					6
128SQ-sAmine	73		1/28/2015	61	17:30	17:38	488			X				8
128SQ-sHg	74		1/28/2015	199.5	17:41	17:47	1,197				X			6
128SQ-sNH3	75		1/28/2015	503	17:48	17:52	2,012					X		4
128SQ-sCARBOX	76		1/28/2015	401.5	17:53	17:59	2,409						X	6
Intentionally Blank														
Intentionally Blank														

Report Tier Levels - please select
Tier I - (Results/Default if not specified) ____
Tier II (Results + QC) ____
Tier III (Data Validation Package) 10% Surcharge X
Tier IV (client specified) ____

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:
[signature]	1/29/15	1700	[signature]	
[signature] Fed Ex			[signature] 1/30/15	0745

Cooler / Blank Temperature ____ °C

P1500771

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone: (805) 526-7161 Fax: (805) 526-7270

Chain of Custody Record & Analytical Service Request

Requested Turnaround Time in Business Days (Surcharges) Please Circle:
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) *10 Day (Standard)*

ALS Project No.

Company Name & Address (Reporting Information)
Stantec Consulting
1500 Lake Shore Drive
Columbus Ohio

Project Name: Bridgeton
Project Number: 182608020
P.O. # / Billing Information: Amy Hargrove/Bridgeton LF

ALS Contact: Samantha Henningsen

Project Manager: Deb.Gray@Stantec.com
Phone: 614-643-4362 Fax:
Email Address for Result Reporting: Deb.Gray@Stantec.com Chris.lalonde@stantec.com
Sampler (Print & Sign): NI/CJL

Client Sample ID	Laboratory ID #	Tube ID	Date Collected	Sampling Pump Flow (mL/min)	Sampling Start Time	Sampling End Time	Sample Volume	Analysis Method/Analytes: EPA TO 11a	NIOSH 6010	AQL 101	NIOSH 6009	OSHA ID 188	AQL 102	Comments e.g. Actual Preservative or specific instructions
128F-sALD	77		1/28/2015	1155	13:38	13:39	1,155	X						1
128F-sHCN	78		1/28/2015	61	13:24	13:27	183		X					3
128F-sAmine	79		1/28/2015	61	13:32	13:36	244			X				4
128F-sHg	80		1/28/2015	199.5	13:40	13:43	598				X			3
128F-sNH3	81		1/28/2015	503	13:44	13:46	1,006					X		2
128F-sCARBOX	82		1/28/2015	401.5	13:49	13:52	1,205						X	3
127-Dup01	83		1/27/2015	1280	NA	NA	346,880	X						271
127Dup02	84		1/27/2015	204	NA	NA	48,960				X			240
127Dup032	85		1/28/2015	404	NA	NA	94,132						X	233
128F-Dup04	86		1/28/2015	61	NA	NA	183		X					3
128Dup05	87		1/28/2015	61	NA	NA	488			X				8
128Dup06	88		1/28/2015	503	NA	NA	2,012					X		4
Intentionally Blank														
Intentionally Blank														

Report Tier Levels - please select
Tier I - (Results/Default if not specified) ____
Tier II (Results + QC) ____
Tier III (Data Validation Package) 10% Surcharge __X
Tier IV (client specified) ____
EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:
FED EX	1/29/15	1700	FED EX	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:
FED EX	1/29/15	1700	1/30/15	0945
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:

Cooler / Blank Temperature ____ °C

ALS Environmental
Sample Acceptance Check Form

Client: Stantec Consulting Services, Inc. Work order: P1500371

Project: Bridgeton / 182608020

Sample(s) received on: 1/30/2015 Date opened: 1/30/2015 by: KKELPE

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by ALS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 3° C Blank Temperature: ° C **Wet Ice**			
9	Was a **trip blank** received?	☒	☐	☐
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☒	☐	☐
	Do they contain moisture?	☐	☒	☐
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1500371-001.01	Silica Gel DNPH Tube					
P1500371-002.01	CN Tube					
P1500371-003.01	Treated Alumina Tube					
P1500371-004.01	Hg tube					
P1500371-005.01	Silica Gel (C. Acids)					
P1500371-006.01	Silica Gel DNPH Tube					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: Stantec Consulting Services, Inc. Work order: P1500371

Project: Bridgeton / 182608020

Sample(s) received on: 1/30/2015 Date opened: 1/30/2015 by: KKELPE

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1500371-007.01	CN Tube					
P1500371-008.01	Treated Alumina Tube					
P1500371-009.01	Hg Tube					
P1500371-010.01	Silica Gel DNPH Tube					
P1500371-011.01	Treated Alumina Tube					
P1500371-012.01	Anasorb 747 Tube					
P1500371-013.01	Silica Gel DNPH Tube					
P1500371-014.01	CN Tube					
P1500371-015.01	Treated Alumina Tube					
P1500371-016.01	Hg Tube					
P1500371-017.01	Silica Gel (C. Acids)					
P1500371-018.01	Silica Gel DNPH Tube					
P1500371-019.01	CN Tube					
P1500371-020.01	Treated Alumina Tube					
P1500371-021.01	Hg Tube					
P1500371-022.01	Silica Gel DNPH Tube					
P1500371-023.01	Treated Alumina Tube					
P1500371-024.01	Anasorb 747 Tube					
P1500371-025.01	Silica Gel (C. Acids)					
P1500371-026.01	Silica Gel DNPH Tube					
P1500371-027.01	Treated Alumina Tube					
P1500371-028.01	Anasorb 747 Tube					
P1500371-029.01	Silica Gel (C. Acids)					
P1500371-030.01	Silica Gel DNPH Tube					
P1500371-031.01	Treated Alumina Tube					
P1500371-032.01	Anasorb 747 Tube					
P1500371-033.01	Silica Gel (C. Acids)					
P1500371-034.01	Silica Gel DNPH Tube					
P1500371-035.01	CN Tube					
P1500371-036.01	Treated Alumina Tube					
P1500371-037.01	Hg Tube					
P1500371-038.01	Anasorb 747 Tube					

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: Stantec Consulting Services, Inc. Work order: P1500371

Project: Bridgeton / 182608020

Sample(s) received on: 1/30/2015 Date opened: 1/30/2015 by: KKELPE

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1500371-039.01	Silica Gel (C. Acids)					
P1500371-040.01	Silica Gel DNPH Tube					
P1500371-041.01	CN Tube					
P1500371-042.01	Treated Alumina Tube					
P1500371-043.01	Hg Tube					
P1500371-044.01	Anasorb 747 Tube					
P1500371-045.01	Silica Gel (C. Acids)					
P1500371-046.01	Anasorb 747 Tube					
P1500371-047.01	Silica Gel (C. Acids)					
P1500371-048.01	Anasorb 747 Tube					
P1500371-049.01	Anasorb 747 Tube					
P1500371-050.01	Anasorb 747 Tube					
P1500371-051.01	Silica Gel (C. Acids)					
P1500371-052.01	Silica Gel (C. Acids)					
P1500371-053.01	Silica Gel DNPH Tube					
P1500371-054.01	CN Tube					
P1500371-055.01	Treated Alumina Tube					
P1500371-056.01	Hg tube					
P1500371-057.01	Anasorb 747 Tube					
P1500371-058.01	Silica Gel (C. Acids)					
P1500371-059.01	Silica Gel DNPH Tube					
P1500371-060.01	CN Tube					
P1500371-061.01	Treated Alumina Tube					
P1500371-062.01	Hg Tube					
P1500371-063.01	Anasorb 747 Tube					
P1500371-064.01	Silica Gel (C. Acids)					
P1500371-065.01	Silica Gel DNPH Tube					
P1500371-066.01	CN Tube					
P1500371-067.01	Treated Alumina Tube					
P1500371-068.01	Hg Tube					
P1500371-069.01	Anasorb 747 Tube					
P1500371-070.01	Silica Gel (C. Acids)					

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: Stantec Consulting Services, Inc. Work order: P1500371

Project: Bridgeton / 182608020

Sample(s) received on: 1/30/2015 Date opened: 1/30/2015 by: KKELPE

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1500371-071.01	Silica Gel DNPH Tube					
P1500371-072.01	CN Tube					
P1500371-073.01	Treated Alumina Tube					
P1500371-074.01	Hg Tube					
P1500371-075.01	Anasorb 747 Tube					
P1500371-076.01	Silica Gel (C. Acids)					
P1500371-077.01	Silica Gel DNPH Tube					
P1500371-078.01	CN Tube					
P1500371-079.01	Treated Alumina Tube					
P1500371-080.01	Hg Tube					
P1500371-081.01	Anasorb 747 Tube					
P1500371-082.01	Silica Gel (C. Acids)					
P1500371-083.01	Silica Gel DNPH Tube					
P1500371-084.01	Hg tube					
P1500371-085.01	Silica Gel (C. Acids)					
P1500371-086.01	CN Tube					
P1500371-087.01	Treated Alumina Tube					
P1500371-088.01	Anasorb 747 Tube					

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127U1-ALD** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-001

Test Code:	EPA Method TO-11A	Date Collected:	1/27/15
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	1/30/15
Analyst:	Madeleine Dangazyan	Date Analyzed:	2/9/15
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	350.945 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	330	**0.93**	0.28	**0.76**	0.23	
75-07-0	Acetaldehyde	320	**0.92**	0.28	**0.51**	0.16	
123-38-6	Propionaldehyde	< 100	ND	0.28	ND	0.12	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.28	ND	0.099	
123-72-8	Butyraldehyde	< 100	ND	0.28	ND	0.097	
100-52-7	Benzaldehyde	< 100	ND	0.28	ND	0.066	
590-86-3	Isovaleraldehyde	< 100	ND	0.28	ND	0.081	
110-62-3	Valeraldehyde	< 100	ND	0.28	ND	0.081	
529-20-4	o-Tolualdehyde	< 100	ND	0.28	ND	0.058	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.57	ND	0.12	
66-25-1	n-Hexaldehyde	200	**0.56**	0.28	**0.14**	0.070	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.28	ND	0.052	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D1-ALD**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-006

Test Code: EPA Method TO-11A
Instrument ID: Agilent Infinity LC 1220/LC3
Analyst: Madeleine Dangazyan
Sample Type: Silica Gel DNPH Tube
Test Notes: **BC**

Date Collected: 1/27/15
Date Received: 1/30/15
Date Analyzed: 2/9/15
Desorption Volume: 1.0 ml
Volume Sampled: 306 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	540	**1.8**	0.33	**1.4**	0.27	
75-07-0	Acetaldehyde	550	**1.8**	0.33	**1.0**	0.18	**BT**
123-38-6	Propionaldehyde	< 100	ND	0.33	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.33	ND	0.11	
123-72-8	Butyraldehyde	< 100	ND	0.33	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.33	ND	0.075	
590-86-3	Isovaleraldehyde	< 100	ND	0.33	ND	0.093	
110-62-3	Valeraldehyde	< 100	ND	0.33	ND	0.093	
529-20-4	o-Tolualdehyde	< 100	ND	0.33	ND	0.067	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.65	ND	0.13	
66-25-1	n-Hexaldehyde	140	**0.44**	0.33	**0.11**	0.080	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.33	ND	0.060	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
BT = Results indicated possible breakthrough; back section > 10% front section.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D2-ALD** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-010

Test Code:	EPA Method TO-11A	Date Collected:	1/27/15
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	1/30/15
Analyst:	Madeleine Dangazyan	Date Analyzed:	2/9/15
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	306 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	330	**1.1**	0.33	**0.87**	0.27	
75-07-0	Acetaldehyde	560	**1.8**	0.33	**1.0**	0.18	**BT**
123-38-6	Propionaldehyde	< 100	ND	0.33	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.33	ND	0.11	
123-72-8	Butyraldehyde	< 100	ND	0.33	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.33	ND	0.075	
590-86-3	Isovaleraldehyde	< 100	ND	0.33	ND	0.093	
110-62-3	Valeraldehyde	< 100	ND	0.33	ND	0.093	
529-20-4	o-Tolualdehyde	< 100	ND	0.33	ND	0.067	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.65	ND	0.13	
66-25-1	n-Hexaldehyde	< 100	ND	0.33	ND	0.080	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.33	ND	0.060	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
BT = Results indicated possible breakthrough; back section > 10% front section.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127F-ALD** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-013

Test Code:	EPA Method TO-11A	Date Collected:	1/27/15
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	1/30/15
Analyst:	Madeleine Dangazyan	Date Analyzed:	2/9/15
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	307.475 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	370	**1.2**	0.33	**0.97**	0.26	
75-07-0	Acetaldehyde	710	**2.3**	0.33	**1.3**	0.18	**BT**
123-38-6	Propionaldehyde	< 100	ND	0.33	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.33	ND	0.11	
123-72-8	Butyraldehyde	< 100	ND	0.33	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.33	ND	0.075	
590-86-3	Isovaleraldehyde	< 100	ND	0.33	ND	0.092	
110-62-3	Valeraldehyde	< 100	ND	0.33	ND	0.092	
529-20-4	o-Tolualdehyde	< 100	ND	0.33	ND	0.066	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.65	ND	0.13	
66-25-1	n-Hexaldehyde	210	**0.68**	0.33	**0.17**	0.079	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.33	ND	0.059	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
BT = Results indicated possible breakthrough; back section > 10% front section.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127SQ-ALD** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-018

Test Code:	EPA Method TO-11A	Date Collected:	1/27/15
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	1/30/15
Analyst:	Madeleine Dangazyan	Date Analyzed:	2/9/15
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	306 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	320	**1.1**	0.33	**0.86**	0.27	
75-07-0	Acetaldehyde	540	**1.8**	0.33	**0.98**	0.18	**BT**
123-38-6	Propionaldehyde	< 100	ND	0.33	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.33	ND	0.11	
123-72-8	Butyraldehyde	< 100	ND	0.33	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.33	ND	0.075	
590-86-3	Isovaleraldehyde	< 100	ND	0.33	ND	0.093	
110-62-3	Valeraldehyde	< 100	ND	0.33	ND	0.093	
529-20-4	o-Tolualdehyde	< 100	ND	0.33	ND	0.067	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.65	ND	0.13	
66-25-1	n-Hexaldehyde	140	**0.45**	0.33	**0.11**	0.080	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.33	ND	0.060	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
BT = Results indicated possible breakthrough; back section > 10% front section.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128U1-ALD** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-022

Test Code:	EPA Method TO-11A	Date Collected:	1/28/15
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	1/30/15
Analyst:	Madeleine Dangazyan	Date Analyzed:	2/9/15
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	301.32 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	350	**1.1**	0.33	**0.93**	0.27	
75-07-0	Acetaldehyde	320	**1.1**	0.33	**0.59**	0.18	
123-38-6	Propionaldehyde	< 100	ND	0.33	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.33	ND	0.12	
123-72-8	Butyraldehyde	< 100	ND	0.33	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.33	ND	0.076	
590-86-3	Isovaleraldehyde	< 100	ND	0.33	ND	0.094	
110-62-3	Valeraldehyde	< 100	ND	0.33	ND	0.094	
529-20-4	o-Tolualdehyde	< 100	ND	0.33	ND	0.068	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.66	ND	0.14	
66-25-1	n-Hexaldehyde	190	**0.62**	0.33	**0.15**	0.081	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.33	ND	0.060	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128D1-ALD** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-026

Test Code:	EPA Method TO-11A	Date Collected:	1/28/15
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	1/30/15
Analyst:	Madeleine Dangazyan	Date Analyzed:	2/9/15
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	296.45 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	490	**1.6**	0.34	**1.3**	0.27	
75-07-0	Acetaldehyde	350	**1.2**	0.34	**0.66**	0.19	
123-38-6	Propionaldehyde	< 100	ND	0.34	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.34	ND	0.12	
123-72-8	Butyraldehyde	< 100	ND	0.34	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.34	ND	0.078	
590-86-3	Isovaleraldehyde	< 100	ND	0.34	ND	0.096	
110-62-3	Valeraldehyde	< 100	ND	0.34	ND	0.096	
529-20-4	o-Tolualdehyde	< 100	ND	0.34	ND	0.069	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.67	ND	0.14	
66-25-1	n-Hexaldehyde	140	**0.48**	0.34	**0.12**	0.082	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.34	ND	0.061	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128D2-ALD** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-030

Test Code:	EPA Method TO-11A	Date Collected:	1/28/15
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	1/30/15
Analyst:	Madeleine Dangazyan	Date Analyzed:	2/9/15
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	285.585 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	530	**1.9**	0.35	**1.5**	0.29	
75-07-0	Acetaldehyde	370	**1.3**	0.35	**0.71**	0.19	
123-38-6	Propionaldehyde	< 100	ND	0.35	ND	0.15	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.35	ND	0.12	
123-72-8	Butyraldehyde	< 100	ND	0.35	ND	0.12	
100-52-7	Benzaldehyde	< 100	ND	0.35	ND	0.081	
590-86-3	Isovaleraldehyde	< 100	ND	0.35	ND	0.099	
110-62-3	Valeraldehyde	< 100	ND	0.35	ND	0.099	
529-20-4	o-Tolualdehyde	< 100	ND	0.35	ND	0.071	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.70	ND	0.14	
66-25-1	n-Hexaldehyde	190	**0.68**	0.35	**0.17**	0.086	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.35	ND	0.064	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128N-ALD** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-034

Test Code:	EPA Method TO-11A	Date Collected:	1/28/15
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	1/30/15
Analyst:	Madeleine Dangazyan	Date Analyzed:	2/9/15
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	303.71 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	410	**1.3**	0.33	**1.1**	0.27	
75-07-0	Acetaldehyde	320	**1.1**	0.33	**0.58**	0.18	
123-38-6	Propionaldehyde	< 100	ND	0.33	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.33	ND	0.11	
123-72-8	Butyraldehyde	< 100	ND	0.33	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.33	ND	0.076	
590-86-3	Isovaleraldehyde	< 100	ND	0.33	ND	0.094	
110-62-3	Valeraldehyde	< 100	ND	0.33	ND	0.094	
529-20-4	o-Tolualdehyde	< 100	ND	0.33	ND	0.067	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.66	ND	0.13	
66-25-1	n-Hexaldehyde	170	**0.55**	0.33	**0.13**	0.080	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.33	ND	0.060	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQ-ALD** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-040

Test Code:	EPA Method TO-11A	Date Collected:	1/28/15
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	1/30/15
Analyst:	Madeleine Dangazyan	Date Analyzed:	2/9/15
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	304.92 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	460	**1.5**	0.33	**1.2**	0.27	
75-07-0	Acetaldehyde	470	**1.5**	0.33	**0.85**	0.18	**BT**
123-38-6	Propionaldehyde	< 100	ND	0.33	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.33	ND	0.11	
123-72-8	Butyraldehyde	< 100	ND	0.33	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.33	ND	0.076	
590-86-3	Isovaleraldehyde	< 100	ND	0.33	ND	0.093	
110-62-3	Valeraldehyde	< 100	ND	0.33	ND	0.093	
529-20-4	o-Tolualdehyde	< 100	ND	0.33	ND	0.067	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.66	ND	0.13	
66-25-1	n-Hexaldehyde	150	**0.48**	0.33	**0.12**	0.080	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.33	ND	0.060	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
BT = Results indicated possible breakthrough; back section > 10% front section.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127TB-ALD** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-053

Test Code:	EPA Method TO-11A	Date Collected:	1/27/15
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	1/30/15
Analyst:	Madeleine Dangazyan	Date Analyzed:	2/9/15
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	NA Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	NA	NA	NA	NA	
75-07-0	Acetaldehyde	< 100	NA	NA	NA	NA	
123-38-6	Propionaldehyde	< 100	NA	NA	NA	NA	
4170-30-3	Crotonaldehyde, Total	< 100	NA	NA	NA	NA	
123-72-8	Butyraldehyde	< 100	NA	NA	NA	NA	
100-52-7	Benzaldehyde	< 100	NA	NA	NA	NA	
590-86-3	Isovaleraldehyde	< 100	NA	NA	NA	NA	
110-62-3	Valeraldehyde	< 100	NA	NA	NA	NA	
529-20-4	o-Tolualdehyde	< 100	NA	NA	NA	NA	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	NA	NA	NA	NA	
66-25-1	n-Hexaldehyde	< 100	NA	NA	NA	NA	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128N-sALD** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-059

Test Code:	EPA Method TO-11A	Date Collected:	1/28/15
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	1/30/15
Analyst:	Madeleine Dangazyan	Date Analyzed:	2/9/15
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	2.31 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	ND	43	ND	35	
75-07-0	Acetaldehyde	150	**64**	43	**35**	24	
123-38-6	Propionaldehyde	< 100	ND	43	ND	18	
4170-30-3	Crotonaldehyde, Total	< 100	ND	43	ND	15	
123-72-8	Butyraldehyde	< 100	ND	43	ND	15	
100-52-7	Benzaldehyde	< 100	ND	43	ND	10	
590-86-3	Isovaleraldehyde	< 100	ND	43	ND	12	
110-62-3	Valeraldehyde	< 100	ND	43	ND	12	
529-20-4	o-Tolualdehyde	< 100	ND	43	ND	8.8	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	87	ND	18	
66-25-1	n-Hexaldehyde	< 100	ND	43	ND	11	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	43	ND	7.9	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQ-sALD** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-065

Test Code:	EPA Method TO-11A	Date Collected:	1/28/15
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	1/30/15
Analyst:	Madeleine Dangazyan	Date Analyzed:	2/9/15
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	2.31 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	ND	43	ND	35	
75-07-0	Acetaldehyde	100	**45**	43	**25**	24	
123-38-6	Propionaldehyde	< 100	ND	43	ND	18	
4170-30-3	Crotonaldehyde, Total	< 100	ND	43	ND	15	
123-72-8	Butyraldehyde	< 100	ND	43	ND	15	
100-52-7	Benzaldehyde	< 100	ND	43	ND	10	
590-86-3	Isovaleraldehyde	< 100	ND	43	ND	12	
110-62-3	Valeraldehyde	< 100	ND	43	ND	12	
529-20-4	o-Tolualdehyde	< 100	ND	43	ND	8.8	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	87	ND	18	
66-25-1	n-Hexaldehyde	< 100	ND	43	ND	11	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	43	ND	7.9	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128SQ-sALD** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-071

Test Code:	EPA Method TO-11A	Date Collected:	1/28/15
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	1/30/15
Analyst:	Madeleine Dangazyan	Date Analyzed:	2/9-10/15
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	2.31 Liter(s)

Dilution Factor: 1.00
Dilution Factor: 10.0

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	ND	43	ND	35	
75-07-0	Acetaldehyde	310	**130**	43	**74**	24	
123-38-6	Propionaldehyde	140	**59**	43	**25**	18	
4170-30-3	Crotonaldehyde, Total	< 100	ND	43	ND	15	
123-72-8	Butyraldehyde	1,100	**480**	43	**160**	15	
100-52-7	Benzaldehyde	< 100	ND	43	ND	10	
590-86-3	Isovaleraldehyde	< 100	ND	43	ND	12	
110-62-3	Valeraldehyde	< 100	ND	43	ND	12	
529-20-4	o-Tolualdehyde	< 100	ND	43	ND	8.8	
620-23-5							
104-87-0	m,p-Tolualdehyde	9,700	**4,200**	87	**860**	18	
66-25-1	n-Hexaldehyde	< 100	ND	43	ND	11	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	43	ND	7.9	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128F-sALD** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-077

Test Code:	EPA Method TO-11A	Date Collected:	1/28/15
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	1/30/15
Analyst:	Madeleine Dangazyan	Date Analyzed:	2/10/15
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	1.155 Liter(s)

Dilution Factor: 1.00
Dilution Factor: 10.0

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	ND	87	ND	71	
75-07-0	Acetaldehyde	11,000	**9,500**	87	**5,200**	48	**BT**
123-38-6	Propionaldehyde	7,100	**6,100**	87	**2,600**	36	**BT**
4170-30-3	Crotonaldehyde, Total	< 100	ND	87	ND	30	
123-72-8	Butyraldehyde	26,000	**23,000**	87	**7,700**	29	**BT**
100-52-7	Benzaldehyde	< 100	ND	87	ND	20	
590-86-3	Isovaleraldehyde	30,000	**26,000**	87	**7,300**	25	**BT**
110-62-3	Valeraldehyde	< 100	ND	87	ND	25	
529-20-4	o-Tolualdehyde	< 100	ND	87	ND	18	
620-23-5 / 104-87-0	m,p-Tolualdehyde	7,800	**6,800**	170	**1,400**	35	**BT**
66-25-1	n-Hexaldehyde	110	**95**	87	**23**	21	**BH**
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	87	ND	16	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
BH = Results indicate breakthrough; back section of tube greater than front section.
BT = Results indicated possible breakthrough; back section > 10% front section.
D = The reported result is from a dilution.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127-Dup01**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-083

Test Code: EPA Method TO-11A
Instrument ID: Agilent Infinity LC 1220/LC3
Analyst: Madeleine Dangazyan
Sample Type: Silica Gel DNPH Tube
Test Notes: **BC**

Date Collected: 1/27/15
Date Received: 1/30/15
Date Analyzed: 2/9/15
Desorption Volume: 1.0 ml
Volume Sampled: 346.88 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	320	**0.92**	0.29	**0.75**	0.23	
75-07-0	Acetaldehyde	400	**1.2**	0.29	**0.65**	0.16	**BT**
123-38-6	Propionaldehyde	< 100	ND	0.29	ND	0.12	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.29	ND	0.10	
123-72-8	Butyraldehyde	< 100	ND	0.29	ND	0.098	
100-52-7	Benzaldehyde	< 100	ND	0.29	ND	0.066	
590-86-3	Isovaleraldehyde	< 100	ND	0.29	ND	0.082	
110-62-3	Valeraldehyde	< 100	ND	0.29	ND	0.082	
529-20-4	o-Tolualdehyde	< 100	ND	0.29	ND	0.059	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.58	ND	0.12	
66-25-1	n-Hexaldehyde	160	**0.46**	0.29	**0.11**	0.070	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.29	ND	0.053	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
BT = Results indicated possible breakthrough; back section > 10% front section.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150209-MB

Test Code:	EPA Method TO-11A	Date Collected:	NA
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	NA
Analyst:	Madeleine Dangazyan	Date Analyzed:	02/09/15
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	NA Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	NA	NA	NA	NA	
75-07-0	Acetaldehyde	< 100	NA	NA	NA	NA	
123-38-6	Propionaldehyde	< 100	NA	NA	NA	NA	
4170-30-3	Crotonaldehyde, Total	< 100	NA	NA	NA	NA	
123-72-8	Butyraldehyde	< 100	NA	NA	NA	NA	
100-52-7	Benzaldehyde	< 100	NA	NA	NA	NA	
590-86-3	Isovaleraldehyde	< 100	NA	NA	NA	NA	
110-62-3	Valeraldehyde	< 100	NA	NA	NA	NA	
529-20-4	o-Tolualdehyde	< 100	NA	NA	NA	NA	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	NA	NA	NA	NA	
66-25-1	n-Hexaldehyde	< 100	NA	NA	NA	NA	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
NA = Not applicable.

Response Factor Report GCI

Method Path : J:\LC03\METHODS\
Method File : TO11A012315E.M
Title : TO-11A Method for Aldehydes/Ketones by HPLC
Last Update : Wed Feb 11 10:00:01 2015
Response Via : Initial Calibration

Calibration Files
50 =012315000004.D 100 =012315000007.D 500 =012315000010.D
1500 =012315000013.D 5000 =012315000016.D 10 =012315000019.D

	Compound	50	100	500	1500	5000	10	Avg	%RSD
1)	Formaldehyde	1.841	1.860	1.948	1.979	2.043	2.077	1.958 E4	4.85
2)	Acetaldehyde	1.440	1.451	1.520	1.541	1.595	1.625	1.529 E4	4.88
3)	Acetone	1.133	1.352	1.214	1.216	1.253	1.275	1.241 E4	5.90
4)	Acrolein	1.156	1.294	1.371	1.403	1.453	1.482	1.360 E4	8.80
5)	Propionaldehyde	1.058	1.107	1.179	1.199	1.241	1.267	1.175 E4	6.79
6)	Crotonaldehyde	0.927	0.990	1.033	1.043	1.075	1.099	1.028 E4	6.02
7)	Butyraldehyde	0.940	0.958	1.004	1.017	1.050	1.070	1.007 E4	5.00
8)	Benzaldehyde	5.653	5.851	6.802	6.967	7.199	7.344	6.636 E3	10.74
9)	Isovaleraldehyde	7.091	7.658	8.808	9.040	9.351	9.517	8.577 E3	11.43
10)	Valeraldehyde	6.810	7.290	7.700	7.877	8.167	8.323	7.695 E3	7.35
11)	o-Tolualdehyde	7.208	6.147	6.490	6.618	6.925	7.137	6.754 E3	6.07
12)	m,p-Tolualdehyde	4.711	4.845	4.973	5.044	5.191	5.248	5.002 E3	4.07
13)	Hexaldehyde	5.479	6.153	6.649	7.038	7.396	7.557	6.712 E3	11.78
14)	2,5-Dimethylb...	3.968	3.944	4.540	4.651	4.892	5.004	4.500 E3	10.05

(#) = Out of Range

ALS Environmental

TO11A Aldehyde & Ketone DNPH Analysis by HPLC

Instrument : LC 03 **Printed :** 2/11/2015
Detector : UV-VIS 360 **Date Acquired :** 2/9/2015
Analyst : MD **Sample Amount :** 3.0uL
Client & Job# : Stantec Consulting Services, Inc. P1500371

QC

Sample Information	MRL	TO-11A 1500ng/ml S28-01231503	% Diff	ACN blank lot DJ138	MB back 1.0ml lot 9253/9342	MB front 1.0ml lot 9253/9342			TO-11A 1500ng/ml S28-01231503	% Diff	TO-11A 1500ng/ml S28-01231503	% Diff	TO-11A 1500ng/ml S28-01231503	% Diff	TO-11A 1500ng/ml S28-01231503	% Diff
Dilution	1.0			1.0	1.0	1.0	1.0	1.0								
Sample Volume (L)	NA			NA	NA	NA	NA	NA								
Final Vol.(mL)	1.0			1.0	1.0	1.0	1.0	1.0								
Data File		0209150000 03.D		020915000004 .D	020915000006 .D	020915000005 .D	0.0	0.0	0209150000 15.D		0209150000 24.D		0209150000 35.D		0209150000 46.D	
	ng/sample	ng/sample		ng/sample	ng/sample	ng/sample	ng/sample	ng/sample	ng/sample		ng/sample		ng/sample		ng/sample	
Formaldehyde	100.00	1591.9	6.1%	ND	ND	ND			1574.8	5.0%	1585.0	5.7%	1589.8	6.0%	1550.6	3.4%
Acetaldehyde	100.00	1579.8	5.3%	ND	ND	ND			1558.9	3.9%	1574.5	5.0%	1581.8	5.5%	1535.0	2.3%
Propionaldehyde	100.00	1589.6	6.0%	ND	ND	ND			1575.1	5.0%	1588.4	5.9%	1594.7	6.3%	1542.0	2.8%
Crotonaldehyde	100.00	1549.1	3.3%	ND	ND	ND			1568.5	4.6%	1578.7	5.2%	1591.1	6.1%	1533.5	2.2%
Butyraldehyde	100.00	1587.0	5.8%	ND	ND	ND			1580.5	5.4%	1593.9	6.3%	1585.6	5.7%	1543.2	2.9%
Benzaldehyde	100.00	1649.4	10.0%	ND	ND	ND			1628.7	8.6%	1636.7	9.1%	1652.0	10.1%	1590.8	6.1%
Isovaleraldehyde	100.00	1663.1	10.9%	ND	ND	ND			1666.2	11.1%	1666.1	11.1%	1675.4	11.7%	1629.5	8.6%
Valeraldehyde	100.00	1605.7	7.0%	ND	ND	ND			1594.3	6.3%	1602.1	6.8%	1612.7	7.5%	1548.2	3.2%
o-Tolualdehyde	100.00	1595.9	6.4%	ND	ND	ND			1590.2	6.0%	1563.9	4.3%	1584.6	5.6%	1595.8	6.4%
m,p-Tolualdehyde	200.00	3269.6	9.0%	ND	ND	ND			3274.1	9.1%	3252.3	8.4%	3303.7	10.1%	3190.8	6.4%
Hexaldehyde	100.00	1631.4	8.8%	ND	ND	ND			1611.4	7.4%	1600.4	6.7%	1534.0	2.3%	1612.5	7.5%
2,5-Dimethylbenzaldehyde	100.00	1657.3	10.5%	ND	ND	ND			1639.2	9.3%	1629.6	8.6%	1545.0	3.0%	1658.5	10.6%

36.01 10

ALS Environmental

TO11A Aldehyde & Ketone DNPH Analysis by HPLC

Instrument : LC 03 **Printed :** 2/11/2015
Detector : UV-VIS 360 **Date Acquired :** 2/10/2015
Analyst : MD **Sample Amount :** 3.0uL
Client & Job# : Stantec Consulting Services, Inc. P1500371

QC

Sample Information	MRL	TO-11A 1500ng/ml S28-01231503	% Diff	acn blank lot dj138					TO-11A 1500ng/ml S28-01231503	% Diff	% Diff	% Diff	% Diff
Dilution	1.0			1.0	1.0	1.0	1.0	1.0					
Sample Volume (L)	NA			NA	NA	NA	NA	NA					
Final Vol.(mL)	1.0			1.0	1.0	1.0	1.0	1.0					
Data File		0210150000 02.D		0.0	0.0	0.0	021015000003 .D	0.0	0210150000 07.D		0.0	0.0	0.0
	ng/sample	ng/sample		ng/sample	ng/sample	ng/sample	ng/sample	ng/sample	ng/sample		ng/sample	ng/sample	ng/sample
Formaldehyde	100.00	1719.3	14.6%				ND		1576.1	5.1%			
Acetaldehyde	100.00	1649.0	9.9%				ND		1561.1	4.1%			
Propionaldehyde	100.00	1575.2	5.0%				ND		1557.3	3.8%			
Crotonaldehyde	100.00	1582.7	5.5%				ND		1555.2	3.7%			
Butyraldehyde	100.00	1584.1	5.6%				ND		1562.2	4.1%			
Benzaldehyde	100.00	1657.9	10.5%				ND		1624.4	8.3%			
Isovaleraldehyde	100.00	1674.8	11.7%				ND		1650.8	10.1%			
Valeraldehyde	100.00	1583.5	5.6%				ND		1561.9	4.1%			
o-Tolualdehyde	100.00	1645.3	9.7%				ND		1602.1	6.8%			
m,p-Tolualdehyde	200.00	3234.6	7.8%				ND		3220.5	7.3%			
Hexaldehyde	100.00	1636.8	9.1%				ND		1620.0	8.0%			
2,5-Dimethylbenzaldehyde	100.00	1667.5	11.2%				ND		1692.5	12.8%			

S28-01231

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127U1-Amine**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-003

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/27/15
Date Received: 1/30/15
Date Analyzed: 2/4/15
Desorption Volume: 2.0 ml
Volume Sampled: 16.802 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	62	ND	34	
75-04-7	Ethylamine	< 1.1	ND	65	ND	35	
75-50-3	Trimethylamine	< 1.0	ND	59	ND	25	
75-31-0	Isopropylamine	< 1.0	ND	62	ND	26	
75-64-9	tert-Butylamine	< 1.0	ND	62	ND	21	
107-10-8	n-Propylamine	< 1.1	ND	64	ND	27	
109-89-7	Diethylamine	< 1.0	ND	61	ND	21	
13952-84-6	sec-Butylamine	< 1.1	ND	63	ND	21	
78-81-9	Isobutylamine	< 1.1	ND	64	ND	21	
109-73-9	n-Butylamine	< 1.1	ND	66	ND	22	
108-18-9	Diisopropylamine	< 1.0	ND	62	ND	15	
121-44-8	Triethylamine	< 1.0	ND	62	ND	15	
142-84-7	Dipropylamine	< 1.0	ND	62	ND	15	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D1-Amine**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-008

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/27/15
Date Received: 1/30/15
Date Analyzed: 2/4/15
Desorption Volume: 2.0 ml
Volume Sampled: 14.52 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	72	ND	39	
75-04-7	Ethylamine	< 1.1	ND	76	ND	41	
75-50-3	Trimethylamine	< 1.0	ND	69	ND	28	
75-31-0	Isopropylamine	< 1.0	ND	72	ND	30	
75-64-9	tert-Butylamine	< 1.0	ND	72	ND	24	
107-10-8	n-Propylamine	< 1.1	ND	75	ND	31	
109-89-7	Diethylamine	< 1.0	ND	71	ND	24	
13952-84-6	sec-Butylamine	< 1.1	ND	72	ND	24	
78-81-9	Isobutylamine	< 1.1	ND	74	ND	25	
109-73-9	n-Butylamine	< 1.1	ND	77	ND	26	
108-18-9	Diisopropylamine	< 1.0	ND	71	ND	17	
121-44-8	Triethylamine	< 1.0	ND	71	ND	17	
142-84-7	Dipropylamine	< 1.0	ND	72	ND	17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D2-Amine**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-011

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/27/15
Date Received: 1/30/15
Date Analyzed: 2/4/15
Desorption Volume: 2.0 ml
Volume Sampled: 14.76 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	70	ND	38	
75-04-7	Ethylamine	< 1.1	ND	74	ND	40	
75-50-3	Trimethylamine	< 1.0	ND	68	ND	28	
75-31-0	Isopropylamine	< 1.0	ND	71	ND	29	
75-64-9	tert-Butylamine	< 1.0	ND	71	ND	24	
107-10-8	n-Propylamine	< 1.1	ND	73	ND	30	
109-89-7	Diethylamine	< 1.0	ND	70	ND	23	
13952-84-6	sec-Butylamine	< 1.1	ND	71	ND	24	
78-81-9	Isobutylamine	< 1.1	ND	73	ND	24	
109-73-9	n-Butylamine	< 1.1	ND	75	ND	25	
108-18-9	Diisopropylamine	< 1.0	ND	70	ND	17	
121-44-8	Triethylamine	< 1.0	ND	70	ND	17	
142-84-7	Dipropylamine	< 1.0	ND	71	ND	17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127F-Amine**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-015

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/27/15
Date Received: 1/30/15
Date Analyzed: 2/4/15
Desorption Volume: 2.0 ml
Volume Sampled: 15.068 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	69	ND	37	
75-04-7	Ethylamine	< 1.1	ND	73	ND	40	
75-50-3	Trimethylamine	< 1.0	ND	66	ND	27	
75-31-0	Isopropylamine	< 1.0	ND	70	ND	29	
75-64-9	tert-Butylamine	< 1.0	ND	69	ND	23	
107-10-8	n-Propylamine	< 1.1	ND	72	ND	30	
109-89-7	Diethylamine	< 1.0	ND	69	ND	23	
13952-84-6	sec-Butylamine	< 1.1	ND	70	ND	23	
78-81-9	Isobutylamine	< 1.1	ND	71	ND	24	
109-73-9	n-Butylamine	< 1.1	ND	74	ND	25	
108-18-9	Diisopropylamine	< 1.0	ND	69	ND	17	
121-44-8	Triethylamine	< 1.0	ND	69	ND	17	
142-84-7	Dipropylamine	< 1.0	ND	69	ND	17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127SQ-Amine**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-020

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/27/15
Date Received: 1/30/15
Date Analyzed: 2/4/15
Desorption Volume: 2.0 ml
Volume Sampled: 14.4 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	72	ND	39	
75-04-7	Ethylamine	< 1.1	ND	76	ND	41	
75-50-3	Trimethylamine	< 1.0	ND	69	ND	29	
75-31-0	Isopropylamine	< 1.0	ND	73	ND	30	
75-64-9	tert-Butylamine	< 1.0	ND	72	ND	24	
107-10-8	n-Propylamine	< 1.1	ND	75	ND	31	
109-89-7	Diethylamine	< 1.0	ND	72	ND	24	
13952-84-6	sec-Butylamine	< 1.1	ND	73	ND	24	
78-81-9	Isobutylamine	< 1.1	ND	74	ND	25	
109-73-9	n-Butylamine	< 1.1	ND	77	ND	26	
108-18-9	Diisopropylamine	< 1.0	ND	72	ND	17	
121-44-8	Triethylamine	< 1.0	ND	72	ND	17	
142-84-7	Dipropylamine	< 1.0	ND	73	ND	18	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128U1-Amine**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-023

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/4/15
Desorption Volume: 2.0 ml
Volume Sampled: 15.188 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	68	ND	37	
75-04-7	Ethylamine	< 1.1	ND	72	ND	39	
75-50-3	Trimethylamine	< 1.0	ND	66	ND	27	
75-31-0	Isopropylamine	< 1.0	ND	69	ND	29	
75-64-9	tert-Butylamine	< 1.0	ND	69	ND	23	
107-10-8	n-Propylamine	< 1.1	ND	71	ND	29	
109-89-7	Diethylamine	< 1.0	ND	68	ND	23	
13952-84-6	sec-Butylamine	< 1.1	ND	69	ND	23	
78-81-9	Isobutylamine	< 1.1	ND	71	ND	24	
109-73-9	n-Butylamine	< 1.1	ND	73	ND	24	
108-18-9	Diisopropylamine	< 1.0	ND	68	ND	16	
121-44-8	Triethylamine	< 1.0	ND	68	ND	16	
142-84-7	Dipropylamine	< 1.0	ND	69	ND	17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128D1-Amine**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-027

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/4/15
Desorption Volume: 2.0 ml
Volume Sampled: 15.068 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	69	ND	37	
75-04-7	Ethylamine	< 1.1	ND	73	ND	40	
75-50-3	Trimethylamine	< 1.0	ND	66	ND	27	
75-31-0	Isopropylamine	< 1.0	ND	70	ND	29	
75-64-9	tert-Butylamine	< 1.0	ND	69	ND	23	
107-10-8	n-Propylamine	< 1.1	ND	72	ND	30	
109-89-7	Diethylamine	< 1.0	ND	69	ND	23	
13952-84-6	sec-Butylamine	< 1.1	ND	70	ND	23	
78-81-9	Isobutylamine	< 1.1	ND	71	ND	24	
109-73-9	n-Butylamine	< 1.1	ND	74	ND	25	
108-18-9	Diisopropylamine	< 1.0	ND	69	ND	17	
121-44-8	Triethylamine	< 1.0	ND	69	ND	17	
142-84-7	Dipropylamine	< 1.0	ND	69	ND	17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128D2-Amine**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-031

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/4/15
Desorption Volume: 2.0 ml
Volume Sampled: 15.168 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	68	ND	37	
75-04-7	Ethylamine	< 1.1	ND	72	ND	39	
75-50-3	Trimethylamine	< 1.0	ND	66	ND	27	
75-31-0	Isopropylamine	< 1.0	ND	69	ND	29	
75-64-9	tert-Butylamine	< 1.0	ND	69	ND	23	
107-10-8	n-Propylamine	< 1.1	ND	71	ND	30	
109-89-7	Diethylamine	< 1.0	ND	68	ND	23	
13952-84-6	sec-Butylamine	< 1.1	ND	69	ND	23	
78-81-9	Isobutylamine	< 1.1	ND	71	ND	24	
109-73-9	n-Butylamine	< 1.1	ND	73	ND	25	
108-18-9	Diisopropylamine	< 1.0	ND	68	ND	16	
121-44-8	Triethylamine	< 1.0	ND	68	ND	16	
142-84-7	Dipropylamine	< 1.0	ND	69	ND	17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128N-Amine**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-036

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/4/15
Desorption Volume: 2.0 ml
Volume Sampled: 15.004 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	69	ND	38	
75-04-7	Ethylamine	< 1.1	ND	73	ND	40	
75-50-3	Trimethylamine	< 1.0	ND	67	ND	28	
75-31-0	Isopropylamine	< 1.0	ND	70	ND	29	
75-64-9	tert-Butylamine	< 1.0	ND	69	ND	23	
107-10-8	n-Propylamine	< 1.1	ND	72	ND	30	
109-89-7	Diethylamine	< 1.0	ND	69	ND	23	
13952-84-6	sec-Butylamine	< 1.1	ND	70	ND	23	
78-81-9	Isobutylamine	< 1.1	ND	71	ND	24	
109-73-9	n-Butylamine	< 1.1	ND	74	ND	25	
108-18-9	Diisopropylamine	< 1.0	ND	69	ND	17	
121-44-8	Triethylamine	< 1.0	ND	69	ND	17	
142-84-7	Dipropylamine	< 1.0	ND	70	ND	17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQ-Amine**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-042

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/4/15
Desorption Volume: 2.0 ml
Volume Sampled: 15.851 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	66	ND	36	
75-04-7	Ethylamine	< 1.1	ND	69	ND	38	
75-50-3	Trimethylamine	< 1.0	ND	63	ND	26	
75-31-0	Isopropylamine	< 1.0	ND	66	ND	27	
75-64-9	tert-Butylamine	< 1.0	ND	66	ND	22	
107-10-8	n-Propylamine	< 1.1	ND	68	ND	28	
109-89-7	Diethylamine	< 1.0	ND	65	ND	22	
13952-84-6	sec-Butylamine	< 1.1	ND	66	ND	22	
78-81-9	Isobutylamine	< 1.1	ND	68	ND	23	
109-73-9	n-Butylamine	< 1.1	ND	70	ND	23	
108-18-9	Diisopropylamine	< 1.0	ND	65	ND	16	
121-44-8	Triethylamine	< 1.0	ND	65	ND	16	
142-84-7	Dipropylamine	< 1.0	ND	66	ND	16	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128TB-Amine**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-055

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/4/15
Desorption Volume: 2.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	NA	NA	NA	NA	
75-04-7	Ethylamine	< 1.1	NA	NA	NA	NA	
75-50-3	Trimethylamine	< 1.0	NA	NA	NA	NA	
75-31-0	Isopropylamine	< 1.0	NA	NA	NA	NA	
75-64-9	tert-Butylamine	< 1.0	NA	NA	NA	NA	
107-10-8	n-Propylamine	< 1.1	NA	NA	NA	NA	
109-89-7	Diethylamine	< 1.0	NA	NA	NA	NA	
13952-84-6	sec-Butylamine	< 1.1	NA	NA	NA	NA	
78-81-9	Isobutylamine	< 1.1	NA	NA	NA	NA	
109-73-9	n-Butylamine	< 1.1	NA	NA	NA	NA	
108-18-9	Diisopropylamine	< 1.0	NA	NA	NA	NA	
121-44-8	Triethylamine	< 1.0	NA	NA	NA	NA	
142-84-7	Dipropylamine	< 1.0	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
NA = Not applicable.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128N-sAmine** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-061

Test Code:	GC/NPD	Date Collected:	1/28/15
Instrument ID:	Agilent 6890N/GC14/NPD	Date Received:	1/30/15
Analyst:	Zheng Wang	Date Analyzed:	2/4/15
Sampling Media:	Treated Alumina Tube	Desorption Volume:	2.0 ml
Test Notes:	**BC, DE**	Volume Sampled:	0.488 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	2,100	ND	1,200	
75-04-7	Ethylamine	< 1.1	ND	2,300	ND	1,200	
75-50-3	Trimethylamine	< 1.0	ND	2,000	ND	850	
75-31-0	Isopropylamine	< 1.0	ND	2,100	ND	890	
75-64-9	tert-Butylamine	< 1.0	ND	2,100	ND	710	
107-10-8	n-Propylamine	< 1.1	ND	2,200	ND	920	
109-89-7	Diethylamine	< 1.0	ND	2,100	ND	710	
13952-84-6	sec-Butylamine	< 1.1	ND	2,200	ND	720	
78-81-9	Isobutylamine	< 1.1	ND	2,200	ND	730	
109-73-9	n-Butylamine	< 1.1	ND	2,300	ND	760	
108-18-9	Diisopropylamine	< 1.0	ND	2,100	ND	510	
121-44-8	Triethylamine	< 1.0	ND	2,100	ND	510	
142-84-7	Dipropylamine	< 1.0	ND	2,100	ND	520	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQ-sAmine**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-067

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/4/15
Desorption Volume: 2.0 ml
Volume Sampled: 0.488 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	2,100	ND	1,200	
75-04-7	Ethylamine	< 1.1	ND	2,300	ND	1,200	
75-50-3	Trimethylamine	< 1.0	ND	2,000	ND	850	
75-31-0	Isopropylamine	< 1.0	ND	2,100	ND	890	
75-64-9	tert-Butylamine	< 1.0	ND	2,100	ND	710	
107-10-8	n-Propylamine	< 1.1	ND	2,200	ND	920	
109-89-7	Diethylamine	< 1.0	ND	2,100	ND	710	
13952-84-6	sec-Butylamine	< 1.1	ND	2,200	ND	720	
78-81-9	Isobutylamine	< 1.1	ND	2,200	ND	730	
109-73-9	n-Butylamine	< 1.1	ND	2,300	ND	760	
108-18-9	Diisopropylamine	< 1.0	ND	2,100	ND	510	
121-44-8	Triethylamine	< 1.0	ND	2,100	ND	510	
142-84-7	Dipropylamine	< 1.0	ND	2,100	ND	520	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128SQ-sAmine**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-073

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/4/15
Desorption Volume: 2.0 ml
Volume Sampled: 0.488 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	2,100	ND	1,200	
75-04-7	Ethylamine	< 1.1	ND	2,300	ND	1,200	
75-50-3	Trimethylamine	< 1.0	ND	2,000	ND	850	
75-31-0	Isopropylamine	< 1.0	ND	2,100	ND	890	
75-64-9	tert-Butylamine	< 1.0	ND	2,100	ND	710	
107-10-8	n-Propylamine	< 1.1	ND	2,200	ND	920	
109-89-7	Diethylamine	< 1.0	ND	2,100	ND	710	
13952-84-6	sec-Butylamine	< 1.1	ND	2,200	ND	720	
78-81-9	Isobutylamine	< 1.1	ND	2,200	ND	730	
109-73-9	n-Butylamine	< 1.1	ND	2,300	ND	760	
108-18-9	Diisopropylamine	< 1.0	ND	2,100	ND	510	
121-44-8	Triethylamine	< 1.0	ND	2,100	ND	510	
142-84-7	Dipropylamine	< 1.0	ND	2,100	ND	520	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128F-sAmine**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-079

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/4/15
Desorption Volume: 2.0 ml
Volume Sampled: 0.244 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	4,300	ND	2,300	
75-04-7	Ethylamine	< 1.1	ND	4,500	ND	2,400	
75-50-3	Trimethylamine	< 1.0	ND	4,100	ND	1,700	
75-31-0	Isopropylamine	< 1.0	ND	4,300	ND	1,800	
75-64-9	tert-Butylamine	< 1.0	ND	4,300	ND	1,400	
107-10-8	n-Propylamine	< 1.1	ND	4,400	ND	1,800	
109-89-7	Diethylamine	< 1.0	ND	4,200	ND	1,400	
13952-84-6	sec-Butylamine	< 1.1	ND	4,300	ND	1,400	
78-81-9	Isobutylamine	< 1.1	ND	4,400	ND	1,500	
109-73-9	n-Butylamine	< 1.1	ND	4,600	ND	1,500	
108-18-9	Diisopropylamine	< 1.0	ND	4,200	ND	1,000	
121-44-8	Triethylamine	< 1.0	ND	4,200	ND	1,000	
142-84-7	Dipropylamine	< 1.0	ND	4,300	ND	1,000	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128Dup05**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-087

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/4/15
Desorption Volume: 2.0 ml
Volume Sampled: 0.488 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	2,100	ND	1,200	
75-04-7	Ethylamine	< 1.1	ND	2,300	ND	1,200	
75-50-3	Trimethylamine	< 1.0	ND	2,000	ND	850	
75-31-0	Isopropylamine	< 1.0	ND	2,100	ND	890	
75-64-9	tert-Butylamine	< 1.0	ND	2,100	ND	710	
107-10-8	n-Propylamine	< 1.1	ND	2,200	ND	920	
109-89-7	Diethylamine	< 1.0	ND	2,100	ND	710	
13952-84-6	sec-Butylamine	< 1.1	ND	2,200	ND	720	
78-81-9	Isobutylamine	< 1.1	ND	2,200	ND	730	
109-73-9	n-Butylamine	< 1.1	ND	2,300	ND	760	
108-18-9	Diisopropylamine	< 1.0	ND	2,100	ND	510	
121-44-8	Triethylamine	< 1.0	ND	2,100	ND	510	
142-84-7	Dipropylamine	< 1.0	ND	2,100	ND	520	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P150204-MB

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: NA
Date Received: NA
Date Analyzed: 2/4/15
Desorption Volume: 2.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	NA	NA	NA	NA	
75-04-7	Ethylamine	< 1.1	NA	NA	NA	NA	
75-50-3	Trimethylamine	< 1.0	NA	NA	NA	NA	
75-31-0	Isopropylamine	< 1.0	NA	NA	NA	NA	
75-64-9	tert-Butylamine	< 1.0	NA	NA	NA	NA	
107-10-8	n-Propylamine	< 1.1	NA	NA	NA	NA	
109-89-7	Diethylamine	< 1.0	NA	NA	NA	NA	
13952-84-6	sec-Butylamine	< 1.1	NA	NA	NA	NA	
78-81-9	Isobutylamine	< 1.1	NA	NA	NA	NA	
109-73-9	n-Butylamine	< 1.1	NA	NA	NA	NA	
108-18-9	Diisopropylamine	< 1.0	NA	NA	NA	NA	
121-44-8	Triethylamine	< 1.0	NA	NA	NA	NA	
142-84-7	Dipropylamine	< 1.0	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
NA = Not applicable.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150204-DLCS

Test Code: GC/NPD Date Collected: NA
Instrument ID: Agilent 6890N/GC14/NPD Date Received: NA
Analyst: Zheng Wang Date Analyzed: 2/04/15
Sampling Media: Treated Alumina Tube Volume(s) Analyzed: NA Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/ml	Result LCS µg/ml	Result DLCS µg/ml	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-40-3	Dimethylamine	10.5	8.43	8.33	**80**	**79**	63-117	1	21	
75-04-7	Ethylamine	11.1	7.62	7.33	**69**	**66**	55-112	4	28	
75-50-3	Trimethylamine	10.2	9.12	9.57	**89**	**94**	61-127	5	32	
75-31-0	Isopropylamine	11.3	9.43	9.14	**83**	**81**	48-132	2	17	
75-64-9	tert-Butylamine	11.0	9.34	9.17	**85**	**83**	70-122	2	18	
107-10-8	n-Propylamine	11.3	8.08	7.69	**72**	**68**	62-112	6	24	
109-89-7	Diethylamine	10.7	9.88	10.2	**92**	**95**	75-117	3	18	
13952-84-6	sec-Butylamine	10.8	9.22	9.11	**85**	**84**	73-116	1	17	
78-81-9	Isobutylamine	10.6	8.21	7.99	**77**	**75**	69-111	3	19	
109-73-9	n-Butylamine	11.3	8.23	8.02	**73**	**71**	64-113	3	23	
108-18-9	Diisopropylamine	9.91	9.03	9.62	**91**	**97**	74-118	6	20	
121-44-8	Triethylamine	10.0	9.19	9.68	**92**	**97**	70-122	5	22	
124-09-4	Hexamethylenediamine	10.3	9.60	10.1	**93**	**98**	50-150	5	30	

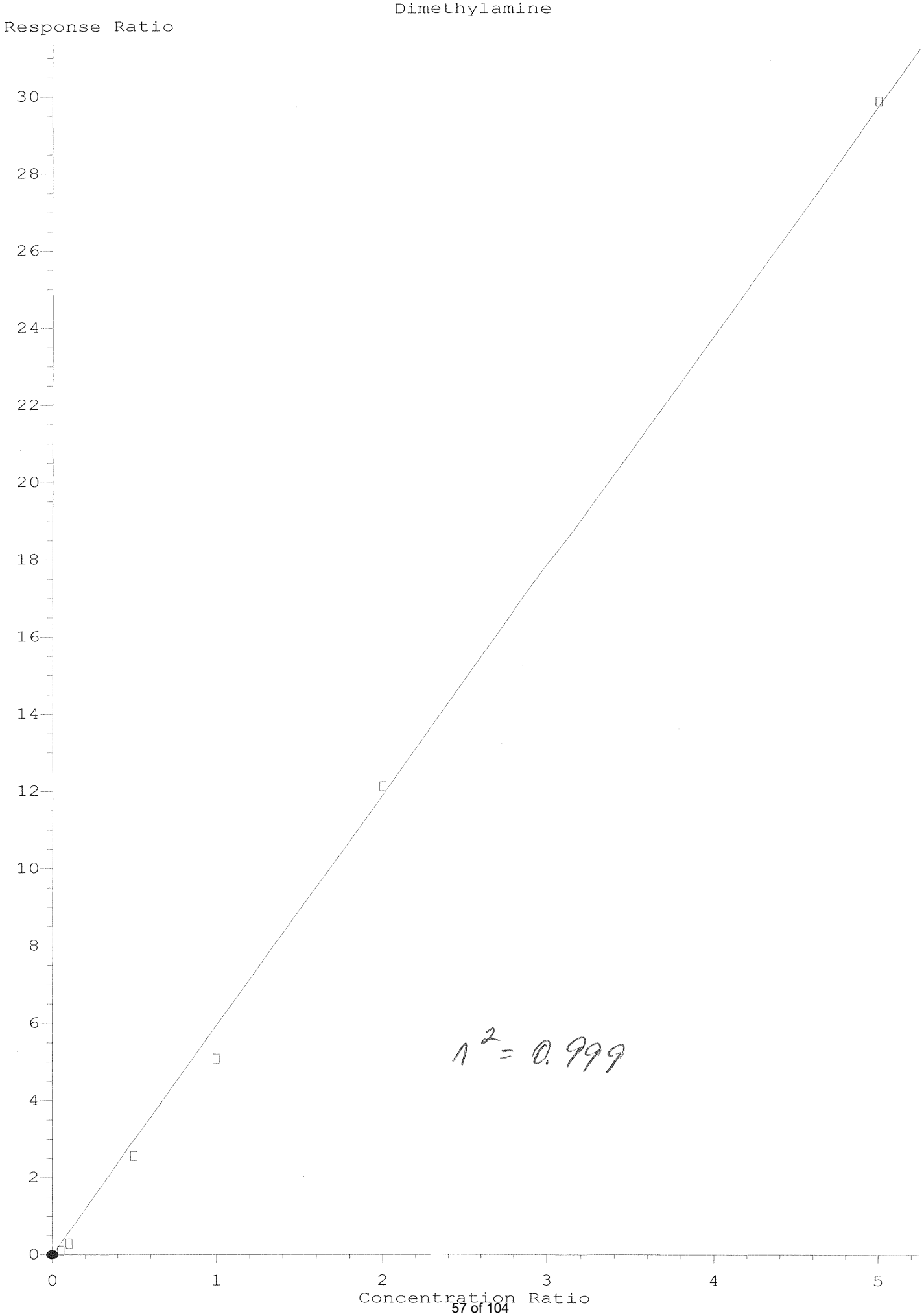
Response Factor Report GC14

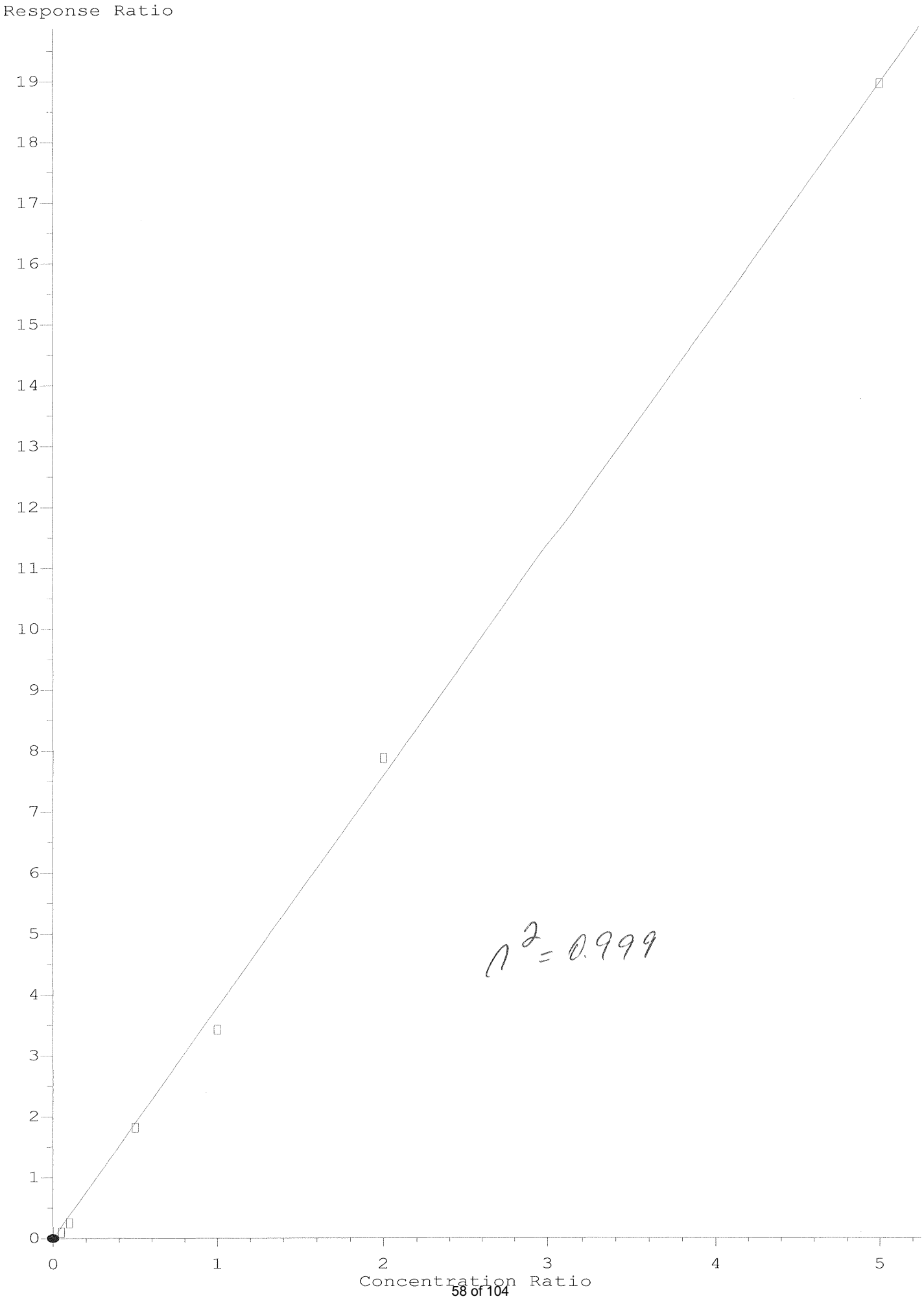
Method Path : J:\GC14\METHODS\
Method File : AMINE091914E.M
Title : GC #15/ NPD Method For Volatile Amines
Last Update : Tue Dec 16 10:15:53 2014
Response Via : Initial Calibration

Calibration Files
0.5 =09191414.D 1.0 =09191415.D 5.0 =09191416.D
10 =09191417.D 20 =09191418.D 50 =09191419.D

		Compound	0.5	1.0	5.0	10	20	50	Avg	%RSD
1)	I	3-Chloropyridine	ISTD							
2)		Dimethylamine	2.186	2.869	5.111	5.085	6.063	5.972	4.548	35.90
3)		Ethylamine	1.876	2.524	3.628	3.421	3.935	3.786	3.195	25.53
4)		Trimethylamine	3.843	3.627	3.801	3.246	3.676	3.397	3.598	6.48
5)		Isopropylamine	1.621	1.815	1.976	1.787	1.980	1.872	1.842	7.30
6)		t-Butylamine	0.853	0.842	0.885	0.773	0.841	0.789	0.831	5.04
7)		Propylamine	1.764	1.911	2.329	2.202	2.477	2.410	2.182	13.10
8)		Diethylamine	1.960	1.898	2.088	1.908	2.086	1.972	1.985	4.23
9)		s-Butylamine	1.264	1.299	1.414	1.328	1.445	1.355	1.351	5.09
10)		Isobutylamine	1.740	1.644	1.827	1.687	1.868	1.762	1.755	4.79
11)		Butylamine	1.124	1.220	1.492	1.455	1.623	1.550	1.411	13.88
12)		Diisopropylamine	1.368	1.293	1.266	1.140	1.221	1.130	1.236	7.46
13)		Triethylamine	1.484	1.492	1.450	1.328	1.458	1.379	1.432	4.52
14)		Pyridine	1.200	1.241	1.332	1.278	1.372	1.288	1.285	4.79
15)		Dipropylamine	1.296	1.211	1.339	1.262	1.361	1.269	1.290	4.23

(#) = Out of Range


Dimethylamine
Response Ratio
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
0
1
2
3
4
5
Concentration Ratio
$r^2 = 0.999$


Ethylamine
Response Ratio
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0
1
2
3
4
5
Concentration Ratio
$r^2 = 0.999$

ALS Environmental

Method : GC #15/ NPD Method For Volatile Amines
Client & Job# : Stantec Consulting Services, Inc. P1500371
Analyst : ZW

Printed : 02/09/15
Instrument : GC14
Date Acquired : 2/4/2015

QC SAMPLE REPORT SUMMARY

Compounds	ug/ml	% Diff		ug/ml	ug/ml	ug/ml	% Diff	ug/ml	% Diff	ug/ml	% Diff	ug/ml	% Diff
Sample Information	10ug/ml Amine CCV	10	Control Limits (%)	RB 0.01N NaOH/MeOH	MB	10ug/ml Amine CCV	10	10ug/ml Amine CCV	10				
Desorption Volume (mL)			2.0	2.0	2.0	2.0		2.0		2.0		2.0	
Dilution			1.0	1.0	1.0	1.0		1.0		1.0		1.0	
3-Chloropyridine IS	13819			13721	16506	14838		14406					
% Relative to CCV	100.0%			99.3%	119.4%	107.4%		104.2%					
Dimethylamine	11.074	10.7%	Pass	ND	ND	11.264	12.6%	10.651	6.5%				
Ethylamine	11.776	17.8%	Pass	ND	ND	11.995	20.0%	11.365	13.7%				
Trimethylamine	11.775	17.8%	Pass	ND	ND	12.289	Fail!	11.505	15.1%				
Isopropylamine	11.740	17.4%	Pass	ND	1	11.915	19.2%	11.527	15.3%				
t-Butylamine	11.116	11.2%	Pass	ND	ND	11.337	13.4%	10.727	7.3%				
Propylamine	11.476	14.8%	Pass	ND	ND	11.673	16.7%	11.347	13.5%				
Diethylamine	10.994	9.9%	Pass	ND	ND	11.200	12.0%	10.897	9.0%				
s-Butylamine	10.985	9.8%	Pass	ND	ND	11.273	12.7%	10.993	9.9%				
Isobutylamine	10.855	8.6%	Pass	ND	ND	11.247	12.5%	10.879	8.8%				
Butylamine	11.124	11.2%	Pass	ND	ND	11.733	17.3%	11.486	14.9%				
Diisopropylamine	10.258	2.6%	Pass	ND	ND	10.579	5.8%	10.006	0.1%				
Triethylamine	10.427	4.3%	Pass	ND	ND	10.576	5.8%	10.040	0.4%				
Dipropylamine	9.717	2.8%	Pass	ND	ND	10.195	2.0%	9.851	1.5%				
Acqisition Time	10:56			11:11	12:29	14:44		17:14					
Analyst	ZW		ZW	ZW	ZW	ZW		ZW					

MRL CHECK & LCS/ LCSD RESULT SUMMARIES

0	ug / sample	%		ug / sample	ug / sample	ug / sample	%		%		%	%	
0	0.5ug/ml MRL Check Std	recovery	Control Limits (%)	SS 10ug/ml	LCS 10ug/ml	LCSD 10ug/ml	recovery		recovery		Average Recovery	RPD	RPD (Control Limits)
Desorption Volume (mL)	2.0			2.0	2.0	2.0							
Dilution	1.0			1.0	1.0	1.0							
3-Chloropyridine IS	15992			16844	16978	16343							
% Relative to CCV	115.7%			121.9%	122.9%	118.3%							
Dimethylamine	0.238	47.6%	P 25-101%	10.528	8.428	8.326	80.1%	Pass	79.1%	Pass	79.6%	1.2%	Pass
Ethylamine	0.338	67.6%	P 29-111%	11.099	7.617	7.325	68.6%	Pass	66.0%	Pass	67.3%	3.9%	Pass
Trimethylamine	0.590	118.0%	P 52-146%	10.220	9.124	9.573	89.3%	Pass	93.7%	Pass	91.5%	4.8%	Pass
Isopropylamine	0.520	104.0%	P 43-142%	11.309	9.429	9.137	83.4%	Pass	80.8%	Pass	82.1%	3.1%	Pass
t-Butylamine	0.551	110.2%	P 47-165%	11.021	9.338	9.169	84.7%	Pass	83.2%	Pass	84.0%	1.8%	Pass
Propylamine	0.445	89.0%	P 39-135%	11.329	8.080	7.686	71.3%	Pass	67.8%	Pass	69.6%	5.0%	Pass
Diethylamine	0.531	106.2%	P 61-136%	10.661	9.875	10.178	92.6%	Pass	95.5%	Pass	94.0%	3.0%	Pass
s-Butylamine	0.482	96.4%	P 57-144%	10.803	9.223	9.106	85.4%	Pass	84.3%	Pass	84.8%	1.3%	Pass
Isobutylamine	0.500	100.0%	P 44-152%	10.620	8.208	7.992	77.3%	Pass	75.3%	Pass	76.3%	2.7%	Pass
Butylamine	0.401	80.2%	P 26-156%	11.335	8.225	8.016	72.6%	Pass	70.7%	Pass	71.6%	2.6%	Pass
Diisopropylamine	0.565	113.0%	P 62-157%	9.909	9.034	9.618	91.2%	Pass	97.1%	Pass	94.1%	6.3%	Pass
Triethylamine	0.527	105.4%	P 71-147%	10.046	9.194	9.679	91.5%	Pass	96.3%	Pass	93.9%	5.1%	Pass
Dipropylamine	0.428	85.6%	P 42-188%	10.341	9.603	10.110	92.9%	Pass	97.8%	Pass	95.3%	5.1%	Pass
Acqisition Time	11:30			11:45	12:00	12:14							
Analyst	ZW			ZW	ZW	ZW							

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Project ID: **Bridgeton / 182608020** ALS Project ID: P1500371

Ammonia

Test Code: OSHA ID-188/ID-164 Date(s) Collected: 1/27 - 1/28/15
Instrument ID: PH01/Thermo Orion 920A+/Ammonia ISE Date Received: 1/30/15
Analyst: Sue Anderson Date Analyzed: 2/5 - 2/6/15
Sampling Media: Anasorb 747 Tube(s) (Sulfuric Treated) Desorption Volume: 0.10 Liter(s)
Test Notes: **BC, DE**

Client Sample ID	ALS Sample ID	Sample Volume Liter(s)	Dilution Factor	Result mg/Tube	Result mg/m³	MRL mg/m³	**Result ppmV**	MRL ppmV	Data Qualifier
127D2-NH3	P1500371-012	121.8	1.0	< 0.010	ND	0.085	ND	0.12	
128U1-NH3	P1500371-024	98.415	1.0	< 0.010	ND	0.10	ND	0.15	
128D1-NH3	P1500371-028	98.98	1.0	< 0.010	ND	0.10	ND	0.15	
128D2-NH3	P1500371-032	97.526	1.0	< 0.010	ND	0.11	ND	0.15	
128N-NH3	P1500371-038	98.131	1.0	< 0.010	ND	0.10	ND	0.15	
128NQ-NH3	P1500371-044	96.408	1.0	< 0.010	ND	0.11	ND	0.15	
127SQ-NH32	P1500371-046	94.132	1.0	< 0.010	ND	0.11	ND	0.16	
127F-NH32	P1500371-048	95.698	1.0	< 0.010	ND	0.11	ND	0.15	
127U12-NH3	P1500371-049	95.645	1.0	< 0.010	ND	0.11	ND	0.15	
127D12-NH3	P1500371-050	97.055	1.0	< 0.010	ND	0.11	ND	0.15	
127TB-NH3	P1500371-057	NA	1.0	< 0.010	NA	NA	NA	NA	
128N-sNH3	P1500371-063	2.012	1.0	< 0.010	ND	5.1	ND	7.4	
128NQ-sNH3	P1500371-069	2.012	1.0	< 0.010	ND	5.1	ND	7.4	
128SQ-sNH3	P1500371-075	2.012	1.0	< 0.010	ND	5.1	ND	7.4	
128F-sNH3	P1500371-081	1.006	1.0	< 0.010	ND	10	ND	15	
128Dup06	P1500371-088	2.012	1.0	< 0.010	ND	5.1	ND	7.4	
Method Blank	P150205-MB	NA	1.0	< 0.010	NA	NA	NA	NA	
Method Blank	P150206-MB	NA	1.0	< 0.010	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
NA = Not applicable.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150205-LCS, P150205-DLCS

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary

Test Code: OSHA ID-188/ID-164 Date Sampled: N/A
Instrument ID: PH01/Thermo Orion 920A+/Ammonia ISE Date Received: N/A
Analyst: Sue Anderson Date Analyzed: 2/05/15
Sampling Media: Anasorb 747 Tube(s) (Sulfuric Treated) Volume(s) Analyzed: N/A
Test Notes:

Compound	Spike Amount LCS / DLCS mg/L	Result LCS mg/L	Result DLCS mg/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	Relative Percent Difference	RPD Limit	Data Qualifier
Ammonia	1.00	0.978	0.978	98	98	88-112	0	4	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150206-LCS, P150206-DLCS

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary

Test Code: OSHA ID-188/ID-164 Date Sampled: N/A
Instrument ID: PH01/Thermo Orion 920A+/Ammonia ISE Date Received: N/A
Analyst: Sue Anderson Date Analyzed: 2/06/15
Sampling Media: Anasorb 747 Tube(s) (Sulfuric Treated) Volume(s) Analyzed: N/A
Test Notes:

Compound	Spike Amount LCS / DLCS mg/L	Result LCS mg/L	Result DLCS mg/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	Relative Percent Difference	RPD Limit	Data Qualifier
Ammonia	1.00	0.946	0.955	95	96	88-112	1	4	

Ammonia in Air

OSHA ID-188/ID-164

Filling solution changed prior to analysis: **Yes** ☒ **No** ☐

Prep. Run#	228656	Run #	431795

Stds.	Conc. mg/L	millivolts mV	Slope: Range [-54~-60]
Std 1:	0.10	172.5	-57.8
Std 2:	1.00	115.7	
Std 3:	5.00	74.3	
Std 4:	10.00	57.3	
Std 5:	100.00	-0.1	

	Ref#	Exp.Date	Prep
Stock 1000 ppm	S24-02041402	8/4/15	—
ICV/CCV 1214 ppm	S24-05301402	01/2016	$\frac{1}{10} \cdot \frac{0.05}{50} \Rightarrow 0.121$ mg/L
pH Buffer; ISA	S24-09231402A	9/23/15	--
Filling Soln	S24-1107/1404	11/7/15	--

DE = 0.971

Sample I.D.	Volume mL	Millivolts mV	Conc. mg/L	DE Corrected Conc. mg/L	Final Value mg	Final Value mg/m³	Final Value ppmV
ICB	50	206.7	0.0170	<0.1			
ICV 0.121 mg/L	"	166.5	0.129	107%			
MB		189.6	0.0454	0.0468	<0.011		
LCS 1.00 mg/L		117.1	0.950	0.978	0.0978	<10%	>98%
DLCS I		117.1	0.950	0.978	0.0978	RPD	>98%
P150037I-12.01B		178.3	0.0773	0.0796	<0.011	<0.085	<0.13
-12.01F		191.2	0.0421	0.0434		↓	J
-24.01B		185.2	0.0562	0.0579		<0.11	<0.16
-24.01F		193.9	0.0365	0.0376		↓	J
-28.01B		189.6	0.0454	0.0468		<0.11	<0.15
-28.01F		180.4	0.0703	0.0724		↓	J
-32.01B		190.7	0.0430	0.0443	↓	<0.11	<0.16
CCV 0.121 mg/L		166.8	0.127	105%			
CCB1		206.9	0.0168	<0.1			
P150037I-32.01F		193.5	0.0371	0.0382	<0.011	<0.11	<0.16
-38.01B		194.0	0.0362	0.0374			
-38.01F		193.3	0.0377	0.0388			
-44.01B		191.6	0.0411	0.0423			
-44.01F		193.1	0.0380	0.0391			
-46.01B		194.7	0.0348	0.0358			
-46.01F		198.2	0.0284	0.0292			
-48.01B		197.6	0.0294	0.0308			
-48.01F	↓	203.3	0.0215	0.0221	↓	↓	↓

Comments: B = BACK
F = FRONT

Analyst: _____ Date/Time: 2/5/15 @1000 Reviewer: _____ Date: 2/6/15

Ammonia in Air

OSHA ID-188/ID-164

page 2 of 2

Filling solution changed prior to analysis: Yes ☒ No ☐

Prep. Run# 228656	Run # 431795

Stds.	Conc. mg/L	millivolts mV	Slope: Range [-54~-60]
Std 1:	0.10	172.5	
Std 2:	1.00	115.7	
Std 3:	5.00	74.3	
Std 4:	10.00	57.3	
Std 5:	100.00	-0.1	

	Ref#	Exp.Date	Prep
Stock 1000 ppm	S24-0204/402	8/4/15	—
ICV/CCV 1214 ppm	S24-0530/402	01/20/16	$\frac{1}{10} \cdot \frac{0.05}{50} \rightarrow 0.121$ mg/L
pH Buffer: ISA	S24-0923/402B	9/23/15	--
Filling Soln	S24-0107/404	11/7/15	--

DE = 0.971

Sample I.D.	Volume mL	Millivolts mV	Conc. mg/L	DE Corrected Conc. mg/L	Final Value mg	Final Value mg/m³	Final Value ppmV
ICB P150037I-49.01B	50 mL	204.4	0.0700	0.0206	<0.011	<0.11	<0.16
ICV CCV2 0.121 mg/L		167.7	0.123	102%			
MB CCB2		209.0	0.0147	<0.1			
LCS P150037I-49.01F		202.4	0.0227	0.0234	<0.011	<0.11	<0.16
" -50.01B		203.3	0.0215	0.0221	"	"	"
" -50.01F		205.2	0.0190	0.196	"	"	"
CCV3 0.121 mg/L		167.7	0.123	102%			
CCB3		206.7	0.0170	<0.1			

spill not likely

Comments: B = BACK F = FRONT

Analyst: _____ Date/Time: 2/5/15 @1000 Reviewer: _____ Date: 2/6/15

ALS

Ammonia in Air

OSHA ID-188/ID-164

page 1 of 2

Filling solution changed prior to analysis: Yes ☒ No ☐

Prep. Run#	228840	Run #	431955

Stds.	Conc. mg/L	millivolts mV	Slope: Range [-54~-60]
Std 1:	0.10	156.3	-58.6
Std 2:	1.00	110.8	
Std 3:	5.00	70.7	
Std 4:	10.00	53.6	
Std 5:	100.00	-4.4	

	Ref#	Exp.Date	Prep
Stock 1000 ppm	524-02041402	8/4/15	
ICV/CCV 1214 ppm	524-05301402	01/20/16	$\frac{1}{10} \cdot \frac{0.05}{50}$ => 0.121 mg/L
pH Buffer; ISA	524-09231402B	9/23/15	--
Filling Soln	524-11071404	11/7/15	--

DE = 0.971

Sample I.D.	Volume mL	Millivolts mV	Conc. mg/L	DE Corrected Conc. mg/L	Final Value mg	Final Value mg/m³	Final Value ppmV
ICB	50	178.5	0.000	<0.1			
ICV 0.121 mg/L		153.8	0.122	101%			
MB		195.2	0.000	—	<0.011		
LCS 1.00 mg/L		112.8	0.919	0.946	0.0946	1%	95%
DLCS		112.5	0.927	0.955	0.0955	RPD	96%
P1500371-57.01B		192.6	0.000	—	<0.011		
-57.01F		184.5	0.000	—			
-63.01B		194.0	0.000	—		<5.12	<7.36
-63.01F		183.1	0.000	—			
-69.01B		192.0	0.000	—			
-69.01F		194.1	0.000	—			
-75.01B		192.6	0.000	—			
CCV 0.121 mg/L		153.8	0.122	101%			
CCB		179.2	0.000	<0.1			
P1500371-75.01F		194.3	0.000	—	<0.011	<5.12	<7.36
-81.01B		183.1	0.000	—		<10.3	<14.8
-81.01F		181.8	0.000	—			
-88.01B		192.3	0.000	—		<5.12	<7.36
-88.01F		194.3	0.000	—			
P1500465-2.01B		194.8	0.000	—		<34.4	<49.4
-2.01F		189.9	0.000	—			
-3.01B		206.8	0.000	—		<41.2	<59.2
-3.01F		187.4	0.000	—			

Comments: B = BACK
F = FRONT

Analyst: [signature] Date/Time: 2/6/15 @1000 Reviewer: [initials] Date: 2/9/15

Ammonia in Air

OSHA ID-188/ID-164

Filling solution changed prior to analysis: Yes ☒ No ☐

Prep. Run#	228840	Run #	431955

Stds.	Conc.	millivolts	Slope:
	mg/L	mV	Range [-54~-60]
Std 1:	0.10	156.3	-58.6
Std 2:	1.00	110.8	
Std 3:	5.00	70.7	
Std 4:	10.00	53.6	
Std 5:	100.00	-4.4	

	Ref#	Exp.Date	Prep
Stock 1000 ppm	S24-0704402	8/4/15	—
ICV/CCV 1214 ppm	S24-0530402	01/2016	$\pm \frac{0.05}{0} \Rightarrow 0.121$ mg/L
pH Buffer: ISA	S24-0923402B	9/23/15	--
Filling Soln	S24-1107402	11/7/15	--

DE = 0.971

Sample I.D.	Volume mL	Millivolts mV	Conc. mg/L	DE Corrected Conc. mg/L	Final Value mg	Final Value mg/m³	Final Value ppmV
ICB P1500465-401BLK0		190.6	0.000	—	<0.011	<34.4	<49.4
ICV CCV2		154.0	0.121	100%			
MB CCB2		188.0	0.000	<0.1			
LCS P1500465-402LK		197.6	0.000	—	<0.011	<34.4	<49.4
CCV3		154.0	0.121	100%			
CCB3		189.9	0.000	<0.1			

Comments:

Analyst: _____ Date/Time: 2/6/15 @ 1000 Reviewer: _____ Date: 2/9/15

ALS Environmental

ISE Method for Ammonia in Air

Printed: 2/5/15
Client: Stantec Consulting Froup, Inc.
Analyst: SMA
CAS Job: P1500371
Method: OSHA ID-188/ ID-164

Instrument: pH01
Date Analyzed: 2/5/15
Sample Amt: 0.100 L
Solvent: 0.1 N H2SO4
Matrix: Anasorb 747 (sulfuric treated)

SAMPLE RESULTS

Sample		Ammonia (mg/L)	Desorption Vol (L)	Dilution	Sample Vol (L)	Ammonia (mg/tube)*	Ammonia mg/m3	Ammonia ppm
	MW	17.03						
	MRL	0.100	0.1	1.0	NA	0.01		
RB		0.0170	NA	NA	NA			
MB		0.0454	0.100	1.0	NA	ND	ND	ND
P1500371-012.01	back	0.0773	0.050	1.0	121.800	ND	ND	ND
P1500371-024.01	back	0.0562	0.050	1.0	98.415	ND	ND	ND
P1500371-028.01	back	0.0454	0.050	1.0	98.980	ND	ND	ND
P1500371-032.01	back	0.0430	0.050	1.0	97.526	ND	ND	ND
P1500371-038.01	back	0.0363	0.050	1.0	98.131	ND	ND	ND
P1500371-044.01	back	0.0411	0.050	1.0	96.408	ND	ND	ND
P1500371-046.01	back	0.0348	0.050	1.0	94.132	ND	ND	ND
P1500371-048.01	back	0.0299	0.050	1.0	95.698	ND	ND	ND
P1500371-049.01	back	0.0200	0.050	1.0	95.645	ND	ND	ND
P1500371-050.01	back	0.0215	0.050	1.0	97.055	ND	ND	ND
P1500371-012.01	front	0.0421	0.100	1.0	121.800	ND	ND	ND
P1500371-024.01	front	0.0365	0.100	1.0	98.415	ND	ND	ND
P1500371-028.01	front	0.0703	0.100	1.0	98.980	ND	ND	ND
P1500371-032.01	front	0.0371	0.100	1.0	97.526	ND	ND	ND
P1500371-038.01	front	0.0377	0.100	1.0	98.131	ND	ND	ND
P1500371-044.01	front	0.0380	0.100	1.0	96.408	ND	ND	ND
P1500371-046.01	front	0.0289	0.100	1.0	94.132	ND	ND	ND
P1500371-048.01	front	0.0215	0.100	1.0	95.698	ND	ND	ND
P1500371-049.01	front	0.0227	0.100	1.0	95.645	ND	ND	ND
P1500371-050.01	front	0.0190	0.100	1.0	97.055	ND	ND	ND

*Samples are DE corrected
Desorption Efficiency (DE): 0.971

QC RESULTS

0.121 mg/L NH3 ICV S24-05301402 (01/16)	0.121	LCS	1.00	
ACTUAL	0.129	SPIKE STD	0.978	
% RECOVERY	106.6%	% RECOVERY	97.8%	
0.121 mg/L NH3 CCV1 S24-05301402 (01/16)	0.12	LCSD	1.00	
ACTUAL	0.13	SPIKE STD	0.978	
% RECOVERY	105.0%	% RECOVERY	97.8%	
		%RPD:	0.0%	
0.121 mg/L NH3 CCV2 S24-05301402 (01/16)	0.12	0.121 mg/L NH3 CCV3 S24-05301402 (01/16)		0.121
ACTUAL	0.12	ACTUAL		0.123
% RECOVERY	101.7%	% RECOVERY		101.7%

ALS Environmental

ISE Method for Ammonia in Air

Printed: 2/16/2015
Client: Stantec Consulting Froup, Inc.
Analyst: SMA
CAS Job: P1500371
Method: OSHA ID-188/ ID-164

Instrument: pH01
Date Analyzed: 2/6/2015
Sample Amt: 0.100 L
Solvent: 0.1 N H2SO4
Matrix: Anasorb 747 (sulfuric treated)

SAMPLE RESULTS

Sample		Ammonia (mg/L)	Desorption Vol (L)	Dilution	Sample Vol (L)	Ammonia (mg/tube)*	Ammonia mg/m3	Ammonia ppm
	MW	17.03						
	MRL	0.100	0.1	1.0	NA	0.01		
RB		0.0000	NA	NA	NA			
MB		0.000	0.100	1.0	NA	ND	ND	ND
P1500371-057.01	back	0.000	0.050	1.0	NA	ND	ND	ND
P1500371-063.01	back	0.000	0.050	1.0	2.012	ND	ND	ND
P1500371-069.01	back	0.000	0.050	1.0	2.012	ND	ND	ND
P1500371-075.01	back	0.000	0.050	1.0	2.012	ND	ND	ND
P1500371-081.01	back	0.000	0.050	1.0	1.006	ND	ND	ND
P1500371-088.01	back	0.000	0.050	1.0	2.012	ND	ND	ND
P1500371-057.01	front	0.000	0.100	1.0	NA	ND	ND	ND
P1500371-063.01	front	0.000	0.100	1.0	2.012	ND	ND	ND
P1500371-069.01	front	0.000	0.100	1.0	2.012	ND	ND	ND
P1500371-075.01	front	0.000	0.100	1.0	2.012	ND	ND	ND
P1500371-081.01	front	0.000	0.100	1.0	1.006	ND	ND	ND
P1500371-088.01	front	0.000	0.100	1.0	2.012	ND	ND	ND

*Samples are DE corrected
Desorption Efficiency (DE): 0.971

QC RESULTS

0.121 mg/L NH3 ICV S24-05301402 (01/16)	0.121	LCS	1.00	
ACTUAL	0.122	SPIKE STD	0.946	
% RECOVERY	100.8%	% RECOVERY	94.6%	
0.121 mg/L NH3 CCV1 S24-05301402 (01/16)	0.121	LCSD	1.00	
ACTUAL	0.122	SPIKE STD	0.955	
% RECOVERY	100.8%	% RECOVERY	95.5%	
		%RPD:	0.9%	
0.121 mg/L NH3 CCV2 S24-05301402 (01/16)	0.121	0.121 mg/L NH3 CCV3 S24-05301402 (01/16)		0.121
ACTUAL	0.121	ACTUAL		0.121
% RECOVERY	100.0%	% RECOVERY		100.0%

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127U1-CARBOX** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-005

Test Code: GC/MS Date Collected: 1/27/15
Instrument ID: Agilent 5973/Agilent 6890/MS14 Date Received: 1/30/15
Analyst: Zheng Wang Date Analyzed: 2/6/15
Sampling Media: Silica Gel Tube Desorption Volume: 1.0 ml
Test Notes: **BC, DE** Volume Sampled: 101.279 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	20	ND	8.2	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.6	ND	0.87	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.5	ND	0.70	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.5	ND	0.70	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.5	ND	0.60	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.5	ND	0.59	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.5	ND	0.60	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.52	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.53	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.5	ND	0.53	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.5	ND	0.53	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.5	ND	0.47	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.7	ND	0.47	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.5	ND	0.47	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.5	ND	0.42	
65-85-0	Benzoic Acid	< 0.31	ND	3.0	ND	0.61	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.5	ND	0.39	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127F-CARBOX**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-017

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: **BC, DE**

Date Collected: 1/27/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 99.96 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	20	ND	8.3	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.88	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.5	ND	0.71	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.71	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.5	ND	0.60	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.5	ND	0.60	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.61	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.53	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.53	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.5	ND	0.53	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.5	ND	0.53	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.5	ND	0.47	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.47	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.5	ND	0.48	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.5	ND	0.43	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.61	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.5	ND	0.39	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128U1-CARBOX**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-025

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 98.172 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	21	ND	8.5	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.90	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.6	ND	0.72	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.73	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.6	ND	0.62	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.6	ND	0.61	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.62	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.6	ND	0.54	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.6	ND	0.54	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.6	ND	0.48	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.48	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.6	ND	0.49	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.6	ND	0.44	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.63	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.6	ND	0.40	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128D1-CARBOX** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-029

Test Code: GC/MS Date Collected: 1/28/15
Instrument ID: Agilent 5973/Agilent 6890/MS14 Date Received: 1/30/15
Analyst: Zheng Wang Date Analyzed: 2/6/15
Sampling Media: Silica Gel Tube Desorption Volume: 1.0 ml
Test Notes: **BC, DE** Volume Sampled: 100.083 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	20	ND	8.3	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.88	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.5	ND	0.71	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.71	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.5	ND	0.60	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.5	ND	0.60	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.5	ND	0.61	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.53	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.53	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.5	ND	0.53	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.5	ND	0.53	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.5	ND	0.47	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.47	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.5	ND	0.48	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.5	ND	0.43	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.61	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.5	ND	0.39	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128D2-CARBOX**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-033

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 98.474 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	21	ND	8.4	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.89	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.6	ND	0.72	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.72	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.6	ND	0.61	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.5	ND	0.61	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.62	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.6	ND	0.54	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.6	ND	0.54	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.6	ND	0.48	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.48	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.5	ND	0.49	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.6	ND	0.43	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.62	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.6	ND	0.40	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128N-CARBOX**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-039

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 98.131 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	21	ND	8.5	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.90	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.6	ND	0.72	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.73	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.6	ND	0.62	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.6	ND	0.61	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.62	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.6	ND	0.54	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.6	ND	0.54	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.6	ND	0.48	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.48	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.6	ND	0.49	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.6	ND	0.44	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.63	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.6	ND	0.40	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQ-CARBOX** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-045

Test Code: GC/MS Date Collected: 1/28/15
Instrument ID: Agilent 5973/Agilent 6890/MS14 Date Received: 1/30/15
Analyst: Zheng Wang Date Analyzed: 2/6/15
Sampling Media: Silica Gel Tube Desorption Volume: 1.0 ml
Test Notes: **BC, DE** Volume Sampled: 99.583 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	20	ND	8.3	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.88	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.6	ND	0.71	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.71	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.5	ND	0.61	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.5	ND	0.60	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.61	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.53	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.54	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.5	ND	0.54	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.5	ND	0.54	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.5	ND	0.48	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.47	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.5	ND	0.48	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.5	ND	0.43	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.62	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.5	ND	0.39	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127SQ-CARBOX2**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-047

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 98.181 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	21	ND	8.5	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.90	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.6	ND	0.72	
107-92-6	Butanoic Acid (Butyric)	0.41	**4.2**	2.6	**1.2**	0.73	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.6	ND	0.62	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.6	ND	0.61	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.62	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.6	ND	0.54	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.6	ND	0.54	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.6	ND	0.48	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.48	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.6	ND	0.49	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.6	ND	0.44	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.63	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.6	ND	0.40	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D22-CARBOX**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-051

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 97.699 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	21	ND	8.5	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.90	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.6	ND	0.72	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.73	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.6	ND	0.62	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.6	ND	0.62	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.63	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.55	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.6	ND	0.55	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.6	ND	0.55	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.6	ND	0.48	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.48	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.6	ND	0.49	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.6	ND	0.44	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.63	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.6	ND	0.40	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D12-CARBOX**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-052

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 98.935 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	21	ND	8.4	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.89	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.6	ND	0.71	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.72	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.5	ND	0.61	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.5	ND	0.61	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.62	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.54	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.6	ND	0.54	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.6	ND	0.54	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.5	ND	0.48	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.48	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.5	ND	0.48	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.6	ND	0.43	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.62	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.6	ND	0.40	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127TB-CARBOX** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-058

Test Code: GC/MS Date Collected: 1/27/15
Instrument ID: Agilent 5973/Agilent 6890/MS14 Date Received: 1/30/15
Analyst: Zheng Wang Date Analyzed: 2/5/15
Sampling Media: Silica Gel Tube Desorption Volume: 1.0 ml
Test Notes: **BC, DE** Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	NA	NA	NA	NA	
79-09-4	Propionic Acid (Propanoic)	< 0.27	NA	NA	NA	NA	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	NA	NA	NA	NA	
107-92-6	Butanoic Acid (Butyric)	< 0.26	NA	NA	NA	NA	
116-53-0	2-Methylbutanoic Acid	< 0.25	NA	NA	NA	NA	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	NA	NA	NA	NA	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	NA	NA	NA	NA	
97-61-0	2-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
105-43-1	3-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	NA	NA	NA	NA	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	NA	NA	NA	NA	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	NA	NA	NA	NA	
149-57-5	2-Ethylhexanoic Acid	< 0.28	NA	NA	NA	NA	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	NA	NA	NA	NA	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	NA	NA	NA	NA	
65-85-0	Benzoic Acid	< 0.31	NA	NA	NA	NA	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.
NA = Not applicable.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128N-sCARBOX**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-064

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 2.409 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	850	ND	340	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	110	ND	36	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	110	ND	29	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	110	ND	30	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	100	ND	25	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	100	ND	25	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	110	ND	25	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	100	ND	22	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	110	ND	22	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	110	ND	22	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	110	ND	22	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	100	ND	20	**V**
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	120	ND	20	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	100	ND	20	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	100	ND	18	**V**
65-85-0	Benzoic Acid	< 0.31	ND	130	ND	25	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	110	ND	16	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQ-sCARBOX** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500371-070

Test Code: GC/MS Date Collected: 1/28/15
Instrument ID: Agilent 5973/Agilent 6890/MS14 Date Received: 1/30/15
Analyst: Zheng Wang Date Analyzed: 2/6/15
Sampling Media: Silica Gel Tube Desorption Volume: 1.0 ml
Test Notes: **BC, DE** Volume Sampled: 2.409 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	850	ND	340	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	110	ND	36	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	110	ND	29	
107-92-6	Butanoic Acid (Butyric)	0.40	**170**	110	**46**	30	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	100	ND	25	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	100	ND	25	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	110	ND	25	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	100	ND	22	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	110	ND	22	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	110	ND	22	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	110	ND	22	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	100	ND	20	**V**
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	120	ND	20	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	100	ND	20	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	100	ND	18	**V**
65-85-0	Benzoic Acid	< 0.31	ND	130	ND	25	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	110	ND	16	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128SQ-sCARBOX**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-076

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 2.409 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	30	**13,000**	850	**5,100**	340	
79-09-4	Propionic Acid (Propanoic)	27	**11,000**	110	**3,800**	36	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	22	**9,300**	110	**2,600**	29	
107-92-6	Butanoic Acid (Butyric)	59	**24,000**	110	**6,800**	30	
116-53-0	2-Methylbutanoic Acid	5.4	**2,200**	100	**530**	25	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	7.7	**3,200**	100	**770**	25	
109-52-4	Pentanoic Acid (Valeric)	5.2	**2,200**	110	**520**	25	
97-61-0	2-Methylpentanoic Acid	0.38	**160**	100	**33**	22	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	110	ND	22	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	110	ND	22	
142-62-1	Hexanoic Acid (Caproic)	1.6	**650**	110	**140**	22	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	100	ND	20	**V**
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	120	ND	20	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	100	ND	20	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	100	ND	18	**V**
65-85-0	Benzoic Acid	< 0.31	ND	130	ND	25	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	110	ND	16	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128F-sCARBOX**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-082

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 1.205 Liter(s)

Dilution Factor: 10.0

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	260	**210,000**	17,000	**87,000**	6,900	
79-09-4	Propionic Acid (Propanoic)	220	**180,000**	2,200	**61,000**	730	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	130	**110,000**	2,100	**30,000**	590	
107-92-6	Butanoic Acid (Butyric)	970	**800,000**	2,100	**220,000**	590	
116-53-0	2-Methylbutanoic Acid	60	**49,000**	2,100	**12,000**	500	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	96	**80,000**	2,100	**19,000**	500	
109-52-4	Pentanoic Acid (Valeric)	240	**200,000**	2,100	**49,000**	510	
97-61-0	2-Methylpentanoic Acid	4.8	**4,000**	2,100	**840**	440	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2,100	ND	440	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2,100	ND	440	
142-62-1	Hexanoic Acid (Caproic)	150	**130,000**	2,100	**27,000**	440	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2,100	ND	390	**V**
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2,300	ND	390	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2,100	ND	400	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2,100	ND	360	**V**
65-85-0	Benzoic Acid	< 0.31	ND	2,500	ND	510	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2,100	ND	320	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127Dup032**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500371
ALS Sample ID: P1500371-085

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: **BC, DE**

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/11/15
Desorption Volume: 1.0 ml
Volume Sampled: 94.132 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	22	ND	8.8	**L**
79-09-4	Propionic Acid (Propanoic)	0.29	**3.1**	2.8	**1.0**	0.93	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.7	ND	0.75	**L**
107-92-6	Butanoic Acid (Butyric)	0.38	**4.0**	2.7	**1.1**	0.76	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.7	ND	0.64	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.7	ND	0.64	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.7	ND	0.65	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.7	ND	0.56	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.7	ND	0.57	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.7	ND	0.57	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.7	ND	0.57	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.7	ND	0.50	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	3.0	ND	0.50	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.7	ND	0.51	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.7	ND	0.46	
65-85-0	Benzoic Acid	< 0.31	ND	3.3	ND	0.65	**L**
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.7	ND	0.42	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.
L = Laboratory control sample recovery outside the specified limits.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150205-MB

Test Code:	GC/MS	Date Collected:	NA
Instrument ID:	Agilent 5973/Agilent 6890/MS14	Date Received:	NA
Analyst:	Zheng Wang	Date Analyzed:	2/5/15
Sampling Media:	Silica Gel Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC, DE**	Volume Sampled:	NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	NA	NA	NA	NA	
79-09-4	Propionic Acid (Propanoic)	< 0.27	NA	NA	NA	NA	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	NA	NA	NA	NA	
107-92-6	Butanoic Acid (Butyric)	< 0.26	NA	NA	NA	NA	
116-53-0	2-Methylbutanoic Acid	< 0.25	NA	NA	NA	NA	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	NA	NA	NA	NA	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	NA	NA	NA	NA	
97-61-0	2-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
105-43-1	3-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	NA	NA	NA	NA	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	NA	NA	NA	NA	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	NA	NA	NA	NA	
149-57-5	2-Ethylhexanoic Acid	< 0.28	NA	NA	NA	NA	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	NA	NA	NA	NA	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	NA	NA	NA	NA	
65-85-0	Benzoic Acid	< 0.31	NA	NA	NA	NA	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
NA = Not applicable.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150211-MB

Test Code:	GC/MS	Date Collected:	NA
Instrument ID:	Agilent 5973/Agilent 6890/MS14	Date Received:	NA
Analyst:	Zheng Wang	Date Analyzed:	2/11/15
Sampling Media:	Silica Gel Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC, DE**	Volume Sampled:	NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	NA	NA	NA	NA	
79-09-4	Propionic Acid (Propanoic)	< 0.27	NA	NA	NA	NA	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	NA	NA	NA	NA	
107-92-6	Butanoic Acid (Butyric)	< 0.26	NA	NA	NA	NA	
116-53-0	2-Methylbutanoic Acid	< 0.25	NA	NA	NA	NA	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	NA	NA	NA	NA	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	NA	NA	NA	NA	
97-61-0	2-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
105-43-1	3-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	NA	NA	NA	NA	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	NA	NA	NA	NA	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	NA	NA	NA	NA	
149-57-5	2-Ethylhexanoic Acid	< 0.28	NA	NA	NA	NA	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	NA	NA	NA	NA	**V**
124-07-2	Octanoic Acid (Caprylic)	< 0.25	NA	NA	NA	NA	
65-85-0	Benzoic Acid	< 0.31	NA	NA	NA	NA	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
NA = Not applicable.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150205-DLCS

Test Code: GC/MS Date Collected: NA
Instrument ID: Agilent 5973/Agilent 6890/MS14 Date Received: NA
Analyst: Zheng Wang Date Analyzed: 2/05/15
Sampling Media: Silica Gel Tube Volume(s) Analyzed: NA Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/ml	Result LCS µg/ml	Result DLCS µg/ml	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
64-19-7	Acetic Acid	23.6	27.5	26.5	**117**	**112**	56-135	4	31	
79-09-4	Propionic Acid (Propanoic)	9.29	9.96	9.59	**107**	**103**	73-119	4	15	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	9.69	10.1	9.89	**104**	**102**	81-114	2	13	
107-92-6	Butanoic Acid (Butyric)	9.98	10.1	10.1	**101**	**101**	85-110	0	10	
116-53-0	2-Methylbutanoic Acid	10.3	10.3	10.3	**100**	**100**	89-109	0	8	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	10.2	10.2	10.1	**100**	**99**	89-109	1	8	
109-52-4	Pentanoic Acid (Valeric)	9.75	9.70	9.69	**99**	**99**	91-107	0	7	
97-61-0	2-Methylpentanoic Acid	10.2	10.0	10.0	**98**	**98**	93-106	0	4	
105-43-1	3-Methylpentanoic Acid	10.4	10.2	10.2	**98**	**98**	93-106	0	4	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	10.2	10	9.96	**98**	**98**	92-107	0	5	
142-62-1	Hexanoic Acid (Caproic)	9.84	9.77	9.75	**99**	**99**	93-105	0	4	
111-14-8	Heptanoic Acid (Enanthoic)	7.08	6.80	6.82	**96**	**96**	92-107	0	7	
149-57-5	2-Ethylhexanoic Acid	7.74	7.36	7.45	**95**	**96**	81-107	1	10	
98-89-5	Cyclohexanecarboxylic Acid	6.45	6.29	6.25	**98**	**97**	91-108	1	6	
124-07-2	Octanoic Acid (Caprylic)	7.10	6.88	6.82	**97**	**96**	92-107	1	6	
65-85-0	Benzoic Acid	7.00	6.48	6.44	**93**	**92**	68-106	1	15	
112-05-0	Nonanoic Acid (Pelargonic)	8.27	7.92	7.91	**96**	**96**	90-107	0	8	

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1500371
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150211-DLCS

Test Code: GC/MS Date Collected: NA
Instrument ID: Agilent 5973/Agilent 6890/MS14 Date Received: NA
Analyst: Zheng Wang Date Analyzed: 2/11/15
Sampling Media: Silica Gel Tube Volume(s) Analyzed: NA Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/ml	Result LCS µg/ml	Result DLCS µg/ml	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
64-19-7	Acetic Acid	25.7	22.3	13.6	**87**	**53**	56-135	49	31	**L, R**
79-09-4	Propionic Acid (Propanoic)	9.44	8.76	7.03	**93**	**74**	73-119	23	15	**R**
79-31-2	2-Methylpropanoic Acid (Isobutyric)	9.59	9.03	7.68	**94**	**80**	81-114	16	13	**L, R**
107-92-6	Butanoic Acid (Butyric)	9.79	9.39	8.84	**96**	**90**	85-110	6	10	
116-53-0	2-Methylbutanoic Acid	10.1	9.85	9.38	**98**	**93**	89-109	5	8	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	9.81	9.76	9.29	**99**	**95**	89-109	4	8	
109-52-4	Pentanoic Acid (Valeric)	9.49	9.53	9.50	**100**	**100**	91-107	0	7	
97-61-0	2-Methylpentanoic Acid	9.84	10	9.80	**102**	**100**	93-106	2	4	
105-43-1	3-Methylpentanoic Acid	10.1	10.3	10.3	**102**	**102**	93-106	0	4	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	9.87	10.1	10.1	**102**	**102**	92-107	0	5	
142-62-1	Hexanoic Acid (Caproic)	9.60	9.88	9.87	**103**	**103**	93-105	0	4	
111-14-8	Heptanoic Acid (Enanthoic)	6.80	6.75	7.00	**99**	**103**	92-107	4	7	
149-57-5	2-Ethylhexanoic Acid	7.43	7.31	7.54	**98**	**101**	81-107	3	10	
98-89-5	Cyclohexanecarboxylic Acid	6.22	6.21	6.38	**100**	**103**	91-108	3	6	
124-07-2	Octanoic Acid (Caprylic)	6.79	6.74	6.98	**99**	**103**	92-107	4	6	
65-85-0	Benzoic Acid	6.90	6.87	7.36	**100**	**107**	68-106	7	15	**L**
112-05-0	Nonanoic Acid (Pelargonic)	8.17	8.09	8.06	**99**	**99**	90-107	0	8	

L = Laboratory control sample recovery outside the specified limits.
R = Duplicate precision not met

Method Path : J:\MS14\METHODS\
Method File : CA042314E.M
Title : Short Chain Carboxylic Acids in Air
Last Update : Thu Apr 24 11:01:56 2014
Response Via : Initial Calibration

Calibration Files
0.25=04231404.D 1 =04231405.D 5 =04231406.D 10 =04231407.D
25 =04231408.D 50 =04231409.D

		Compound	0.25	1	5	10	25	50	Avg	%RSD
1)	I	IS1 Bromofluoroben...	----------ISTD----------							
2)	T	Acetic acid		0.090	0.088	0.079	0.067	0.045	0.074	25.15
3)	T	Propanoic acid	0.876	0.757	0.792	0.717	0.633	0.713	0.748	10.99
4)	T	2-Methylpropan...	0.534	0.538	0.550	0.501	0.453	0.491	0.511	7.15
5)	T	Butanoic acid	0.932	0.907	0.918	0.832	0.775	0.818	0.864	7.38
6)		2-Methylbutano...	1.309	1.246	1.260	1.164	1.087	1.141	1.201	6.98
7)	T	3-Methylbutano...	1.845	1.666	1.725	1.602	1.496	1.532	1.644	7.87
8)	T	Pentanoic acid	1.720	1.651	1.709	1.579	1.486	1.503	1.608	6.31
9)	T	2-Methylpentan...	2.165	2.083	2.128	1.977	1.884	1.915	2.026	5.76
10)	T	3-Methylpentan...	2.613	2.527	2.529	2.343	2.206	2.193	2.402	7.49
11)	T	4-Methylpentan...	1.333	1.320	1.304	1.203	1.156	1.159	1.246	6.61
12)	T	Hexanoic acid	2.396	2.211	2.258	2.107	1.986	1.982	2.157	7.54
13)	I	IS2 1,4-Dibromoben...	----------ISTD----------							
14)	T	Heptanoic acid	4.795	4.695	4.879	4.579	4.300	4.159	4.568	6.22
15)	T	2-Ethylhexanoi...	3.566	3.391	3.442	3.230	3.060	3.025	3.285	6.61
16)	T	Cyclohexanecar...	2.403	2.288	2.310	2.139	2.021	1.921	2.180	8.52
17)	T	Octanoic acid	5.656	5.271	5.331	4.996	4.676	4.520	5.075	8.43
18)	T	Benzoic acid	4.006	3.764	3.749	3.602	3.474	3.530	3.687	5.27
19)	I	IS3 Biphenyl	----------ISTD----------							
20)	T	Nonanoic acid	1.173	1.148	1.191	1.144	1.101	1.011	1.128	5.76
21)	T	Decanoic Acid	0.975	1.002	1.111	1.036	0.999	0.966	1.015	5.22

(#) = Out of Range

Evaluate Continuing Calibration Report

Data Path : J:\MS14\DATA\ACIDS\2015_02\05\
Data File : 02051509.D
Acq On : 5 Feb 2015 9:36 am
Operator : ZW
Sample : 25/50ug/ml Carboxylic Acid
Misc : S28-12171407
ALS Vial : 3 Sample Multiplier: 1

ZW
2/12/15

Quant Time: Feb 11 10:30:13 2015
Quant Method : J:\MS14\METHODS\CA042314E.M
Quant Title : Short Chain Carboxylic Acids in Air
QLast Update : Thu Apr 24 11:01:56 2014
Response via : Initial Calibration
DataAcq Meth:FAME

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	IS1 Bromofluorobenzene (BFB	1.000	1.000	0.0	212#	-0.02
2	T	Acetic acid	0.074	0.095	-28.4	301#	-0.03
3	T	Propanoic acid	0.748	0.762	-1.9	255#	-0.02
4	T	2-Methylpropanoic acid	0.511	0.530	-3.7	248#	-0.02
5	T	Butanoic acid	0.864	0.918	-6.3	251#	-0.02
6		2-Methylbutanoic acid	1.201	1.292	-7.6	252#	-0.02
7	T	3-Methylbutanoic acid	1.644	1.757	-6.9	249#	-0.02
8	T	Pentanoic acid	1.608	1.647	-2.4	235#	-0.02
9	T	2-Methylpentanoic acid	2.026	2.144	-5.8	241#	-0.02
10	T	3-Methylpentanoic acid	2.402	2.550	-6.2	245#	-0.02
11	T	4-Methylpentanoic acid	1.246	1.324	-6.3	243#	-0.02
12	T	Hexanoic acid	2.157	2.225	-3.2	238#	-0.03
13	I	IS2 1,4-Dibromobenzene	1.000	1.000	0.0	298#	-0.02
14	T	Heptanoic acid	4.568	3.317	27.4	230#	-0.02
15	T	2-Ethylhexanoic acid	3.285	2.614	20.4	255#	-0.02
16	T	Cyclohexanecarboxylic acid	2.180	1.462	32.9#	216#	-0.02
17	T	Octanoic acid	5.075	3.676	27.6	234#	-0.02
18	T	Benzoic acid	3.687	2.649	28.2	227#	-0.02
19	I	IS3 Biphenyl	1.000	1.000	0.0	273#	-0.02
20	T	Nonanoic acid	1.128	0.973	13.7	241#	-0.02
21	T	Decanoic Acid	1.015	0.893	12.0	244#	-0.02

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : J:\MS14\DATA\ACIDS\2015_02\06\
Data File : 02061503.D
Acq On : 6 Feb 2015 9:07 am
Operator : ZW
Sample : 25/50ug/ml Carboxylic Acid
Misc : S28-12171407
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 11 13:42:31 2015
Quant Method : J:\MS14\METHODS\CA042314E.M
Quant Title : Short Chain Carboxylic Acids in Air
QLast Update : Thu Apr 24 11:01:56 2014
Response via : Initial Calibration
DataAcq Meth:FAME

ZW
2/12/15

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	IS1 Bromofluorobenzene (BFB	1.000	1.000	0.0	218#	-0.02
2	T	Acetic acid	0.074	0.074	0.0	243#	-0.04
3	T	Propanoic acid	0.748	0.627	16.2	216#	-0.02
4	T	2-Methylpropanoic acid	0.511	0.480	6.1	231#	-0.02
5	T	Butanoic acid	0.864	0.814	5.8	229#	-0.02
6		2-Methylbutanoic acid	1.201	1.236	-2.9	248#	-0.02
7	T	3-Methylbutanoic acid	1.644	1.660	-1.0	242#	-0.03
8	T	Pentanoic acid	1.608	1.572	2.2	231#	-0.02
9	T	2-Methylpentanoic acid	2.026	2.103	-3.8	243#	-0.03
10	T	3-Methylpentanoic acid	2.402	2.525	-5.1	249#	-0.02
11	T	4-Methylpentanoic acid	1.246	1.307	-4.9	246#	-0.03
12	T	Hexanoic acid	2.157	2.186	-1.3	240#	-0.03
13	I	IS2 1,4-Dibromobenzene	1.000	1.000	0.0	320#	-0.02
14	T	Heptanoic acid	4.568	3.181	30.4#	237#	-0.03
15	T	2-Ethylhexanoic acid	3.285	2.518	23.3	263#	-0.02
16	T	Cyclohexanecarboxylic acid	2.180	1.415	35.1#	224#	-0.02
17	T	Octanoic acid	5.075	3.526	30.5#	241#	-0.02
18	T	Benzoic acid	3.687	2.583	29.9	238#	-0.02
19	I	IS3 Biphenyl	1.000	1.000	0.0	299#	-0.02
20	T	Nonanoic acid	1.128	0.916	18.8	248#	-0.02
21	T	Decanoic Acid	1.015	0.856	15.7	256#	-0.02

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : J:\MS14\DATA\ACIDS\2015_02\11\
Data File : 02111504.D
Acq On : 11 Feb 2015 11:22 am
Operator : ZW
Sample : 25/50ug/ml Carboxylic Acid
Misc : S28-12171407
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Feb 13 09:42:58 2015
Quant Method : J:\MS14\METHODS\CA042314E.M
Quant Title : Short Chain Carboxylic Acids in Air
QLast Update : Thu Apr 24 11:01:56 2014
Response via : Initial Calibration
DataAcq Meth:FAME

ZL
2/13/15

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	IS1 Bromofluorobenzene (BFB	1.000	1.000	0.0	241#	-0.02
2	T	Acetic acid	0.074	0.093	-25.7	336#	-0.04
3	T	Propanoic acid	0.748	0.750	-0.3	286#	-0.02
4	T	2-Methylpropanoic acid	0.511	0.519	-1.6	276#	-0.02
5	T	Butanoic acid	0.864	0.892	-3.2	277#	-0.02
6		2-Methylbutanoic acid	1.201	1.251	-4.2	277#	-0.03
7	T	3-Methylbutanoic acid	1.644	1.702	-3.5	274#	-0.03
8	T	Pentanoic acid	1.608	1.584	1.5	257#	-0.02
9	T	2-Methylpentanoic acid	2.026	2.059	-1.6	263#	-0.03
10	T	3-Methylpentanoic acid	2.402	2.467	-2.7	269#	-0.02
11	T	4-Methylpentanoic acid	1.246	1.281	-2.8	267#	-0.02
12	T	Hexanoic acid	2.157	2.170	-0.6	263#	-0.03
13	I	IS2 1,4-Dibromobenzene	1.000	1.000	0.0	338#	-0.02
14	T	Heptanoic acid	4.568	3.276	28.3	258#	-0.03
15	T	2-Ethylhexanoic acid	3.285	2.513	23.5	278#	-0.03
16	T	Cyclohexanecarboxylic acid	2.180	1.425	34.6#	239#	-0.02
17	T	Octanoic acid	5.075	3.584	29.4	259#	-0.02
18	T	Benzoic acid	3.687	2.683	27.2	261#	-0.02
19	I	IS3 Biphenyl	1.000	1.000	0.0	318#	-0.02
20	T	Nonanoic acid	1.128	0.923	18.2	267#	-0.02
21	T	Decanoic Acid	1.015	0.861	15.2	274#	-0.02

(#) = Out of Range SPCC's out = 0 CCC's out = 0

ANALYTICAL REPORT

Report Date: February 12, 2015

Deb Gray
Stantec Consulting
1500 Lake Shore Drive
Suite 100
Columbus, OH 43204

Phone: (614) 643-4362

E-mail: Deb.Gray@Stantec.com

Workorder: **34-1503475**
Client Project ID: P1500371 020315
Purchase Order: P1500371
Project Manager: Paul Pope

Analytical Results

Sample ID: **127UI-CN** Collected: 01/27/2015
Lab ID: 1503475001 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 16.531 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.013	<0.011	0.21

Sample ID: **127U1-HG** Collected: 01/27/2015
Lab ID: 1503475002 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 55.013 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.00022	<0.000027	0.012

Sample ID: **127D1-CN** Collected: 01/27/2015
Lab ID: 1503475003 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 14.76 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.014	<0.013	0.21

Sample ID: **127D1-Hg** Collected: 01/27/2015
Lab ID: 1503475004 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 48.48 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.00025	<0.000030	0.012

ANALYTICAL REPORT

Workorder: **34-1503475**
Client Project ID: P1500371 020315
Purchase Order: P1500371
Project Manager: Paul Pope

Analytical Results

Sample ID: **127F-CN** Collected: 01/27/2015
Lab ID: 1503475005 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 14.333 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.015	<0.013	0.21

Sample ID: **127F-Hg** Collected: 01/27/2015
Lab ID: 1503475006 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 49.368 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.00024	<0.000030	0.012

Sample ID: **127SQ-CN** Collected: 01/27/2015
Lab ID: 1503475007 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 14.04 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.015	<0.014	0.21

Sample ID: **127SQ-Hg** Collected: 01/27/2015
Lab ID: 1503475008 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 49.08 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.00024	<0.000030	0.012

Sample ID: **128N-CN** Collected: 01/28/2015
Lab ID: 1503475009 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 15.246 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.014	<0.012	0.21

ANALYTICAL REPORT

Workorder: **34-1503475**
Client Project ID: P1500371 020315
Purchase Order: P1500371
Project Manager: Paul Pope

Analytical Results

Sample ID: **128N-Hg** Collected: 01/28/2015
Lab ID: 1503475010 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 50.094 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.00024	<0.000029	0.012

Sample ID: **128NQ-CN** Collected: 01/28/2015
Lab ID: 1503475011 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 15.488 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.014	<0.012	0.21

Sample ID: **128NQ-Hg** Collected: 01/28/2015
Lab ID: 1503475012 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 50.215 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.00024	<0.000029	0.012

Sample ID: **127TB-CN** Collected: 01/27/2015
Lab ID: 1503475013 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	NA	NA	0.21

Sample ID: **127TB-Hg** Collected: 01/27/2015
Lab ID: 1503475015 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume Not Provided**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	NA	NA	0.012

ANALYTICAL REPORT

Workorder: **34-1503475**
Client Project ID: P1500371 020315
Purchase Order: P1500371
Project Manager: Paul Pope

Analytical Results

Sample ID: **128N-sHCN** Collected: 01/28/2015
Lab ID: 1503475016 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 366 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.00057	<0.00052	0.21

Sample ID: **128N-sHg** Collected: 01/28/2015
Lab ID: 1503475017 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 1.197 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.010	<0.0012	0.012

Sample ID: **128NQ-sHCN** Collected: 01/28/2015
Lab ID: 1503475018 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 366 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.00057	<0.00052	0.21

Sample ID: **128NQ-sHg** Collected: 01/28/2015
Lab ID: 1503475019 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 1.197 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.010	<0.0012	0.012

Sample ID: **128SQ-sHCN** Collected: 01/28/2015
Lab ID: 1503475020 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 366 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.00057	<0.00052	0.21

ANALYTICAL REPORT

Workorder: **34-1503475**
Client Project ID: P1500371 020315
Purchase Order: P1500371
Project Manager: Paul Pope

Analytical Results

Sample ID: **128SQ-sHg** Collected: 01/28/2015
Lab ID: 1503475021 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 1.197 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.010	<0.0012	0.012

Sample ID: **128F-sHCN** Collected: 01/28/2015
Lab ID: 1503475022 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 183 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.0011	<0.0010	0.21

Sample ID: **128F-sHg** Collected: 01/28/2015
Lab ID: 1503475023 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 598 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	**0.29**	**0.00048**	**0.000059**	0.012

Sample ID: **128F-Dup04** Collected: 01/27/2015
Lab ID: 1503475024 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 48.96 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.0043	<0.0039	0.21

Sample ID: **127 Dup02** Collected: 01/28/2015
Lab ID: 1503475025 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 183 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.000066	<0.0000080	0.012

ANALYTICAL REPORT

Workorder: **34-1503475**
Client Project ID: P1500371 020315
Purchase Order: P1500371
Project Manager: Paul Pope

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 6009 Mod.	/S/ Christopher R. Hansen 02/10/2015 16:02	/S/ Kristie F. Bitner 02/10/2015 16:02
NIOSH 6010 Mod.	/S/ Brittney Austin 02/06/2015 09:02	/S/ Whitney Lewis 02/09/2015 09:02

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ACLASS (DoD ELAP)	ADE-1420	http://www.aclasscorp.com
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Florida (TNI)	E871067	http://www.dep.state.fl.us/labs/bars/sas/qa/
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Lead Testing:			
CPSC	ACLASS (ISO 17025, CPSC)	ADE-1420	http://www.aclasscorp.com
Soil, Dust, Paint ,Air	AIHA (ISO 17025, AIHA ELLAP and NLLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

ANALYTICAL REPORT

Workorder: **34-1503475**
Client Project ID: P1500371 020315
Purchase Order: P1500371
Project Manager: Paul Pope

Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.
LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.
ND = Not Detected, Testing result not detected above the LOD or LOQ.
NA = Not Applicable.
** No result could be reported, see sample comments for details.
< This testing result is less than the numerical value.
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1503475

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	NIOSH 6009 Mod.
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	IHG/2818 (HBN: 143412)
		Prepared By:	NA	**Analyzed By:**	Christopher R. Hansen

Blank

LRB: 432885
Analyzed: 02/10/2015 15:36
Units: ug/sample

Analyte	Result	MDL	RL
Mercury	ND	NA	0.0120

LMB: 432886
Analyzed: 02/10/2015 15:37
Units: ug/sample

Analyte	Result	MDL	RL
Mercury	ND	NA	0.0120

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 432888
Analyzed: 02/10/2015 15:38
Dilution: 1
Units: ug/sample

LCSD: 432889
Analyzed: 02/10/2015 15:39
Dilution: 1
Units: ug/sample

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Mercury	0.550	0.500	110	80.3	128.9	0.548	110	0.292	0.0	15.0

QC Data Approved and Reviewed by

Christopher R. Hansen	Kristie F. Bitner	2/10/2015
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1503475

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	NIOSH 6010 Mod.
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	IWC/2224 (HBN: 143203)
		Prepared By:	NA	**Analyzed By:**	Brittney Austin

Blank

LMB: 432304
Analyzed: 02/05/2015 13:42
Units: ug/sample

Analyte	Result	MDL	RL
Cyanide	ND	NA	0.200

Laboratory Control Sample - Laboratory Control Sample Duplicate

	LCS: 432305	LCSD: 432306
Analyzed:	02/05/2015 15:07	02/05/2015 13:45
Dilution:	1	1
Units:	ug/sample	ug/sample

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Cyanide	1.88	2.00	94.0	42.9	120.4	1.90	94.9	0.911	0.0	20.0

QC Data Approved and Reviewed by

Brittney Austin	Whitney Lewis	2/9/2015
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
● - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

ALS Environmental Chain of Custody

2655 Park Center Drive, Suite A • Simi Valley, CA 93065 • 805-526-7161 • FAX 805-526-7270

ALS Contact: Samantha Henningsen

1503475

Project Number: P1500371
Project Manager: Samantha Henningsen

W 1503475

Lab Code	Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Lab ID	3 Misc Out 2 None NIOSH 6010	4 Misc Out 3 None NIOSH 6009
P1500371-002	127U1-CN	1	Air	1/27/15	1426	Salt Lake City ALS		X
P1500371-004	127U1-Hg		Air	1/27/15	1426	Salt Lake City ALS	X	
P1500371-007	127D1-CN		Air	1/27/15	1522	Salt Lake City ALS		X
P1500371-009	127D1-Hg		Air	1/27/15	1522	Salt Lake City ALS	X	
P1500371-014	127F-CN		Air	1/27/15	1515	Salt Lake City ALS		X
P1500371-016	127F-Hg		Air	1/27/15	1515	Salt Lake City ALS	X	
P1500371-019	127SQ-CN		Air	1/27/15	1541	Salt Lake City ALS		X
P1500371-021	127SQ-Hg		Air	1/27/15	1541	Salt Lake City ALS	X	
P1500371-035	128N-CN		Air	1/28/15	1355	Salt Lake City ALS		X
P1500371-037	128N-Hg		Air	1/28/15	1355	Salt Lake City ALS	X	
P1500371-041	128NQ-CN		Air	1/28/15	1402	Salt Lake City ALS		X
P1500371-043	128NQ-Hg		Air	1/28/15	1402	Salt Lake City ALS	X	

Special Instructions/Comments

Please address report to client listed on COC - Deb Gray

Invoice ALS Simi Valley - PM SHENNINGSEN

H - Test is On Hold P - Test is Authorized for Prep Only

Turnaround Requirements

____ **RUSH** (Surcharges Apply)

PLEASE CIRCLE WORK DAYS

1 2 3 4 5

X **STANDARD**

Requested FAX Date: _____

Requested Report Date: 02/10/15

Report Requirements

____ I. Results Only

X II. Results + QC Summaries

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J N

EDD N

Invoice Information

PO# P1500371

Bill to

Relinquished By: 2/2/15 1600 Received By: 02-03-15 9:18

Airbill Number:

ALS Environmental Chain of Custody

2655 Park Center Drive, Suite A • Simi Valley, CA 93065 • 805-526-7161 • FAX 805-526-7270

ALS Contact: Samantha Henningsen

Project Number: P1500371
Project Manager: Samantha Henningsen

Lab Code	Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Lab ID	Misc Out 2 None 2 6010	Misc Out 3 None 4 6020
P1500371-054	127TB-CN	1	Air	1/27/15	0000	Salt Lake City ALS		X
P1500371-056	127TB-Hg		Air	1/27/15	0000	Salt Lake City ALS	X	
P1500371-060	128N-sHCN		Air	1/28/15	1635	Salt Lake City ALS		X
P1500371-062	128N-sHg		Air	1/28/15	1701	Salt Lake City ALS	X	
P1500371-066	128NQ-sHCN		Air	1/28/15	1420	Salt Lake City ALS		X
P1500371-068	128NQ-sHg		Air	1/28/15	1441	Salt Lake City ALS	X	
P1500371-072	128SQ-sHCN		Air	1/28/15	1728	Salt Lake City ALS		X
P1500371-074	128SQ-sHg		Air	1/28/15	1747	Salt Lake City ALS	X	
P1500371-078	128F-sHCN		Air	1/28/15	1327	Salt Lake City ALS		X
P1500371-080	128F-sHg		Air	1/28/15	1343	Salt Lake City ALS	X	
P1500371-084	127Dup02		Air	1/27/15	0000	Salt Lake City ALS	X	
P1500371-086	128F-Dup04		Air	1/28/15	0000	Salt Lake City ALS		X

103 of 104

Special Instructions/Comments

H - Test is On Hold P - Test is Authorized for Prep Only

Turnaround Requirements

_____ **RUSH** (Surcharges Apply)

PLEASE CIRCLE WORK DAYS
1 2 3 4 5

____ **STANDARD**

Requested FAX Date: _____

Requested Report Date: 02/10/15

Report Requirements

____ I. Results Only

____ II. Results + QC Summaries

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J N
EDD N

Invoice Information

PO#
P1500371

Bill to

Relinquished By: _____ Received By: _____ 02-03-15 9:15 Airbill Number: _____

ALS Environmental Chain of Custody

2655 Park Center Drive, Suite A • Simi Valley, CA 93065 • 805-526-7161 • FAX 805-526-7270

ALS Contact: Samantha Henningsen

Project Number: / Test Comments:	P1500371		
Project Manager: / Misc Out 2 - None	Samantha Henningsen	P1500371-004,9,16,21,37,43,56,62,68,74, 80,84	Subbed to ALS SLC
Misc Out 3 - None		P1500371-002,7,14,19,35,41,54,60,66,72, 78,86	Subbed to ALS SLC

Special Instructions/Comments	Turnaround Requirements	Report Requirements	Invoice Information
	____RUSH (Surcharges Apply)	____ I. Results Only	
	PLEASE CIRCLE WORK DAYS 1 2 3 4 5	____ II. Results + QC Summaries	PO# P1500371
	____ **STANDARD**	____ III. Results + QC and Calibration Summaries	
	Requested FAX Date: ________	____ IV. Data Validation Report with Raw Data	Bill to
H - Test is On Hold P - Test is Authorized for Prep Only	Requested Report Date: 02/10/15	PQL/MDL/J N EDD N	

Relinquished By: ____________ Received By: [signature] 02-03-15 9:18 Airbill Number: ____________

ANALYTICAL REPORT
Amended-20150220

Report Date: February 23, 2015

Deb Gray
Stantec Consulting
1500 Lake Shore Drive
Suite 100
Columbus, OH 43204

Phone: (614) 643-4362

E-mail: Deb.Gray@Stantec.com

Workorder: **34-1503475**
Client Project ID: P1500371 020315
Purchase Order: P1500371
Project Manager: Paul Pope

Analytical Results

Sample ID: **127UI-CN** Collected: 01/27/2015
Lab ID: 1503475001 Sampling Location: P1500371 Received: 02/03/2015
Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 16.531 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.013	<0.011	0.21

Sample ID: **127U1-HG** Collected: 01/27/2015
Lab ID: 1503475002 Sampling Location: P1500371 Received: 02/03/2015
Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 55.013 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.00022	<0.000027	0.012

Sample ID: **127D1-CN** Collected: 01/27/2015
Lab ID: 1503475003 Sampling Location: P1500371 Received: 02/03/2015
Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 14.76 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.014	<0.013	0.21

Sample ID: **127D1-Hg** Collected: 01/27/2015
Lab ID: 1503475004 Sampling Location: P1500371 Received: 02/03/2015
Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 48.48 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.00025	<0.000030	0.012

ANALYTICAL REPORT

Amended-20150220

Workorder: **34-1503475**
Client Project ID: P1500371 020315
Purchase Order: P1500371
Project Manager: Paul Pope

Analytical Results

Sample ID: **127F-CN** Collected: 01/27/2015
Lab ID: 1503475005 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 14.333 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.015	<0.013	0.21

Sample ID: **127F-Hg** Collected: 01/27/2015
Lab ID: 1503475006 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 49.368 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.00024	<0.000030	0.012

Sample ID: **127SQ-CN** Collected: 01/27/2015
Lab ID: 1503475007 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 14.04 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.015	<0.014	0.21

Sample ID: **127SQ-Hg** Collected: 01/27/2015
Lab ID: 1503475008 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 49.08 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.00024	<0.000030	0.012

Sample ID: **128N-CN** Collected: 01/28/2015
Lab ID: 1503475009 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 15.246 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.014	<0.012	0.21

ANALYTICAL REPORT

Amended-20150220

Workorder: **34-1503475**
Client Project ID: P1500371 020315
Purchase Order: P1500371
Project Manager: Paul Pope

Analytical Results

Sample ID: **128N-Hg** Collected: 01/28/2015
Lab ID: 1503475010 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 50.094 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.00024	<0.000029	0.012

Sample ID: **128NQ-CN** Collected: 01/28/2015
Lab ID: 1503475011 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 15.488 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.014	<0.012	0.21

Sample ID: **128NQ-Hg** Collected: 01/28/2015
Lab ID: 1503475012 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 50.215 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.00024	<0.000029	0.012

Sample ID: **127TB-CN** Collected: 01/27/2015
Lab ID: 1503475013 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	NA	NA	0.21

Sample ID: **127TB-Hg** Collected: 01/27/2015
Lab ID: 1503475015 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume Not Provided**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	NA	NA	0.012

ANALYTICAL REPORT

Amended-20150220

Workorder: **34-1503475**
Client Project ID: P1500371 020315
Purchase Order: P1500371
Project Manager: Paul Pope

Analytical Results

Sample ID: **128N-sHCN** Collected: 01/28/2015
Lab ID: 1503475016 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 366 mL**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.57	<0.52	0.21

Sample ID: **128N-sHg** Collected: 01/28/2015
Lab ID: 1503475017 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 1.197 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.010	<0.0012	0.012

Sample ID: **128NQ-sHCN** Collected: 01/28/2015
Lab ID: 1503475018 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 366 mL**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.57	<0.52	0.21

Sample ID: **128NQ-sHg** Collected: 01/28/2015
Lab ID: 1503475019 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 1.197 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.010	<0.0012	0.012

Sample ID: **128SQ-sHCN** Collected: 01/28/2015
Lab ID: 1503475020 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 366 mL**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.57	<0.52	0.21

ANALYTICAL REPORT

Amended-20150220

Workorder: **34-1503475**
Client Project ID: P1500371 020315
Purchase Order: P1500371
Project Manager: Paul Pope

Analytical Results

Sample ID: **128SQ-sHg** Collected: 01/28/2015
Lab ID: 1503475021 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 1.197 L**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.010	<0.0012	0.012

Sample ID: **128F-sHCN** Collected: 01/28/2015
Lab ID: 1503475022 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 183 mL**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<1.1	<1.0	0.21

Sample ID: **128F-sHg** Collected: 01/28/2015
Lab ID: 1503475023 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 598 mL**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	**0.29**	**0.48**	**0.059**	0.012

Sample ID: **127Dup02** Collected: 01/27/2015
Lab ID: 1503475024 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6010 Mod.** **Media:** SKC 226-28, Soda Lime-200/600 **Analyzed:** 02/05/2015
Sampling Parameter: **Air Volume 48960 mL**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.0043	<0.0039	0.21

Sample ID: **128Dup04** Collected: 01/28/2015
Lab ID: 1503475025 Sampling Location: P1500371 Received: 02/03/2015

Method: **NIOSH 6009 Mod.** **Media:** SKC 226-17-1A, Hopcalite Tube **Analyzed:** 02/10/2015
Sampling Parameter: **Air Volume 183 mL**

Analyte	ug/sample	mg/m³	ppm	RL (ug/sample)
Mercury	<0.012	<0.066	<0.0080	0.012

ANALYTICAL REPORT
Amended-20150220

Workorder: **34-1503475**
Client Project ID: P1500371 020315
Purchase Order: P1500371
Project Manager: Paul Pope

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 6009 Mod.	/S/ Christopher R. Hansen 02/10/2015 16:02	/S/ Kristie F. Bitner 02/10/2015 16:02
NIOSH 6010 Mod.	/S/ Brittney Austin 02/06/2015 09:02	/S/ Whitney Lewis 02/09/2015 09:02

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ACLASS (DoD ELAP)	ADE-1420	http://www.aclasscorp.com
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Florida (TNI)	E871067	http://www.dep.state.fl.us/labs/bars/sas/qa/
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Lead Testing:			
CPSC	ACLASS (ISO 17025, CPSC)	ADE-1420	http://www.aclasscorp.com
Soil, Dust, Paint ,Air	AIHA (ISO 17025, AIHA ELLAP and NLLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

ANALYTICAL REPORT

Amended-20150220

Workorder: **34-1503475**
Client Project ID: P1500371 020315
Purchase Order: P1500371
Project Manager: Paul Pope

Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.
LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.
ND = Not Detected, Testing result not detected above the LOD or LOQ.
NA = Not Applicable.
** No result could be reported, see sample comments for details.
< This testing result is less than the numerical value.
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

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Simi Valley, CA 93065
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LABORATORY REPORT

February 12, 2015

Deborah Gray
Stantec Consulting Services, Inc.
1500 Lake Shore Drive Suite 100
Columbus, OH 43204

RE: Bridgeton / 182608020

Dear Deborah:

Enclosed are the results of the samples submitted to our laboratory on January 30, 2015. For your reference, these analyses have been assigned our service request number P1500355.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Samantha Henningsen

By Samantha Henningsen at 12:04 pm, Feb 12, 2015

Samantha Henningsen
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

Client: Stantec Consulting Services, Inc. Service Request No: P1500355
Project: Bridgeton / 182608020

CASE NARRATIVE

The samples were received intact under chain of custody on January 30, 2015 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Polynuclear Aromatic Hydrocarbon Analysis

The high volume PUF/XAD-2 samples were analyzed for polynuclear aromatic hydrocarbons (PAHs). The extracts were analyzed according to the methodology outlined in EPA Method TO-13A using combined gas chromatography/mass spectrometry (GC/MS). The samples were analyzed in SIM mode which is a method modification. This method is not included on the laboratory's DoD-ELAP or AIHA-LAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP scope of accreditation.

The lower control criterion was exceeded for Acenaphthylene in the Laboratory Control Sample (LCS) and Duplicate Laboratory Control Sample (DLCS) extracted on February 4, 2015. The data has been qualified accordingly. No further corrective action was taken.

Sample 129sSQ-PAH (P1500355-003) was concentrated to a final volume of 10 milliliter instead of 1 milliliter due to matrix interference. The sample extracted also required an additional 10-fold dilution to quantitate naphthalene accurately. The reporting limits have been elevated accordingly.

NELAC requirements for compliance with EPA TO-13A state a duplicate sample must be analyzed. However, this is dependent upon the client submitting a secondary sample for extraction and analysis. Sample extraction was performed at the laboratory's off-site extraction facility located at 2360 Shasta Way, Suite G, Simi Valley, CA 93065.

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
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www.alsglobal.com

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjlabs.com/search-accredited-labs	L14-2
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	838341
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	CA200007
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-14-5
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272014-4
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Stantec Consulting Services, Inc. Service Request: P1500355
Project ID: Bridgeton / 182608020

Date Received: 1/30/2015
Time Received: 07:45

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	TO-13A Modified - PAH SIM Hi Vol
129sN-PAH	P1500355-001	Air	1/29/2015	11:53	X
129sNQ-PAH	P1500355-002	Air	1/29/2015	11:31	X
129sSQ-PAH	P1500355-003	Air	1/29/2015	12:17	X
129BLANK-PAH	P1500355-004	Air	1/29/2015	00:00	X
128U1-PAH	P1500355-005	Air	1/28/2015	09:21	X
128D1-PAH	P1500355-006	Air	1/28/2015	10:47	X
128F-PAH	P1500355-007	Air	1/28/2015	09:48	X

Record & Analytical Service Request

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone: (805) 526-7161 Fax: (805) 526-7270

Page 1 of 1

Turnaround Time in Business Days (Surcharges) Please Circle:
100%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day (Standard)

ALS Project No. P1500355

Company Name & Address (Reporting Information) Stantec 1500 Lake Shore Drive Suite 100 Columbus Ohio 43204	**Project Name** Bridgeton **Project Number** 182608020	**ALS Contact:** Samantha Henningsen
Project Manager Deb Gray	**P.O. # / Billing Information** Direct Bill -Amy Hargrove/Bridgeton LF	
Phone 614-643-4382 **Fax**		
Email Address for Result Reporting Deb.gray@stantec.com, Nick.Iannaggi@stantec.com	**Sampler (Print & Sign)** NI/CJL/RP/NB	

Client Sample ID	Laboratory ID #	Tube ID	Date Collected	Sampling Pump	Sampling Start Time	Sampling End Time	Sample (Liters) Volume	Analysis Method/Analytes: EPA TO9a, Dioxin/Furan	Analysis Method/Analytes: EPA TO-13, PAHs	Comments e.g. Actual Preservative or specific instructions
129sN-PAH	1	hx028	1/29/2015	1068	9:55	11:53	28,526		X	Filter
129sNQ-PAH	2	hx081	1/29/2015	1113	9:26	11:31	30,262		X	Filter
129sSQ-PAH	3	hx067	1/29/2015	1060	10:17	12:17	27,340		X	Filter
129BLANK-PAH	4	hx135	1/29/2015	NA	NA	NA	0		X	Trip Blank
128U1-PAH	5	hx201	1/28/2015	1060	9:22	9:21	358,164		X	Filter, 24 hour from 1/27 to 1/28
128D1-PAH	6	hx016	1/28/2015	1068	10:48	10:47	350,774		X	Filter, 24 hour from 1/27 to 1/28
128F-PAH	7	hx004	1/28/2015	1113	9:53	9:48	347,413		X	Filter, 24 hour from 1/27 to 1/28

Report Tier Levels - please select
Tier I - (Results/Default if not specified) (Data Validation Package) 10% Surcharge X Tier III
Tier II (Results + QC) _____ Tier IV (client specified) _____

EDD required Yes / No
Type: _____

Project Requirements (MRLs, QAPP)
8 Metals

Relinquished by: (Signature)	Date: 1/29/15	Time: 1700	Received by: (Signature) FED EX	Time:	
Relinquished by: (Signature) FED EX	Date:	Time:	Received by: (Signature) 1/30/15	Time: 0745	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:	Cooler / Blank Temperature _____ °C

ALS Environmental
Sample Acceptance Check Form

Client: Stantec Consulting Services, Inc. Work order: P1500355

Project: Bridgeton / 182608020

Sample(s) received on: 1/30/2015 Date opened: 1/30/2015 by: KKELPE

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by ALS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 8° C Blank Temperature: ° C **Wet Ice**			
9	Was a **trip blank** received?	☒	☐	☐
10	Were **custody seals** on outside of cooler/Box?	☒	☐	☐
	Location of seal(s)? _____ Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1500355-001.01	PUF/XAD-2/Filter (High Vol)					
P1500355-002.01	PUF/XAD-2/Filter (High Vol)					
P1500355-003.01	PUF/XAD-2/Filter (High Vol)					
P1500355-004.01	PUF/XAD-2/Filter (High Vol)					
P1500355-005.01	PUF/XAD-2/Filter (High Vol)					
P1500355-006.01	PUF/XAD-2/Filter (High Vol)					
P1500355-007.01	PUF/XAD-2/Filter (High Vol)					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **129sN-PAH**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500355
ALS Sample ID: P1500355-001

Test Code: EPA TO-13A Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS7
Analyst: Madeleine Dangazyan
Sampling Media: PUF/XAD-2/Filter (Hi_Vol) Cartridge
Test Notes:

Date Collected: 1/29/2015
Date Received: 1/30/2015
Date Extracted: 2/4/2015
Date Analyzed: 2/10/2015
Final Volume: 1.0 ml
Volume Sampled: 28526 Liter(s)

Dilution Factor: 1.00
Dilution Factor: 10.0

CAS #	Compound	Result µg/Cartridge	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	520	**18**	0.35	**3.5**	0.067	**D**
208-96-8	Acenaphthylene	< 0.50	ND	0.018	ND	0.0028	**L**
83-32-9	Acenaphthene	< 0.50	ND	0.018	ND	0.0028	
86-73-7	Fluorene	< 0.50	ND	0.018	ND	0.0026	
85-01-8	Phenanthrene	< 0.50	ND	0.018	ND	0.0024	
120-12-7	Anthracene	< 0.50	ND	0.018	ND	0.0024	
206-44-0	Fluoranthene	< 0.50	ND	0.018	ND	0.0021	
129-00-0	Pyrene	< 0.50	ND	0.018	ND	0.0021	
56-55-3	Benz(a)anthracene	< 0.50	ND	0.018	ND	0.0019	
218-01-9	Chrysene	< 0.50	ND	0.018	ND	0.0019	
205-99-2	Benzo(b)fluoranthene	< 0.50	ND	0.018	ND	0.0017	
207-08-9	Benzo(k)fluoranthene	< 0.50	ND	0.018	ND	0.0017	
50-32-8	Benzo(a)pyrene	< 0.50	ND	0.018	ND	0.0017	
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	ND	0.018	ND	0.0016	
53-70-3	Dibenz(a,h)anthracene	< 0.50	ND	0.018	ND	0.0015	
191-24-2	Benzo(g,h,i)perylene	< 0.50	ND	0.018	ND	0.0016	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
L = Laboratory control sample recovery outside the specified limits.
D = The reported result is from a dilution.

SURROGATE SPIKE RECOVERY RESULTS

CAS #	Compound	Spike Amount µg/Sample	Amout Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	5.00	3.24	**65**	60-120	
1718-52-1	Pyrene-d10	5.00	3.57	**71**	60-120	
93951-69-0	Fluoranthene-d10	10.0	7.57	**76**	60-120	
63466-71-7	Benzo[a]pyrene-d12	10.0	8.20	**82**	60-120	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **129sNQ-PAH**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500355
ALS Sample ID: P1500355-002

Test Code: EPA TO-13A Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS7
Analyst: Madeleine Dangazyan
Sampling Media: PUF/XAD-2/Filter (Hi_Vol) Cartridge
Test Notes:

Date Collected: 1/29/2015
Date Received: 1/30/2015
Date Extracted: 2/4/2015
Date Analyzed: 2/10/2015
Final Volume: 1.0 ml
Volume Sampled: 30262 Liter(s)

Dilution Factor: 1.00

CAS #	Compound	Result µg/Cartridge	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	5.7	**0.19**	0.033	**0.036**	0.0063	
208-96-8	Acenaphthylene	< 0.50	ND	0.017	ND	0.0027	**L**
83-32-9	Acenaphthene	< 0.50	ND	0.017	ND	0.0026	
86-73-7	Fluorene	< 0.50	ND	0.017	ND	0.0024	
85-01-8	Phenanthrene	< 0.50	ND	0.017	ND	0.0023	
120-12-7	Anthracene	< 0.50	ND	0.017	ND	0.0023	
206-44-0	Fluoranthene	< 0.50	ND	0.017	ND	0.0020	
129-00-0	Pyrene	< 0.50	ND	0.017	ND	0.0020	
56-55-3	Benz(a)anthracene	< 0.50	ND	0.017	ND	0.0018	
218-01-9	Chrysene	< 0.50	ND	0.017	ND	0.0018	
205-99-2	Benzo(b)fluoranthene	< 0.50	ND	0.017	ND	0.0016	
207-08-9	Benzo(k)fluoranthene	< 0.50	ND	0.017	ND	0.0016	
50-32-8	Benzo(a)pyrene	< 0.50	ND	0.017	ND	0.0016	
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	ND	0.017	ND	0.0015	
53-70-3	Dibenz(a,h)anthracene	< 0.50	ND	0.017	ND	0.0015	
191-24-2	Benzo(g,h,i)perylene	< 0.50	ND	0.017	ND	0.0015	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
L = Laboratory control sample recovery outside the specified limits.

SURROGATE SPIKE RECOVERY RESULTS

CAS #	Compound	Spike Amount µg/Sample	Amout Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	5.00	3.19	**64**	60-120	
1718-52-1	Pyrene-d10	5.00	3.53	**71**	60-120	
93951-69-0	Fluoranthene-d10	10.0	6.73	**67**	60-120	
63466-71-7	Benzo[a]pyrene-d12	10.0	7.73	**77**	60-120	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **129sSQ-PAH**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500355
ALS Sample ID: P1500355-003

Test Code: EPA TO-13A Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS7
Analyst: Madeleine Dangazyan
Sampling Media: PUF/XAD-2/Filter (Hi_Vol) Cartridge
Test Notes:

Date Collected: 1/29/2015
Date Received: 1/30/2015
Date Extracted: 2/4/2015
Date Analyzed: 2/10/2015
Final Volume: 10 ml
Volume Sampled: 27340 Liter(s)

Dilution Factor: 1.00
Dilution Factor: 10.0

CAS #	Compound	Result µg/Cartridge	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	6,300	**230**	3.7	**44**	0.70	**D**
208-96-8	Acenaphthylene	< 5.0	ND	0.18	ND	0.029	**L**
83-32-9	Acenaphthene	< 5.0	ND	0.18	ND	0.029	
86-73-7	Fluorene	< 5.0	ND	0.18	ND	0.027	
85-01-8	Phenanthrene	< 5.0	ND	0.18	ND	0.025	
120-12-7	Anthracene	< 5.0	ND	0.18	ND	0.025	
206-44-0	Fluoranthene	< 5.0	ND	0.18	ND	0.022	
129-00-0	Pyrene	< 5.0	ND	0.18	ND	0.022	
56-55-3	Benz(a)anthracene	< 5.0	ND	0.18	ND	0.020	
218-01-9	Chrysene	< 5.0	ND	0.18	ND	0.020	
205-99-2	Benzo(b)fluoranthene	< 5.0	ND	0.18	ND	0.018	
207-08-9	Benzo(k)fluoranthene	< 5.0	ND	0.18	ND	0.018	
50-32-8	Benzo(a)pyrene	< 5.0	ND	0.18	ND	0.018	
193-39-5	Indeno(1,2,3-cd)pyrene	< 5.0	ND	0.18	ND	0.016	
53-70-3	Dibenz(a,h)anthracene	< 5.0	ND	0.18	ND	0.016	
191-24-2	Benzo(g,h,i)perylene	< 5.0	ND	0.18	ND	0.016	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
L = Laboratory control sample recovery outside the specified limits.
D = The reported result is from a dilution.

SURROGATE SPIKE RECOVERY RESULTS

CAS #	Compound	Spike Amount µg/Sample	Amout Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	5.00	4.13	**83**	60-120	
1718-52-1	Pyrene-d10	5.00	3.36	**67**	60-120	
93951-69-0	Fluoranthene-d10	10.0	6.77	**68**	60-120	
63466-71-7	Benzo[a]pyrene-d12	10.0	7.87	**79**	60-120	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **129BLANK-PAH**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500355
ALS Sample ID: P1500355-004

Test Code: EPA TO-13A Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS7
Analyst: Madeleine Dangazyan
Sampling Media: PUF/XAD-2/Filter (Hi_Vol) Cartridge
Test Notes:

Date Collected: 1/29/2015
Date Received: 1/30/2015
Date Extracted: 2/4/2015
Date Analyzed: 2/10/2015
Final Volume: 1.0 ml
Volume Sampled: NA Liter(s)

Dilution Factor: 1.00

CAS #	Compound	Result µg/Cartridge	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	< 1.0	NA	NA	NA	NA	
208-96-8	Acenaphthylene	< 0.50	NA	NA	NA	NA	**L**
83-32-9	Acenaphthene	< 0.50	NA	NA	NA	NA	
86-73-7	Fluorene	< 0.50	NA	NA	NA	NA	
85-01-8	Phenanthrene	< 0.50	NA	NA	NA	NA	
120-12-7	Anthracene	< 0.50	NA	NA	NA	NA	
206-44-0	Fluoranthene	< 0.50	NA	NA	NA	NA	
129-00-0	Pyrene	< 0.50	NA	NA	NA	NA	
56-55-3	Benz(a)anthracene	< 0.50	NA	NA	NA	NA	
218-01-9	Chrysene	< 0.50	NA	NA	NA	NA	
205-99-2	Benzo(b)fluoranthene	< 0.50	NA	NA	NA	NA	
207-08-9	Benzo(k)fluoranthene	< 0.50	NA	NA	NA	NA	
50-32-8	Benzo(a)pyrene	< 0.50	NA	NA	NA	NA	
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	NA	NA	NA	NA	
53-70-3	Dibenz(a,h)anthracene	< 0.50	NA	NA	NA	NA	
191-24-2	Benzo(g,h,i)perylene	< 0.50	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
NA = Not applicable.
L = Laboratory control sample recovery outside the specified limits.

SURROGATE SPIKE RECOVERY RESULTS

CAS #	Compound	Spike Amount µg/Sample	Amout Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	5.00	3.46	**69**	60-120	
1718-52-1	Pyrene-d10	5.00	4.03	**81**	60-120	
93951-69-0	Fluoranthene-d10	10.0	8.21	**82**	60-120	
63466-71-7	Benzo[a]pyrene-d12	10.0	9.61	**96**	60-120	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128U1-PAH**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500355
ALS Sample ID: P1500355-005

Test Code: EPA TO-13A Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS7
Analyst: Madeleine Dangazyan
Sampling Media: PUF/XAD-2/Filter (Hi_Vol) Cartridge
Test Notes:

Date Collected: 1/28/2015
Date Received: 1/30/2015
Date Extracted: 2/4/2015
Date Analyzed: 2/10/2015
Final Volume: 1.0 ml
Volume Sampled: 358164 Liter(s)

Dilution Factor: 1.00

CAS #	Compound	Result µg/Cartridge	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	11	**0.031**	0.0028	**0.0060**	0.00053	
208-96-8	Acenaphthylene	< 0.50	ND	0.0014	ND	0.00022	**L**
83-32-9	Acenaphthene	< 0.50	ND	0.0014	ND	0.00022	
86-73-7	Fluorene	< 0.50	ND	0.0014	ND	0.00021	
85-01-8	Phenanthrene	1.1	**0.0032**	0.0014	**0.00044**	0.00019	
120-12-7	Anthracene	< 0.50	ND	0.0014	ND	0.00019	
206-44-0	Fluoranthene	< 0.50	ND	0.0014	ND	0.00017	
129-00-0	Pyrene	< 0.50	ND	0.0014	ND	0.00017	
56-55-3	Benz(a)anthracene	< 0.50	ND	0.0014	ND	0.00015	
218-01-9	Chrysene	< 0.50	ND	0.0014	ND	0.00015	
205-99-2	Benzo(b)fluoranthene	< 0.50	ND	0.0014	ND	0.00014	
207-08-9	Benzo(k)fluoranthene	< 0.50	ND	0.0014	ND	0.00014	
50-32-8	Benzo(a)pyrene	< 0.50	ND	0.0014	ND	0.00014	
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	ND	0.0014	ND	0.00012	
53-70-3	Dibenz(a,h)anthracene	< 0.50	ND	0.0014	ND	0.00012	
191-24-2	Benzo(g,h,i)perylene	< 0.50	ND	0.0014	ND	0.00012	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
L = Laboratory control sample recovery outside the specified limits.

SURROGATE SPIKE RECOVERY RESULTS

CAS #	Compound	Spike Amount µg/Sample	Amout Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	5.00	3.05	**61**	60-120	
1718-52-1	Pyrene-d10	5.00	3.68	**74**	60-120	
93951-69-0	Fluoranthene-d10	10.0	6.85	**69**	60-120	
63466-71-7	Benzo[a]pyrene-d12	10.0	6.84	**68**	60-120	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128D1-PAH**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500355
ALS Sample ID: P1500355-006

Test Code: EPA TO-13A Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS7
Analyst: Madeleine Dangazyan
Sampling Media: PUF/XAD-2/Filter (Hi_Vol) Cartridge
Test Notes:

Date Collected: 1/28/2015
Date Received: 1/30/2015
Date Extracted: 2/4/2015
Date Analyzed: 2/10/2015
Final Volume: 1.0 ml
Volume Sampled: 350774 Liter(s)

Dilution Factor: 1.00

CAS #	Compound	Result µg/Cartridge	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	16	**0.047**	0.0029	**0.0089**	0.00054	
208-96-8	Acenaphthylene	< 0.50	ND	0.0014	ND	0.00023	**L**
83-32-9	Acenaphthene	< 0.50	ND	0.0014	ND	0.00023	
86-73-7	Fluorene	< 0.50	ND	0.0014	ND	0.00021	
85-01-8	Phenanthrene	1.3	**0.0036**	0.0014	**0.00049**	0.00020	
120-12-7	Anthracene	< 0.50	ND	0.0014	ND	0.00020	
206-44-0	Fluoranthene	< 0.50	ND	0.0014	ND	0.00017	
129-00-0	Pyrene	< 0.50	ND	0.0014	ND	0.00017	
56-55-3	Benz(a)anthracene	< 0.50	ND	0.0014	ND	0.00015	
218-01-9	Chrysene	< 0.50	ND	0.0014	ND	0.00015	
205-99-2	Benzo(b)fluoranthene	< 0.50	ND	0.0014	ND	0.00014	
207-08-9	Benzo(k)fluoranthene	< 0.50	ND	0.0014	ND	0.00014	
50-32-8	Benzo(a)pyrene	< 0.50	ND	0.0014	ND	0.00014	
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	ND	0.0014	ND	0.00013	
53-70-3	Dibenz(a,h)anthracene	< 0.50	ND	0.0014	ND	0.00013	
191-24-2	Benzo(g,h,i)perylene	< 0.50	ND	0.0014	ND	0.00013	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
L = Laboratory control sample recovery outside the specified limits.

SURROGATE SPIKE RECOVERY RESULTS

CAS #	Compound	Spike Amount µg/Sample	Amout Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	5.00	3.18	**64**	60-120	
1718-52-1	Pyrene-d10	5.00	4.19	**84**	60-120	
93951-69-0	Fluoranthene-d10	10.0	7.88	**79**	60-120	
63466-71-7	Benzo[a]pyrene-d12	10.0	7.58	**76**	60-120	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128F-PAH**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500355
ALS Sample ID: P1500355-007

Test Code: EPA TO-13A Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS7
Analyst: Madeleine Dangazyan
Sampling Media: PUF/XAD-2/Filter (Hi_Vol) Cartridge
Test Notes:

Date Collected: 1/28/2015
Date Received: 1/30/2015
Date Extracted: 2/4/2015
Date Analyzed: 2/10/2015
Final Volume: 1.0 ml
Volume Sampled: 347413 Liter(s)

Dilution Factor: 1.00

CAS #	Compound	Result µg/Cartridge	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	17	**0.049**	0.0029	**0.0094**	0.00055	
208-96-8	Acenaphthylene	< 0.50	ND	0.0014	ND	0.00023	**L**
83-32-9	Acenaphthene	< 0.50	ND	0.0014	ND	0.00023	
86-73-7	Fluorene	< 0.50	ND	0.0014	ND	0.00021	
85-01-8	Phenanthrene	1.4	**0.0041**	0.0014	**0.00056**	0.00020	
120-12-7	Anthracene	< 0.50	ND	0.0014	ND	0.00020	
206-44-0	Fluoranthene	< 0.50	ND	0.0014	ND	0.00017	
129-00-0	Pyrene	< 0.50	ND	0.0014	ND	0.00017	
56-55-3	Benz(a)anthracene	< 0.50	ND	0.0014	ND	0.00015	
218-01-9	Chrysene	< 0.50	ND	0.0014	ND	0.00015	
205-99-2	Benzo(b)fluoranthene	< 0.50	ND	0.0014	ND	0.00014	
207-08-9	Benzo(k)fluoranthene	< 0.50	ND	0.0014	ND	0.00014	
50-32-8	Benzo(a)pyrene	< 0.50	ND	0.0014	ND	0.00014	
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	ND	0.0014	ND	0.00013	
53-70-3	Dibenz(a,h)anthracene	< 0.50	ND	0.0014	ND	0.00013	
191-24-2	Benzo(g,h,i)perylene	< 0.50	ND	0.0014	ND	0.00013	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
L = Laboratory control sample recovery outside the specified limits.

SURROGATE SPIKE RECOVERY RESULTS

CAS #	Compound	Spike Amount µg/Sample	Amout Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	5.00	3.03	**61**	60-120	
1718-52-1	Pyrene-d10	5.00	3.84	**77**	60-120	
93951-69-0	Fluoranthene-d10	10.0	7.69	**77**	60-120	
63466-71-7	Benzo[a]pyrene-d12	10.0	7.48	**75**	60-120	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank**
Client Project ID: **Bridgeton / 182608020**

ALS Project ID: P1500355
ALS Sample ID: P150204-MB

Test Code: EPA TO-13A Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS7
Analyst: Madeleine Dangazyan
Sampling Media: PUF/XAD-2/Filter (Hi_Vol) Cartridge
Test Notes:

Date Collected: NA
Date Received: NA
Date Extracted: 2/04/15
Date Analyzed: 2/10/2015
Final Volume: 1.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Cartridge	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	< 1.0	NA	NA	NA	NA	
208-96-8	Acenaphthylene	< 0.50	NA	NA	NA	NA	**L**
83-32-9	Acenaphthene	< 0.50	NA	NA	NA	NA	
86-73-7	Fluorene	< 0.50	NA	NA	NA	NA	
85-01-8	Phenanthrene	< 0.50	NA	NA	NA	NA	
120-12-7	Anthracene	< 0.50	NA	NA	NA	NA	
206-44-0	Fluoranthene	< 0.50	NA	NA	NA	NA	
129-00-0	Pyrene	< 0.50	NA	NA	NA	NA	
56-55-3	Benz(a)anthracene	< 0.50	NA	NA	NA	NA	
218-01-9	Chrysene	< 0.50	NA	NA	NA	NA	
205-99-2	Benzo(b)fluoranthene	< 0.50	NA	NA	NA	NA	
207-08-9	Benzo(k)fluoranthene	< 0.50	NA	NA	NA	NA	
50-32-8	Benzo(a)pyrene	< 0.50	NA	NA	NA	NA	
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	NA	NA	NA	NA	
53-70-3	Dibenz(a,h)anthracene	< 0.50	NA	NA	NA	NA	
191-24-2	Benzo(g,h,i)perylene	< 0.50	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
NA = Not applicable.
L = Laboratory control sample recovery outside the specified limits.

SURROGATE SPIKE RECOVERY RESULTS

CAS #	Compound	Spike Amount µg/Sample	Amout Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	5.00	3.66	**73**	60-120	
1718-52-1	Pyrene-d10	5.00	3.77	**75**	60-120	

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1500355
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150204-DLCS

Test Code: EPA TO-13A Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS7 Date Received: NA
Analyst: Madeleine Dangazyan Date Extracted: 2/4/15
Sampling Media: PUF/XAD-2/Filter (Hi_Vol) Cartridge Date Analyzed: 2/10/2015
Test Notes: Volume(s) Analyzed: NA Liter(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/ml	Result LCS µg/ml	Result DLCS µg/ml	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
91-20-3	Naphthalene	5.00	3.19	3.26	**64**	**65**	60-120	2	32	
208-96-8	Acenaphthylene	5.00	2.76	2.84	**55**	**57**	60-120	4	16	**L**
83-32-9	Acenaphthene	5.00	3.04	3.10	**61**	**62**	60-120	2	16	
86-73-7	Fluorene	5.00	3.13	3.17	**63**	**63**	60-120	0	22	
85-01-8	Phenanthrene	5.00	3.08	2.99	**62**	**60**	60-120	3	14	
120-12-7	Anthracene	5.00	3.18	3.17	**64**	**63**	60-120	2	12	
206-44-0	Fluoranthene	5.00	3.60	3.55	**72**	**71**	60-120	1	14	
129-00-0	Pyrene	5.00	3.56	3.52	**71**	**70**	60-120	1	16	
56-55-3	Benz(a)anthracene	5.00	4.41	4.45	**88**	**89**	60-120	1	7	
218-01-9	Chrysene	5.00	4.23	4.28	**85**	**86**	60-120	1	7	
205-99-2	Benzo(b)fluoranthene	5.00	4.49	4.63	**90**	**93**	60-120	3	14	
207-08-9	Benzo(k)fluoranthene	5.00	4.69	4.86	**94**	**97**	60-120	3	12	
50-32-8	Benzo(a)pyrene	5.00	3.87	3.98	**77**	**80**	60-120	4	9	
193-39-5	Indeno(1,2,3-cd)pyrene	5.00	4.40	4.68	**88**	**94**	60-120	7	20	
53-70-3	Dibenz(a,h)anthracene	5.00	5.15	5.33	**103**	**107**	60-120	4	10	
191-24-2	Benzo(g,h,i)perylene	5.00	4.97	5.15	**99**	**103**	60-120	4	16	

L = Laboratory control sample recovery outside the specified limits.

SURROGATE/FIELD SPIKE RECOVERY RESULTS

CAS #	Compound	QC Sample	Spike Amount µg/Sample	Amout Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	LCS	5.00	3.36	**67**	60-120	
1718-52-1	Pyrene-d10	LCS	5.00	3.69	**74**	60-120	
93951-69-0	Fluoranthene-d10	LCS	5.00	4.83	**97**	60-120	
63466-71-7	Benzo[a]pyrene-d12	LCS	5.00	4.56	**91**	60-120	
81103-79-9	Fluorene-d10	DLCS	5.00	3.53	**71**	60-120	
1718-52-1	Pyrene-d10	DLCS	5.00	3.65	**73**	60-120	
93951-69-0	Fluoranthene-d10	DLCS	5.00	4.77	**95**	60-120	
63466-71-7	Benzo[a]pyrene-d12	DLCS	5.00	4.68	**94**	60-120	

Method Path : J:\MS15\METHODS\
Method File : PS101014E.M
Title : TO-13A Modified For PAHs in SIM
Last Update : Fri Oct 10 16:50:53 2014
Response Via : Initial Calibration

Calibration Files
0.5 =10101404.D 1 =10101405.D 5 =10101406.D 10 =10101407.D 20 =10101408.D 40 =10101412.D
100 =10101410.D

		Compound	0.5	1	5	10	20	40	100	Avg	%RSD
1)	I	Naphthalene-d8	ISTD								
2)		Naphthalene	1.224	1.217	1.117	1.045	1.090	1.145	1.024	1.123	6.95
3)	I	Acenaphthene-d10	ISTD								
4)		Acenaphthylene	2.561	2.541	2.299	2.117	2.112	2.063		2.282	9.80
5)		Acenaphthene	1.566	1.476	1.303	1.203	1.210	1.197		1.326	11.95
6)	S	Fluorene-d10	1.431	1.349	1.205	1.103	1.107	1.113		1.218	11.59
7)		Fluorene	1.662	1.638	1.504	1.399	1.403	1.474		1.514	7.51
8)	I	Phenanthrene-d10	ISTD								
9)		Phenanthrene	1.414	1.482	1.280	1.304	1.285	1.231		1.333	7.12
10)		Anthracene	1.634	1.621	1.532	1.425	1.416	1.364		1.499	7.59
11)	S	Fluoranthene-d10	1.303	1.280	1.185	1.078	1.091	1.035		1.162	9.62
12)		Fluoranthene	1.584	1.541	1.419	1.293	1.312	1.239		1.398	10.07
13)	S	Pyrene-d10	1.146	1.118	1.046	0.953	0.971	0.923		1.026	8.95
14)		Pyrene	1.619	1.573	1.453	1.328	1.345	1.261		1.430	10.02
15)	I	Chrysene-d12	ISTD								
16)		Benzo[a]anthra...	1.495	1.406	1.331	1.272	1.295	1.418		1.370	6.17
17)		Chrysene	1.709	1.699	1.548	1.422	1.443	1.567		1.565	7.79
18)	I	Perylene-d12	ISTD								
19)		Benzo[b]fluora...	1.304	1.254	1.203	1.103	1.075	1.101		1.174	8.01
20)		Benzo[k]fluora...	1.695	1.666	1.420	1.263	1.348	1.261		1.442	13.45
21)	S	Benzo[a]pyrene...	0.941	0.948	0.839	0.822	0.808	0.789		0.858	8.04
22)		Benzo[a]pyrene	1.323	1.362	1.281	1.157	1.117	1.139		1.230	8.54
23)		Indeno[1,2,3-c...	1.386	1.385	1.262	1.142	1.125	1.227		1.255	9.05
24)		Dibenz[a,h]ant...	1.093	1.099	1.004	0.917	0.908	0.959		0.997	8.43
25)		Benzo[g,h,i]pe...	1.205	1.188	1.103	1.012	1.000	1.004		1.085	8.69

(#) = Out of Range

ALS Environmental

TO-13A Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS

Method : TO-13A Modified For PAHs in SIM
Client & Job# : Stantec P1500355
Analyst : MD

Printed : 2/10/2015
Instrument : MS07
Date Acquired : 2/10/2015
Sample Media: HiVol puf/xad + filter

2/10/15

SAMPLE RESULT SUMMARIES (ug/ml)

	MDL	%Diff.		ug/ml		ug/ml				ug/sample	ug/sample	ug/sample	ug/sample
Sample Information :	**ug/ml**	10ug/ml PAHs CCV		LCS 5ug/ml ext.2/4/15 fv=1mL	**% Rec.**	LCSD 5ug/ml ext.2/4/15 fv=1mL	**% Rec.**	**%RPD**		MB ext.2/4/15 fv=1mL	P1500355-004 ext.2/4/15 fv=1mL	P1500355-001 ext.2/4/15 fv=1mL	P1500355-002 ext.2/4/15 fv=1mL
Dilution Factor	**1.0**	CCV Concentration		1.0		1.0				1.0	1.0	1.0	1.0
Final Extract Vol. (ml)	**1.0**	10 ug/ml		1.0		1.0				1.0	1.0	1.0	1.0
Naphthalene	1.00	9.79	2.1%	3.19	64%	3.26	65%	**2%**		ND	ND	~~46.632~~	5.699
Acenaphthylene	0.50	9.86	1.4%	2.76	55%	2.84	57%	**3%**		ND	ND	ND	ND
Acenaphthene	0.50	9.28	7.2%	3.04	61%	3.10	62%	**2%**		ND	ND	ND	ND
Fluorene	0.50	9.73	2.8%	3.13	63%	3.17	63%	**1%**		ND	ND	ND	ND
Phenanthrene	0.50	9.02	9.8%	3.08	62%	2.99	60%	**3%**		ND	ND	ND	ND
Anthracene	0.50	8.74	12.6%	3.18	64%	3.17	63%	**0%**		ND	ND	ND	ND
Fluoranthene	0.50	9.48	5.2%	3.60	72%	3.55	71%	**1%**		ND	ND	ND	ND
Pyrene	0.50	9.50	5.1%	3.56	71%	3.52	70%	**1%**		ND	ND	ND	ND
Benzo(a)anthracene	0.50	10.15	1.5%	4.41	88%	4.45	89%	**1%**		ND	ND	ND	ND
Chrysene	0.50	9.31	6.9%	4.23	85%	4.28	86%	**1%**		ND	ND	ND	ND
Benzo[b]fluoranthene	0.50	10.43	4.3%	4.49	90%	4.63	93%	**3%**		ND	ND	ND	ND
Benzo[k]fluoranthene	0.50	9.74	2.6%	4.69	94%	4.86	97%	**4%**		ND	ND	ND	ND
Benzo[a]pyrene	0.50	9.88	1.2%	3.87	77%	3.98	80%	**3%**		ND	ND	ND	ND
Indeno[1,2,3-cd]pyrene	0.50	11.36	13.6%	4.40	88%	4.68	94%	**6%**		ND	ND	ND	ND
Dibenz[a,h]anthracene	0.50	10.93	9.3%	5.15	103%	5.33	107%	**3%**		ND	ND	ND	ND
Benzo[g,h,i]perylene	0.50	10.22	2.2%	4.97	99%	5.15	103%	**4%**		ND	ND	ND	ND

% Surrogate Spike Recoveries Summary

Sample Information :		LCS 5ug/ml ext.2/4/15 fv=1mL	LCSD 5ug/ml ext.2/4/15 fv=1mL	MB ext.2/4/15 fv=1mL	P1500355-004 ext.2/4/15 fv=1mL	P1500355-001 ext.2/4/15 fv=1mL	P1500355-002 ext.2/4/15 fv=1mL
Fluorene-d10	ug/ml	3.36	3.53	3.66	3.46	3.24	3.19
	% Recovery	67%	71%	73%	69%	65%	64%
Pyrene-d10	ug/ml	3.69	3.65	3.77	4.03	3.57	3.53
	% Recovery	74%	73%	75%	81%	71%	71%
Fluorene-d10		Pass	Pass	Pass	Pass	Pass	Pass
Pyrene-d10		Pass	Pass	Pass	Pass	Pass	Pass

ALS Environmental
ALS Group USA, Corp
2655 Park Center Drive, Suite A
Simi Valley, CA 93065
T: 805-526-7161
F: 805-526-7270
www.alsglobal.com

February 10, 2015

Analytical Report for Service Request No: P1500356

Deborah Gray
Stantec Consulting Services, Inc.
1500 Lake Shore Drive Suite 100
Columbus, OH 43204

Laboratory Results for: Bridgeton/182608020

Dear Deborah:

Enclosed are the results of the sample(s) submitted to our laboratory on January 30, 2015. For your reference, these analyses have been assigned our service request number **P1500356**.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. In accordance to the NELAC 2003 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My direct number is 281-575-2284. You may also contact me via email at Nicole.Brown@alsglobal.com.

Respectfully submitted,

Nicole Brown
Project Manager

ALS Group USA Corp. dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Environmental

Client:	Stantec Consulting Services, Inc.	**Service Request No.:**	P1500356
Project:	Bridgeton / 182608020	**Date Received:**	02/02/15
Sample Matrix:	Air		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Seven air samples were received for analysis at ALS Environmental in Houston on 02/02/15.

Please note the reporting forms are currently referencing the date ALS-Simi Valley, CA received the samples (01/30/15) and not the date ALS-Houston received the samples (02/02/15).

The samples were received at 4°C in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

MS/MSD

EQ1500085: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of an MS/MSD for this extraction batch. The batch quality control criteria were met.

Y flags – Labeled Standards

Quantification of the native 2,3,7,8-substituted congeners is based on isotopic dilution, which automatically corrects for variation in extraction efficiency and provides accurate values even with poor recovery. Samples that had recoveries of labeled standards outside the acceptance limits are qualified with 'Y' flags on the Labeled Compound summary pages. In all cases, the signal-to-noise ratios are greater than 10:1 and detection limits were below the Method Reporting Limits.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

Detection Limits

Detection limits are calculated for each analyte in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

MRL

The Method Reporting Limit (MRL) established by analytical method TO-9 for 2378-TCDD and 2378-TCDF is 10 pg/L. The laboratory's estimated detection limit (EDL) at the time of analysis for the method blank EQ1500085-01 and sample P1500356-002 were very slightly above 10 pg/L (at 10.1 and 10.4 pg/L, respectively). Therefore, the MRL has been raised to be equal to the EDL for those reported results.

The TEQ Summary results for each sample have been calculated by ALS/Houston to include:

- WHO-2005 TEFs, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- Non-detected compounds are not included in the 'Total'

Client: Stantec Consulting Group, Inc. **Service Request:**P1500356
Project: Bridgeton/182608020

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
P1500356-001	129sN-DF	1/29/2015	1153
P1500356-002	129sNQ-DF	1/29/2015	1131
P1500356-003	129sSQ-DF	1/29/2015	1217
P1500356-004	129BLANK-DF	1/29/2015	0000
P1500356-005	128U1-DF	1/28/2015	0921
P1500356-006	128D1-DF	1/28/2015	1047
P1500356-007	128F-DF	1/28/2015	0948

Service Request Summary

Folder #: **P1500356**
Client Name: Stantec Consulting Group, Inc.
Project Name: Bridgeton
Project Number: 182608020

Report To: Deborah Gray
Stantec Consulting Services, Inc.
1500 Lake Shore Drive Suite 100
Columbus, OH 43204
USA
Phone Number: 614-486-4383
Cell Number: 614-738-0791
Fax Number:
E-mail: deb.gray@stantec.com

Project Chemist: Samantha Henningsen
Originating Lab: SIMIVALLEY
Logged By: KKELPE
Date Received: 01/30/15
Internal Due Date: 2/10/2015
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: N
Report to MDL?: Y
P.O. Number: PO4848419
EDD: No EDD Specified

7 1 L-Glass Jar WM CLEAR None
Location: E-Disposed
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON Dioxins and Furans/TO-9A
P1500356-001	129sN-DF	Air	01/29/15 1153	III
P1500356-002	129sNQ-DF	Air	01/29/15 1131	III
P1500356-003	129sSQ-DF	Air	01/29/15 1217	III
P1500356-004	129BLANK-DF	Air	01/29/15 0000	III
P1500356-005	128U1-DF	Air	01/28/15 0921	III
P1500356-006	128D1-DF	Air	01/28/15 1047	III
P1500356-007	128F-DF	Air	01/28/15 0948	III

Service Request Summary

Folder #: **P1500356**
Client Name: Stantec Consulting Group, Inc.
Project Name: Bridgeton
Project Number: 182608020

Report To: Deborah Gray
Stantec Consulting Services, Inc.
1500 Lake Shore Drive Suite 100
Columbus, OH 43204
USA
Phone Number: 614-486-4383
Cell Number: 614-738-0791
Fax Number:
E-mail: deb.gray@stantec.com

Project Chemist: Samantha Henningsen
Originating Lab: SIMIVALLEY
Logged By: KKELPE
Date Received: 01/30/15
Internal Due Date: 2/10/2015
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: N
Report to MDL?: Y
P.O. Number: PO4848419
EDD: No EDD Specified

7 1 L-Glass Jar WM CLEAR None
Location: E-Disposed
Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	Dioxins and Furans/TO-9A	7	Subbed to ALS Houston HRMS

Superset Summary

Service Request: P1500356 **SuperSet Reference:** 15-0000320482 rev 00

Analytical Method: **TO-9A**

Calibrations: 10/18/14

Data Files:

Raw Data	Begin CCAL	Method Blank	Lab ID
P176195	P176193	P176195	EQ1500085-01
P176203	P176193	P176195	EQ1500085-02
P176204	P176193	P176195	EQ1500085-03
P176196	P176193	P176195	P1500356-001
P176197	P176193	P176195	P1500356-002
P176198	P176193	P176195	P1500356-003
P176199	P176193	P176195	P1500356-004
P176200	P176193	P176195	P1500356-005
P176201	P176193	P176195	P1500356-006
P176202	P176193	P176195	P1500356-007

Data Qualifiers

HRMS Qualifier Set

B	Indicates the associated analyte was found in the method blank at >1/10th the reported value.
E	Estimated value. The reported concentration is above the calibration range of the instrument.
H	Sample extracted and/or analyzed out of suggested holding time.
J	Estimated value. The reported concentration is below the MRL.
K	The ion abundance ratio between the primary and secondary ions were outside of theoretical acceptance limits. Reported concentration is a conservative estimate, however EMPC correction was not applied.
P	Chlorodiphenyl ether interference was present at the retention time of the target analyte. Reported result should be considered an estimate.
Q	Monitored lock-mass indicates matrix-interference. Reported result is estimated.
S	Signal saturated detector. Result reported from dilution.
U	Compound was analyzed for, but was not detected (ND).
X	See Case Narrative.
Y	Isotopically Labeled Standard recovery outside of acceptance limits. In all cases, the signal-to-nois ratios are greater than 10:1, making the recoveries acceptable.
i	The MDL/MRL have been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

ALS Environmental

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
American Association for Laboratory Accreditation	2897.01	11/30/2015
Arizona Department of Health Services	AZ0793	5/27/2015
Arkansas Department of Environmental Quality	14-038-0	6/16/2015
California Department of Health Services	2452	2/28/2015
Florida Department of Health	E87611	6/30/2015
Hawaii Department of Health	TX02694	6/30/2015
Illinois Environmental Protection Agency	200057	10/6/2015
Louisiana Department of Health and Hospitals	TX2694	6/30/2015
Maine Center for Disease Control and Prevention	2014019	6/5/2016
Maryland Department of the Environment	343	6/30/2015
Michigan Depratment of Environmental Quality	9971	6/30/2015
Nebraska Department of Health and Human Services	NE-OS-25-13	6/30/2015
Nevada Department of Concervation and Natural Resources	TX014112013-2	7/31/2015
New Jersey Department of Environmental Protection	NLC140001	6/30/2015
New Mexico Environment Department	TX02694	6/30/2015
New York Department of Health	11707	4/1/2015
Oklahoma Department of Environmental Quality	2014-124	8/31/2015
Oregon Environmental Laboratory Accreditation Program	TX200002	3/24/2015
Pennsylvania Department of Environmental Protection	68-03441	6/30/2015
Tennessee Department of Environment and Concervation	04016	6/30/2015
Texas Commision on Environmental Quality	TX104704216-14-5	6/30/2015
United States Department of Agriculture	P330-14-00067	2/21/2017
Utah Department of Health Environmental Laboratory Certification	TX02694	7/31/2015
Washington Department of Health	c819	11/14/2015
West Virginia Department of Environmental Protection	347	6/30/2015

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID: P1500356 | DB-5 | (DB-5MSUI) | DB-225 | SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date:	Analyst:	Samples:
02/09/15	JC	001-007

Second Level - Data Review – to be filled by person doing peer review

Date:	Analyst:	Samples:
02/09/15	LM	001-007

Chain of Custody

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Intra-Network Chain of Custody

2655 Park Center Drive, Suite A • Simi Valley, CA 93065 • 805-526-7161 • FAX 805-526-7270

ALS Contact: Samantha Henningsen

Project Name: Bridgeton
Project Number: 182608020
Project Manager: Deborah Gray
Company: Stantec Consulting Services, Inc.

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	Dioxins and Furans TO-9A
P1500356-001	129sN-DF		Air	1/29/15	1153	1/30/15	HOUSTON	III
P1500356-002	129sNQ-DF		Air	1/29/15	1131	1/30/15	HOUSTON	III
P1500356-003	129sSQ-DF		Air	1/29/15	1217	1/30/15	HOUSTON	III
P1500356-004	129BLANK-DF		Air	1/29/15	0000	1/30/15	HOUSTON	III
P1500356-005	128U1-DF		Air	1/28/15	0921	1/30/15	HOUSTON	III
P1500356-006	128D1-DF		Air	1/28/15	1047	1/30/15	HOUSTON	III
P1500356-007	128F-DF		Air	1/28/15	0948	1/30/15	HOUSTON	III

P1500356 5
Stantec Consulting Services, Inc.
Bridgeton

Test Comments
Dioxins and Furans - TO-9A P1500356-001,2,3,4,5,6,7 Subbed to ALS Houston HRMS

Special Instructions/Comments
Please issue report directly to deliverables listed on attached client COC. Invoice ALS Simi Valley. Questions call Sam Henningsen

pH Checked _____

Turnaround Requirements
____ **RUSH** (Surcharges Apply)
PLEASE CIRCLE WORK DAYS
1 2 3 4 5
X **STANDARD**
Requested FAX Date: _____
Requested Report Date: 02/10/15

Report Requirements
____ I. Results Only
____ II. Results + QC Summaries
X III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data
PQL/MDL/J N
EDD N

Invoice Information
PO# P1500356
Bill to

Relinquished By: P1500356 1/30/15 1630 Received By: 2/2/15 1020 Airbill Number: _____

Saturday

X **Ship To: HOUSTON**
ALS Environmental - Houston HRMS
10450 Stancliff Rd
Suite 210
Houston, TX 77099

PC SH Date 1/30/15

SMO _____ Date _____

Instructions:

Ice X

Dry Ice _____

No Ice _____

Shipping:

Overnight X

2nd Day _____

Ground _____

Bill to Client Account _____

Comments:

ALS Environmental

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone: (805) 526-7161 Fax: (805) 526-7270

Record & Analytical Service Request

Turnaround Time in Business Days (Surcharges) Please Circle: 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day (Standard)

ALS Project No. P1500356

Company Name & Address (Reporting Information): Stantec, 1500 Lake Shore Drive Suite 100, Columbus Ohio 43204

Project Name: Bridgeton

ALS Contact: Samantha Henningsen

Project Number: 182608020

Project Manager: Deb Gray

P.O. # / Billing Information: Direct Bill - Bridgeton LF/Amy Hargrove

Phone: 614-643-4382

Fax:

Email Address for Result Reporting: Deb.gray@stantec.com, Nick.Iannaggi@stantec.com

Sampler (Print & Sign): NI/CJ/JRP/NB

Analysis Method/Analytes

Client Sample ID	Laboratory ID #	Tube ID	Date Collected	Sampling Pump	Sampling Start Time	Sampling End Time	Sample (Liters) Volume	EPA TO9a, Dioxin/Furan	EPA TO-13, PAHs	Comments e.g. Actual Preservative or specific instructions
129sN-DF	1	302-27-012	1/29/2015	1075	9:55	11:53	27,711	X		
129sNQ-DF	2	302-27-006	1/29/2015	1095	9:25	11:31	28,680	X		
129sSQ-DF	3	302-27-007	1/29/2015	1085	10:17	12:17	28,508	X		
129Blank-DF	4	302-27-003	1/29/2015	NA	NA	NA	0 L	X		Trip Blank
128U1-DF	5	302-27-005	1/28/2015	1085	9:17	9:21	349,709	X		24 hour from 1/27 to 1/28
128D1-DF	6	302-27-013	1/28/2015	1075	10:42	10:47	336,049	X		24 hour from 1/27 to 1/28
128F-DF	7	302-27-004	1/28/2015	1095	9:48	9:48	351,525	X		24 hour from 1/27 to 1/28

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____ Tier III (Data Validation Package) 10% Surcharge X Tier III

Tier II (Results + QC) ____ Tier IV (client specified) ____

EDD required Yes / No

Type: ____

Project Requirements (MRLs, QAPP)

Reliquished by: (Signature) [signature]	Date: 1/29/15	Time: 1700	Received by: (Signature) Fed Ex	Time:
Reliquished by: (Signature) Fed Ex	Date:	Time:	Received by: (Signature) [signature] 1/30/15	Time: 0748
Reliquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:

Wet ice 8°

Cooler / Blank Temperature ____°C

P1500356

Cooler Receipt Form

ALS Environmental

Project Chemist _____

Client/Project Stantec Thermometer ID SMO

Date/Time Received: 2/2/15 1020 Initials: LLL Date/Time Logged in: _____ Initials _____

1. Method of delivery: ○ US Mail ✓ Fed Ex ○ UPS ○ DHL ○ Courier ○ Client

2. Samples received in: ✓ Cooler ○ Box ○ Envelope ○ Other _____

3. Were custody seals on coolers? ○ Yes ✓ No
   Were they intact? ○ Yes ○ No ✓ N/A
   Were they signed and dated? ○ Yes ○ No ✓ N/A
   If yes, how many and where? none

4. Packing Material: ○ Inserts ○ Baggies ✓ Bubble Wrap ✓ Gel Packs ○ Wet Ice ○ Sleeves ○ Other _____

5. Foreign or Regulated Soil? ○ Yes ✓ No Location of Sampling: _____

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
5488 8293 9119		2/2/15	1030	LLL	4	☐
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ✓ Yes ○ No
7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ✓ Yes ○ No
8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ✓ Yes ○ No
9. Were appropriate bottles/containers and volumes received for the requested tests? ✓ Yes ○ No
10. Did sample labels and tags agree with custody documents? ✓ Yes ○ No

Notes, Discrepancies, & Resolutions:

The jars in which samples P1500356-003 and -006 were contained were broken upon arrival, but the glass cartriges appeared to be intact. LLL 2/2/15

Service request Label: P1500356 5
Stantec Consulting Services, Inc.
Bridgeton

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 713 266 1599
F: +1 713 266 1599
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 228508 **Prep WorkFlow:** OrgExtDioxA(7) **Status:** Prepped
Team: Semivoa GCMS/LMCCRINK **Prep Method:** Method **Prep Date/Time:** 2/3/15 01:05 PM

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Sample Description
1	EQ1500085-01	MB		TO-9A/Dioxins and Furans		Air	0.5000Sample	
2	EQ1500085-02	LCS		TO-9A/Dioxins and Furans		Air	0.5000Sample	
3	EQ1500085-03	DLCS		TO-9A/Dioxins and Furans		Air	0.5000Sample	
4	P1500356-001	129sN-DF	.01	TO-9A/Dioxins and Furans		Air	0.5000Sample	PUF 302-27-012
5	P1500356-002	129sNQ-DF	.01	TO-9A/Dioxins and Furans		Air	0.5000Sample	PUF 302-27-006
6	P1500356-003	129sSQ-DF	.01	TO-9A/Dioxins and Furans		Air	0.5000Sample	PUF 302-27-007
7	P1500356-004	129BLANK-DF	.01	TO-9A/Dioxins and Furans		Air	0.5000Sample	PUF 302-27-003
8	P1500356-005	128U1-DF	.01	TO-9A/Dioxins and Furans		Air	0.5000Sample	PUF 302-27-005
9	P1500356-006	128D1-DF	.01	TO-9A/Dioxins and Furans		Air	0.5000Sample	PUF 302-27-013
10	P1500356-007	128F-DF	.01	TO-9A/Dioxins and Furans		Air	0.5000Sample	PUF 302-27-004

Spiking Solutions

Name: 23/TO-9A Alternate Working Solution Inventory ID 69136 Logbook Ref: 69136 CID 04/07/14 Expires On: 04/07/2015

EQ1500085-01	20.00µL	EQ1500085-02	20.00µL	EQ1500085-03	20.00µL	P1500356-001	20.00µL	P1500356-002	20.00µL	P1500356-003	20.00µL
P1500356-004	20.00µL	P1500356-005	20.00µL	P1500356-006	20.00µL	P1500356-007	20.00µL				

Name: 23/TO-9A Surrogate Working Solution Inventory ID 76641 Logbook Ref: 100 ng/ml 76641 WM 11/13/14 Expires On: 11/13/2015

EQ1500085-01	40.00µL	EQ1500085-02	40.00µL	EQ1500085-03	40.00µL	P1500356-001	40.00µL	P1500356-002	40.00µL	P1500356-003	40.00µL
P1500356-004	40.00µL	P1500356-005	40.00µL	P1500356-006	40.00µL	P1500356-007	40.00µL				

Name: 23/TO-9A Internal Working Solution Inventory ID 77568 Logbook Ref: 100-200ng/ml 77568 WM 12/23/14 Expires On: 12/23/2015

EQ1500085-01	40.00µL	EQ1500085-02	40.00µL	EQ1500085-03	40.00µL	P1500356-001	40.00µL	P1500356-002	40.00µL	P1500356-003	40.00µL
P1500356-004	40.00µL	P1500356-005	40.00µL	P1500356-006	40.00µL	P1500356-007	40.00µL				

Name: 1613B Matrix Working Standard Inventory ID 78041 Logbook Ref: 2-20 ng/ml 78041 TL 1/13/15 Expires On: 01/13/2016

EQ1500085-02	200.00µL	EQ1500085-03	200.00µL

Preparation Information Benchsheet

Prep Run#: 228508 **Prep WorkFlow:** OrgExtDioxA(7) **Status:** Prepped
Team: Semivoa GCMS/LMCCRINK **Prep Method:** Method **Prep Date/Time:** 2/3/15 01:05 PM

Preparation Materials

Carbon, High Purity	AL 01/14/15 (78050)	Ethyl Acetate 99.9% Minimum EtOAc	LM 09/23/14 (75019)	Glass Wool	AL 10/22/14 (75977)
Sulfuric Acid Reagent Grade H2SO4	AL 10/20/14 (75883)	Hexanes 95%	AL 1/15/15 (78091)	Dichloromethane (Methylene Chloride) 99.9% MeCl2	LM 11/21/14 (76813)
Sodium Sulfate Anhydrous Reagent Grade Na2SO4	LM 11/20/14 (76802)	Tridecane (n-Tridecane)	AL 11/24/14 (76855)	Silica Gel Reagent Grade	AL 12/3/14 (76978)
Toluene 99.9% Minimum	AL 01/30/15 (78396)	Sodium Hydroxide Reagent Grade NaOH	LM 09/02/14 (74232)	Sodium Chloride Reagent Grade NaCl	C2-65-5 (38670)

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	2/3/15 13:05	Started:	2/5/15 09:20	Started:	2/5/15 12:00	Started:	2/5/15 16:40
Finished:	2/4/15 09:00	Finished:	2/5/15 09:35	Finished:	2/5/15 13:45	Finished:	2/5/15 17:50
By:	LMCCRINK	By:	CDIAZ	By:	CDIAZ	By:	LMCCRINK
Comments		Comments		Comments		Comments	

Comments: _____

Reviewed By: ak Date: 2/6/15

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Analytical Results

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/29/15 11:53
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	129sN-DF	**Units:**	pg
Lab Code:	P1500356-001	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 13:01
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176196	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	5.72	10.0			1
1,2,3,7,8-PeCDD	ND	U	6.74	50.0			1
1,2,3,4,7,8-HxCDD	ND	U	8.03	50.0			1
1,2,3,6,7,8-HxCDD	ND	U	7.29	50.0			1
1,2,3,7,8,9-HxCDD	ND	U	7.10	50.0			1
1,2,3,4,6,7,8-HpCDD	ND	U	7.18	50.0			1
OCDD	ND	U	12.0	100			1
2,3,7,8-TCDF	ND	U	5.79	10.0			1
1,2,3,7,8-PeCDF	ND	U	6.36	50.0			1
2,3,4,7,8-PeCDF	ND	U	6.51	50.0			1
1,2,3,4,7,8-HxCDF	ND	U	5.08	50.0			1
1,2,3,6,7,8-HxCDF	ND	U	4.56	50.0			1
1,2,3,7,8,9-HxCDF	ND	U	6.12	50.0			1
2,3,4,6,7,8-HxCDF	ND	U	5.13	50.0			1
1,2,3,4,6,7,8-HpCDF	ND	U	5.73	50.0			1
1,2,3,4,7,8,9-HpCDF	ND	U	7.66	50.0			1
OCDF	ND	U	9.63	100			1
Total Tetra-Dioxins	ND	U	5.72	10.0			1
Total Penta-Dioxins	ND	U	6.74	50.0			1
Total Hexa-Dioxins	ND	U	7.45	50.0			1
Total Hepta-Dioxins	ND	U	7.18	50.0			1
Total Tetra-Furans	ND	U	5.79	10.0			1
Total Penta-Furans	ND	U	6.89	50.0			1
Total Hexa-Furans	ND	U	5.17	50.0			1
Total Hepta-Furans	ND	U	6.56	50.0			1

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/29/15 11:53
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	129sN-DF	**Units:**	Percent
Lab Code:	P1500356-001	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 13:01
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176196	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1223.525	61		50-120	0.78	1.027
13C-1,2,3,7,8-PeCDD	2000	1746.761	87		50-120	1.57	1.223
13C-1,2,3,6,7,8-HxCDD	2000	1467.519	73		50-120	1.26	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1460.515	73		40-120	1.02	1.069
13C-OCDD	4000	2497.364	62		40-120	0.90	1.140
13C-2,3,7,8-TCDF	2000	1192.707	60		50-120	0.77	0.992
13C-1,2,3,7,8-PeCDF	2000	1550.336	78		50-120	1.61	1.173
13C-1,2,3,6,7,8-HxCDF	2000	1472.140	74		50-120	0.52	0.972
13C-1,2,3,4,6,7,8-HpCDF	2000	1158.003	58		40-120	0.45	1.045
37Cl-2,3,7,8-TCDD	2000	2216.685	111		50-120	NA	1.001
13C-1,2,3,4,7,8-HxCDD	2000	1974.566	99		50-120	1.27	0.998
13C-2,3,4,7,8-PeCDF	2000	2025.668	101		50-120	1.59	1.033
13C-1,2,3,4,7,8-HxCDF	2000	1739.495	87		50-120	0.52	0.997
13C-1,2,3,4,7,8,9-HpCDF	2000	2287.558	114		40-120	0.43	1.035
13C-1,2,3,7,8,9-HxCDF	2000	1650.525	83		50-120	0.53	1.008

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/29/15 11:53
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	129sN-DF	**Units:**	pg
Lab Code:	P1500356-001	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method: TO-9A
Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	5.72	10.0	1	1	
1,2,3,7,8-PeCDD	ND	6.74	50.0	1	1	
1,2,3,4,7,8-HxCDD	ND	8.03	50.0	1	0.1	
1,2,3,6,7,8-HxCDD	ND	7.29	50.0	1	0.1	
1,2,3,7,8,9-HxCDD	ND	7.10	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDD	ND	7.18	50.0	1	0.01	
OCDD	ND	12.0	100	1	0.0003	
2,3,7,8-TCDF	ND	5.79	10.0	1	0.1	
1,2,3,7,8-PeCDF	ND	6.36	50.0	1	0.03	
2,3,4,7,8-PeCDF	ND	6.51	50.0	1	0.3	
1,2,3,4,7,8-HxCDF	ND	5.08	50.0	1	0.1	
1,2,3,6,7,8-HxCDF	ND	4.56	50.0	1	0.1	
1,2,3,7,8,9-HxCDF	ND	6.12	50.0	1	0.1	
2,3,4,6,7,8-HxCDF	ND	5.13	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDF	ND	5.73	50.0	1	0.01	
1,2,3,4,7,8,9-HpCDF	ND	7.66	50.0	1	0.01	
OCDF	ND	9.63	100	1	0.0003	
		Total TEQ				0.00

2005 WHO TEFs, ND = 0

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/29/15 11:31
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	129sNQ-DF	**Units:**	pg
Lab Code:	P1500356-002	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 13:49
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176197	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	8.21	10.0			1
1,2,3,7,8-PeCDD	ND	U	11.7	50.0			1
1,2,3,4,7,8-HxCDD	ND	U	9.05	50.0			1
1,2,3,6,7,8-HxCDD	ND	U	8.23	50.0			1
1,2,3,7,8,9-HxCDD	ND	U	8.01	50.0			1
1,2,3,4,6,7,8-HpCDD	ND	U	11.2	50.0			1
OCDD	27.6**J**		12.1	100	0.81	1.000	1
2,3,7,8-TCDF	ND	U	10.4	10.4			1
1,2,3,7,8-PeCDF	ND	U	7.43	50.0			1
2,3,4,7,8-PeCDF	ND	U	7.60	50.0			1
1,2,3,4,7,8-HxCDF	ND	U	6.90	50.0			1
1,2,3,6,7,8-HxCDF	ND	U	6.20	50.0			1
1,2,3,7,8,9-HxCDF	ND	U	8.32	50.0			1
2,3,4,6,7,8-HxCDF	ND	U	6.96	50.0			1
1,2,3,4,6,7,8-HpCDF	ND	U	7.76	50.0			1
1,2,3,4,7,8,9-HpCDF	ND	U	10.4	50.0			1
OCDF	ND	U	13.4	100			1
Total Tetra-Dioxins	ND	U	8.21	10.0			1
Total Penta-Dioxins	ND	U	11.7	50.0			1
Total Hexa-Dioxins	ND	U	8.41	50.0			1
Total Hepta-Dioxins	ND	U	11.2	50.0			1
Total Tetra-Furans	ND	U	10.4	10.4			1
Total Penta-Furans	ND	U	8.51	50.0			1
Total Hexa-Furans	ND	U	7.01	50.0			1
Total Hepta-Furans	ND	U	8.88	50.0			1

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/29/15 11:31
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	129sNQ-DF	**Units:**	Percent
Lab Code:	P1500356-002	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 13:49
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176197	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1154.452	58		50-120	0.79	1.026
13C-1,2,3,7,8-PeCDD	2000	1499.989	75		50-120	1.59	1.222
13C-1,2,3,6,7,8-HxCDD	2000	1218.246	61		50-120	1.17	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1288.961	64		40-120	1.07	1.070
13C-OCDD	4000	2318.625	58		40-120	0.92	1.140
13C-2,3,7,8-TCDF	2000	1093.286	55		50-120	0.79	0.991
13C-1,2,3,7,8-PeCDF	2000	1291.337	65		50-120	1.61	1.173
13C-1,2,3,6,7,8-HxCDF	2000	1303.953	65		50-120	0.51	0.972
13C-1,2,3,4,6,7,8-HpCDF	2000	991.904	50		40-120	0.45	1.045
37Cl-2,3,7,8-TCDD	2000	2204.294	110		50-120	NA	1.001
13C-1,2,3,4,7,8-HxCDD	2000	2014.066	101		50-120	1.19	0.998
13C-2,3,4,7,8-PeCDF	2000	2081.155	104		50-120	1.61	1.032
13C-1,2,3,4,7,8-HxCDF	2000	1646.309	82		50-120	0.56	0.997
13C-1,2,3,4,7,8,9-HpCDF	2000	2179.481	109		40-120	0.45	1.036
13C-1,2,3,7,8,9-HxCDF	2000	1619.467	81		50-120	0.52	1.008

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/29/15 11:31
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	129sNQ-DF	**Units:**	pg
Lab Code:	P1500356-002	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method: TO-9A
Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	8.21	10.0	1	1	
1,2,3,7,8-PeCDD	ND	11.7	50.0	1	1	
1,2,3,4,7,8-HxCDD	ND	9.05	50.0	1	0.1	
1,2,3,6,7,8-HxCDD	ND	8.23	50.0	1	0.1	
1,2,3,7,8,9-HxCDD	ND	8.01	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDD	ND	11.2	50.0	1	0.01	
OCDD	**27.6**	12.1	100	1	0.0003	0.00828
2,3,7,8-TCDF	ND	10.4	10.4	1	0.1	
1,2,3,7,8-PeCDF	ND	7.43	50.0	1	0.03	
2,3,4,7,8-PeCDF	ND	7.60	50.0	1	0.3	
1,2,3,4,7,8-HxCDF	ND	6.90	50.0	1	0.1	
1,2,3,6,7,8-HxCDF	ND	6.20	50.0	1	0.1	
1,2,3,7,8,9-HxCDF	ND	8.32	50.0	1	0.1	
2,3,4,6,7,8-HxCDF	ND	6.96	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDF	ND	7.76	50.0	1	0.01	
1,2,3,4,7,8,9-HpCDF	ND	10.4	50.0	1	0.01	
OCDF	ND	13.4	100	1	0.0003	
		Total TEQ				0.00828

2005 WHO TEFs, ND = 0

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/29/15 12:17
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	129sSQ-DF	**Units:**	pg
Lab Code:	P1500356-003	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 14:37
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176198	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	8.05	10.0			1
1,2,3,7,8-PeCDD	ND	U	7.46	50.0			1
1,2,3,4,7,8-HxCDD	ND	U	7.14	50.0			1
1,2,3,6,7,8-HxCDD	ND	U	6.49	50.0			1
1,2,3,7,8,9-HxCDD	ND	U	6.32	50.0			1
1,2,3,4,6,7,8-HpCDD	ND	U	5.63	50.0			1
OCDD	15.4**J**		8.41	100	0.96	1.000	1
2,3,7,8-TCDF	ND	U	8.15	10.0			1
1,2,3,7,8-PeCDF	ND	U	4.57	50.0			1
2,3,4,7,8-PeCDF	ND	U	4.68	50.0			1
1,2,3,4,7,8-HxCDF	ND	U	4.70	50.0			1
1,2,3,6,7,8-HxCDF	ND	U	4.22	50.0			1
1,2,3,7,8,9-HxCDF	ND	U	5.66	50.0			1
2,3,4,6,7,8-HxCDF	ND	U	4.74	50.0			1
1,2,3,4,6,7,8-HpCDF	ND	U	4.56	50.0			1
1,2,3,4,7,8,9-HpCDF	ND	U	6.10	50.0			1
OCDF	ND	U	8.31	100			1
Total Tetra-Dioxins	ND	U	8.05	10.0			1
Total Penta-Dioxins	ND	U	7.46	50.0			1
Total Hexa-Dioxins	ND	U	6.63	50.0			1
Total Hepta-Dioxins	ND	U	5.63	50.0			1
Total Tetra-Furans	ND	U	8.15	10.0			1
Total Penta-Furans	ND	U	3.59	50.0			1
Total Hexa-Furans	ND	U	4.77	50.0			1
Total Hepta-Furans	ND	U	5.22	50.0			1

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/29/15 12:17
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	129sSQ-DF	**Units:**	Percent
Lab Code:	P1500356-003	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 14:37
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176198	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1541.418	77		50-120	0.77	1.027
13C-1,2,3,7,8-PeCDD	2000	1864.348	93		50-120	1.60	1.223
13C-1,2,3,6,7,8-HxCDD	2000	1537.034	77		50-120	1.30	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1477.488	74		40-120	1.05	1.069
13C-OCDD	4000	2524.149	63		40-120	0.90	1.140
13C-2,3,7,8-TCDF	2000	1481.065	74		50-120	0.79	0.991
13C-1,2,3,7,8-PeCDF	2000	1728.958	86		50-120	1.58	1.173
13C-1,2,3,6,7,8-HxCDF	2000	1495.650	75		50-120	0.52	0.972
13C-1,2,3,4,6,7,8-HpCDF	2000	1161.876	58		40-120	0.46	1.045
37Cl-2,3,7,8-TCDD	2000	2207.993	110		50-120	NA	1.001
13C-1,2,3,4,7,8-HxCDD	2000	2081.566	104		50-120	1.29	0.998
13C-2,3,4,7,8-PeCDF	2000	2010.855	101		50-120	1.56	1.032
13C-1,2,3,4,7,8-HxCDF	2000	1967.310	98		50-120	0.52	0.997
13C-1,2,3,4,7,8,9-HpCDF	2000	2446.767	122	**Y**	40-120	0.45	1.036
13C-1,2,3,7,8,9-HxCDF	2000	1715.385	86		50-120	0.52	1.009

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/29/15 12:17
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	129sSQ-DF	**Units:**	pg
Lab Code:	P1500356-003	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method: TO-9A
Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	8.05	10.0	1	1	
1,2,3,7,8-PeCDD	ND	7.46	50.0	1	1	
1,2,3,4,7,8-HxCDD	ND	7.14	50.0	1	0.1	
1,2,3,6,7,8-HxCDD	ND	6.49	50.0	1	0.1	
1,2,3,7,8,9-HxCDD	ND	6.32	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDD	ND	5.63	50.0	1	0.01	
OCDD	**15.4**	8.41	100	1	0.0003	0.00462
2,3,7,8-TCDF	ND	8.15	10.0	1	0.1	
1,2,3,7,8-PeCDF	ND	4.57	50.0	1	0.03	
2,3,4,7,8-PeCDF	ND	4.68	50.0	1	0.3	
1,2,3,4,7,8-HxCDF	ND	4.70	50.0	1	0.1	
1,2,3,6,7,8-HxCDF	ND	4.22	50.0	1	0.1	
1,2,3,7,8,9-HxCDF	ND	5.66	50.0	1	0.1	
2,3,4,6,7,8-HxCDF	ND	4.74	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDF	ND	4.56	50.0	1	0.01	
1,2,3,4,7,8,9-HpCDF	ND	6.10	50.0	1	0.01	
OCDF	ND	8.31	100	1	0.0003	
		Total TEQ				0.00462

2005 WHO TEFs, ND = 0

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/29/15 00:00
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	129BLANK-DF	**Units:**	pg
Lab Code:	P1500356-004	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 15:25
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176199	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	9.29	10.0			1
1,2,3,7,8-PeCDD	ND	U	9.81	50.0			1
1,2,3,4,7,8-HxCDD	ND	U	8.46	50.0			1
1,2,3,6,7,8-HxCDD	ND	U	7.68	50.0			1
1,2,3,7,8,9-HxCDD	ND	U	7.48	50.0			1
1,2,3,4,6,7,8-HpCDD	ND	U	7.94	50.0			1
OCDD	31.8**JK**		17.9	100	1.11	1.000	1
2,3,7,8-TCDF	ND	U	9.88	10.0			1
1,2,3,7,8-PeCDF	ND	U	8.23	50.0			1
2,3,4,7,8-PeCDF	ND	U	8.42	50.0			1
1,2,3,4,7,8-HxCDF	ND	U	6.40	50.0			1
1,2,3,6,7,8-HxCDF	ND	U	5.75	50.0			1
1,2,3,7,8,9-HxCDF	ND	U	7.71	50.0			1
2,3,4,6,7,8-HxCDF	ND	U	6.46	50.0			1
1,2,3,4,6,7,8-HpCDF	ND	U	7.01	50.0			1
1,2,3,4,7,8,9-HpCDF	ND	U	9.37	50.0			1
OCDF	ND	U	15.2	100			1
Total Tetra-Dioxins	ND	U	9.29	10.0			1
Total Penta-Dioxins	ND	U	9.81	50.0			1
Total Hexa-Dioxins	ND	U	7.85	50.0			1
Total Hepta-Dioxins	ND	U	7.94	50.0			1
Total Tetra-Furans	ND	U	9.88	10.0			1
Total Penta-Furans	ND	U	7.09	50.0			1
Total Hexa-Furans	ND	U	6.51	50.0			1
Total Hepta-Furans	ND	U	8.02	50.0			1

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/29/15 00:00
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	129BLANK-DF	**Units:**	Percent
Lab Code:	P1500356-004	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 15:25
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176199	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1214.813	61		50-120	0.76	1.026
13C-1,2,3,7,8-PeCDD	2000	1627.576	81		50-120	1.57	1.222
13C-1,2,3,6,7,8-HxCDD	2000	1369.744	68		50-120	1.23	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1377.282	69		40-120	1.07	1.069
13C-OCDD	4000	2406.698	60		40-120	0.90	1.140
13C-2,3,7,8-TCDF	2000	1151.963	58		50-120	0.79	0.992
13C-1,2,3,7,8-PeCDF	2000	1409.451	70		50-120	1.56	1.173
13C-1,2,3,6,7,8-HxCDF	2000	1408.195	70		50-120	0.53	0.972
13C-1,2,3,4,6,7,8-HpCDF	2000	1094.157	55		40-120	0.45	1.045
37Cl-2,3,7,8-TCDD	2000	2212.115	111		50-120	NA	1.001
13C-1,2,3,4,7,8-HxCDD	2000	2031.062	102		50-120	1.27	0.998
13C-2,3,4,7,8-PeCDF	2000	2076.186	104		50-120	1.57	1.033
13C-1,2,3,4,7,8-HxCDF	2000	1653.557	83		50-120	0.51	0.997
13C-1,2,3,4,7,8,9-HpCDF	2000	2267.233	113		40-120	0.43	1.036
13C-1,2,3,7,8,9-HxCDF	2000	1455.814	73		50-120	0.53	1.008

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/29/15 00:00
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	129BLANK-DF	**Units:**	pg
Lab Code:	P1500356-004	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method: TO-9A
Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	9.29	10.0	1	1	
1,2,3,7,8-PeCDD	ND	9.81	50.0	1	1	
1,2,3,4,7,8-HxCDD	ND	8.46	50.0	1	0.1	
1,2,3,6,7,8-HxCDD	ND	7.68	50.0	1	0.1	
1,2,3,7,8,9-HxCDD	ND	7.48	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDD	ND	7.94	50.0	1	0.01	
OCDD	**31.8**	17.9	100	1	0.0003	0.00954
2,3,7,8-TCDF	ND	9.88	10.0	1	0.1	
1,2,3,7,8-PeCDF	ND	8.23	50.0	1	0.03	
2,3,4,7,8-PeCDF	ND	8.42	50.0	1	0.3	
1,2,3,4,7,8-HxCDF	ND	6.40	50.0	1	0.1	
1,2,3,6,7,8-HxCDF	ND	5.75	50.0	1	0.1	
1,2,3,7,8,9-HxCDF	ND	7.71	50.0	1	0.1	
2,3,4,6,7,8-HxCDF	ND	6.46	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDF	ND	7.01	50.0	1	0.01	
1,2,3,4,7,8,9-HpCDF	ND	9.37	50.0	1	0.01	
OCDF	ND	15.2	100	1	0.0003	
		Total TEQ				0.00954

2005 WHO TEFs, ND = 0

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/28/15 09:21
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	128U1-DF	**Units:**	pg
Lab Code:	P1500356-005	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 16:14
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176200	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	6.22	10.0			1
1,2,3,7,8-PeCDD	ND	U	7.89	50.0			1
1,2,3,4,7,8-HxCDD	ND	U	6.44	50.0			1
1,2,3,6,7,8-HxCDD	ND	U	5.85	50.0			1
1,2,3,7,8,9-HxCDD	ND	U	5.70	50.0			1
1,2,3,4,6,7,8-HpCDD	16.0**JK**		7.79	50.0	0.82	1.000	1
OCDD	55.9**JK**		11.8	100	1.26	1.000	1
2,3,7,8-TCDF	ND	U	8.92	10.0			1
1,2,3,7,8-PeCDF	ND	U	6.06	50.0			1
2,3,4,7,8-PeCDF	ND	U	6.21	50.0			1
1,2,3,4,7,8-HxCDF	ND	U	5.16	50.0			1
1,2,3,6,7,8-HxCDF	ND	U	4.64	50.0			1
1,2,3,7,8,9-HxCDF	ND	U	6.22	50.0			1
2,3,4,6,7,8-HxCDF	ND	U	5.21	50.0			1
1,2,3,4,6,7,8-HpCDF	ND	U	5.85	50.0			1
1,2,3,4,7,8,9-HpCDF	ND	U	7.82	50.0			1
OCDF	ND	U	10.9	100			1
Total Tetra-Dioxins	ND	U	6.22	10.0			1
Total Penta-Dioxins	ND	U	7.89	50.0			1
Total Hexa-Dioxins	ND	U	5.98	50.0			1
Total Hepta-Dioxins	ND	U	7.79	50.0			1
Total Tetra-Furans	ND	U	8.92	10.0			1
Total Penta-Furans	ND	U	5.87	50.0			1
Total Hexa-Furans	ND	U	5.25	50.0			1
Total Hepta-Furans	ND	U	6.69	50.0			1

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/28/15 09:21
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	128U1-DF	**Units:**	Percent
Lab Code:	P1500356-005	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 16:14
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176200	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1577.247	79		50-120	0.81	1.027
13C-1,2,3,7,8-PeCDD	2000	1981.399	99		50-120	1.57	1.223
13C-1,2,3,6,7,8-HxCDD	2000	1567.777	78		50-120	1.29	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1612.584	81		40-120	1.04	1.069
13C-OCDD	4000	2858.131	71		40-120	0.90	1.140
13C-2,3,7,8-TCDF	2000	1500.192	75		50-120	0.80	0.992
13C-1,2,3,7,8-PeCDF	2000	1786.262	89		50-120	1.63	1.173
13C-1,2,3,6,7,8-HxCDF	2000	1713.391	86		50-120	0.53	0.972
13C-1,2,3,4,6,7,8-HpCDF	2000	1275.906	64		40-120	0.47	1.045
37Cl-2,3,7,8-TCDD	2000	2211.375	111		50-120	NA	1.001
13C-1,2,3,4,7,8-HxCDD	2000	2143.759	107		50-120	1.25	0.998
13C-2,3,4,7,8-PeCDF	2000	2050.926	103		50-120	1.59	1.033
13C-1,2,3,4,7,8-HxCDF	2000	1706.461	85		50-120	0.53	0.997
13C-1,2,3,4,7,8,9-HpCDF	2000	2201.288	110		40-120	0.45	1.035
13C-1,2,3,7,8,9-HxCDF	2000	1700.332	85		50-120	0.52	1.008

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/28/15 09:21
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	128U1-DF	**Units:**	pg
Lab Code:	P1500356-005	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method: TO-9A
Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	6.22	10.0	1	1	
1,2,3,7,8-PeCDD	ND	7.89	50.0	1	1	
1,2,3,4,7,8-HxCDD	ND	6.44	50.0	1	0.1	
1,2,3,6,7,8-HxCDD	ND	5.85	50.0	1	0.1	
1,2,3,7,8,9-HxCDD	ND	5.70	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDD	**16.0**	7.79	50.0	1	0.01	0.160
OCDD	**55.9**	11.8	100	1	0.0003	0.0168
2,3,7,8-TCDF	ND	8.92	10.0	1	0.1	
1,2,3,7,8-PeCDF	ND	6.06	50.0	1	0.03	
2,3,4,7,8-PeCDF	ND	6.21	50.0	1	0.3	
1,2,3,4,7,8-HxCDF	ND	5.16	50.0	1	0.1	
1,2,3,6,7,8-HxCDF	ND	4.64	50.0	1	0.1	
1,2,3,7,8,9-HxCDF	ND	6.22	50.0	1	0.1	
2,3,4,6,7,8-HxCDF	ND	5.21	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDF	ND	5.85	50.0	1	0.01	
1,2,3,4,7,8,9-HpCDF	ND	7.82	50.0	1	0.01	
OCDF	ND	10.9	100	1	0.0003	
		Total TEQ				0.177

2005 WHO TEFs, ND = 0

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/28/15 10:47
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	128D1-DF	**Units:**	pg
Lab Code:	P1500356-006	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 17:02
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176201	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	7.21	10.0			1
1,2,3,7,8-PeCDD	ND	U	7.28	50.0			1
1,2,3,4,7,8-HxCDD	ND	U	6.05	50.0			1
1,2,3,6,7,8-HxCDD	ND	U	5.49	50.0			1
1,2,3,7,8,9-HxCDD	ND	U	5.35	50.0			1
1,2,3,4,6,7,8-HpCDD	15.7**JK**		4.79	50.0	0.83	1.000	1
OCDD	52.8**J**		9.50	100	0.79	1.000	1
2,3,7,8-TCDF	ND	U	8.57	10.0			1
1,2,3,7,8-PeCDF	ND	U	7.26	50.0			1
2,3,4,7,8-PeCDF	ND	U	7.43	50.0			1
1,2,3,4,7,8-HxCDF	ND	U	3.94	50.0			1
1,2,3,6,7,8-HxCDF	ND	U	3.54	50.0			1
1,2,3,7,8,9-HxCDF	ND	U	4.74	50.0			1
2,3,4,6,7,8-HxCDF	ND	U	3.98	50.0			1
1,2,3,4,6,7,8-HpCDF	ND	U	3.48	50.0			1
1,2,3,4,7,8,9-HpCDF	ND	U	4.64	50.0			1
OCDF	ND	U	7.80	100			1
Total Tetra-Dioxins	ND	U	7.21	10.0			1
Total Penta-Dioxins	ND	U	7.28	50.0			1
Total Hexa-Dioxins	6.02**J**		5.61	50.0	1.05		1
Total Hepta-Dioxins	15.0**J**		4.79	50.0	1.05		1
Total Tetra-Furans	ND	U	8.57	10.0			1
Total Penta-Furans	ND	U	6.66	50.0			1
Total Hexa-Furans	ND	U	4.00	50.0			1
Total Hepta-Furans	ND	U	3.98	50.0			1

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/28/15 10:47
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	128D1-DF	**Units:**	Percent
Lab Code:	P1500356-006	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 17:02
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176201	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1375.373	69		50-120	0.78	1.026
13C-1,2,3,7,8-PeCDD	2000	1827.691	91		50-120	1.56	1.222
13C-1,2,3,6,7,8-HxCDD	2000	1492.817	75		50-120	1.27	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1518.735	76		40-120	1.06	1.069
13C-OCDD	4000	2611.910	65		40-120	0.90	1.140
13C-2,3,7,8-TCDF	2000	1331.429	67		50-120	0.79	0.991
13C-1,2,3,7,8-PeCDF	2000	1646.655	82		50-120	1.59	1.173
13C-1,2,3,6,7,8-HxCDF	2000	1570.157	79		50-120	0.53	0.972
13C-1,2,3,4,6,7,8-HpCDF	2000	1183.224	59		40-120	0.44	1.045
37Cl-2,3,7,8-TCDD	2000	2224.141	111		50-120	NA	1.001
13C-1,2,3,4,7,8-HxCDD	2000	2034.131	102		50-120	1.25	0.998
13C-2,3,4,7,8-PeCDF	2000	1971.827	99		50-120	1.60	1.033
13C-1,2,3,4,7,8-HxCDF	2000	1659.148	83		50-120	0.51	0.997
13C-1,2,3,4,7,8,9-HpCDF	2000	2102.950	105		40-120	0.45	1.036
13C-1,2,3,7,8,9-HxCDF	2000	1628.589	81		50-120	0.51	1.008

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/28/15 10:47
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	128D1-DF	**Units:**	pg
Lab Code:	P1500356-006	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method: TO-9A
Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	7.21	10.0	1	1	
1,2,3,7,8-PeCDD	ND	7.28	50.0	1	1	
1,2,3,4,7,8-HxCDD	ND	6.05	50.0	1	0.1	
1,2,3,6,7,8-HxCDD	ND	5.49	50.0	1	0.1	
1,2,3,7,8,9-HxCDD	ND	5.35	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDD	**15.7**	4.79	50.0	1	0.01	0.157
OCDD	**52.8**	9.50	100	1	0.0003	0.0158
2,3,7,8-TCDF	ND	8.57	10.0	1	0.1	
1,2,3,7,8-PeCDF	ND	7.26	50.0	1	0.03	
2,3,4,7,8-PeCDF	ND	7.43	50.0	1	0.3	
1,2,3,4,7,8-HxCDF	ND	3.94	50.0	1	0.1	
1,2,3,6,7,8-HxCDF	ND	3.54	50.0	1	0.1	
1,2,3,7,8,9-HxCDF	ND	4.74	50.0	1	0.1	
2,3,4,6,7,8-HxCDF	ND	3.98	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDF	ND	3.48	50.0	1	0.01	
1,2,3,4,7,8,9-HpCDF	ND	4.64	50.0	1	0.01	
OCDF	ND	7.80	100	1	0.0003	
		Total TEQ				0.173

2005 WHO TEFs, ND = 0

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/28/15 09:48
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	128F-DF	**Units:**	pg
Lab Code:	P1500356-007	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 17:50
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176202	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	8.56	10.0			1
1,2,3,7,8-PeCDD	ND	U	5.34	50.0			1
1,2,3,4,7,8-HxCDD	ND	U	4.18	50.0			1
1,2,3,6,7,8-HxCDD	ND	U	3.79	50.0			1
1,2,3,7,8,9-HxCDD	ND	U	3.70	50.0			1
1,2,3,4,6,7,8-HpCDD	18.1**J**		4.65	50.0	1.07	1.000	1
OCDD	85.2**JK**		5.60	100	1.05	1.000	1
2,3,7,8-TCDF	ND	U	9.41	10.0			1
1,2,3,7,8-PeCDF	ND	U	3.72	50.0			1
2,3,4,7,8-PeCDF	ND	U	3.80	50.0			1
1,2,3,4,7,8-HxCDF	ND	U	2.75	50.0			1
1,2,3,6,7,8-HxCDF	ND	U	2.47	50.0			1
1,2,3,7,8,9-HxCDF	ND	U	3.32	50.0			1
2,3,4,6,7,8-HxCDF	ND	U	2.78	50.0			1
1,2,3,4,6,7,8-HpCDF	ND	U	3.78	50.0			1
1,2,3,4,7,8,9-HpCDF	ND	U	5.05	50.0			1
OCDF	ND	U	9.54	100			1
Total Tetra-Dioxins	ND	U	8.56	10.0			1
Total Penta-Dioxins	ND	U	5.34	50.0			1
Total Hexa-Dioxins	ND	U	3.88	50.0			1
Total Hepta-Dioxins	42.9**J**		4.65	50.0	1.04		1
Total Tetra-Furans	ND	U	9.41	10.0			1
Total Penta-Furans	ND	U	4.71	50.0			1
Total Hexa-Furans	ND	U	2.80	50.0			1
Total Hepta-Furans	ND	U	4.32	50.0			1

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/28/15 09:48
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	128F-DF	**Units:**	Percent
Lab Code:	P1500356-007	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 17:50
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176202	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1469.399	73		50-120	0.78	1.026
13C-1,2,3,7,8-PeCDD	2000	1858.517	93		50-120	1.58	1.222
13C-1,2,3,6,7,8-HxCDD	2000	1480.405	74		50-120	1.28	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1570.610	79		40-120	1.07	1.070
13C-OCDD	4000	2647.572	66		40-120	0.90	1.140
13C-2,3,7,8-TCDF	2000	1416.711	71		50-120	0.77	0.992
13C-1,2,3,7,8-PeCDF	2000	1679.026	84		50-120	1.59	1.173
13C-1,2,3,6,7,8-HxCDF	2000	1621.616	81		50-120	0.52	0.972
13C-1,2,3,4,6,7,8-HpCDF	2000	1234.816	62		40-120	0.44	1.045
37Cl-2,3,7,8-TCDD	2000	2199.982	110		50-120	NA	1.001
13C-1,2,3,4,7,8-HxCDD	2000	2152.102	108		50-120	1.25	0.998
13C-2,3,4,7,8-PeCDF	2000	1998.460	100		50-120	1.56	1.032
13C-1,2,3,4,7,8-HxCDF	2000	1689.774	84		50-120	0.52	0.997
13C-1,2,3,4,7,8,9-HpCDF	2000	2099.630	105		40-120	0.43	1.036
13C-1,2,3,7,8,9-HxCDF	2000	1750.478	88		50-120	0.52	1.008

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	01/28/15 09:48
Sample Matrix:	Air	**Date Received:**	01/30/15 07:45
Sample Name:	128F-DF	**Units:**	pg
Lab Code:	P1500356-007	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method: TO-9A
Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	8.56	10.0	1	1	
1,2,3,7,8-PeCDD	ND	5.34	50.0	1	1	
1,2,3,4,7,8-HxCDD	ND	4.18	50.0	1	0.1	
1,2,3,6,7,8-HxCDD	ND	3.79	50.0	1	0.1	
1,2,3,7,8,9-HxCDD	ND	3.70	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDD	**18.1**	4.65	50.0	1	0.01	0.181
OCDD	**85.2**	5.60	100	1	0.0003	0.0256
2,3,7,8-TCDF	ND	9.41	10.0	1	0.1	
1,2,3,7,8-PeCDF	ND	3.72	50.0	1	0.03	
2,3,4,7,8-PeCDF	ND	3.80	50.0	1	0.3	
1,2,3,4,7,8-HxCDF	ND	2.75	50.0	1	0.1	
1,2,3,6,7,8-HxCDF	ND	2.47	50.0	1	0.1	
1,2,3,7,8,9-HxCDF	ND	3.32	50.0	1	0.1	
2,3,4,6,7,8-HxCDF	ND	2.78	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDF	ND	3.78	50.0	1	0.01	
1,2,3,4,7,8,9-HpCDF	ND	5.05	50.0	1	0.01	
OCDF	ND	9.54	100	1	0.0003	
		Total TEQ				0.207

2005 WHO TEFs, ND = 0

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	NA
Sample Matrix:	Air	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	pg
Lab Code:	EQ1500085-01	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 12:13
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176195	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	9.36	10.0			1
1,2,3,7,8-PeCDD	ND	U	8.49	50.0			1
1,2,3,4,7,8-HxCDD	ND	U	8.03	50.0			1
1,2,3,6,7,8-HxCDD	ND	U	7.29	50.0			1
1,2,3,7,8,9-HxCDD	ND	U	7.10	50.0			1
1,2,3,4,6,7,8-HpCDD	ND	U	10.1	50.0			1
OCDD	ND	U	16.2	100			1
2,3,7,8-TCDF	ND	U	10.1	10.1			1
1,2,3,7,8-PeCDF	ND	U	7.36	50.0			1
2,3,4,7,8-PeCDF	ND	U	7.54	50.0			1
1,2,3,4,7,8-HxCDF	ND	U	5.67	50.0			1
1,2,3,6,7,8-HxCDF	ND	U	5.09	50.0			1
1,2,3,7,8,9-HxCDF	ND	U	6.83	50.0			1
2,3,4,6,7,8-HxCDF	ND	U	5.72	50.0			1
1,2,3,4,6,7,8-HpCDF	ND	U	7.42	50.0			1
1,2,3,4,7,8,9-HpCDF	ND	U	9.92	50.0			1
OCDF	ND	U	15.5	100			1
Total Tetra-Dioxins	ND	U	9.36	10.0			1
Total Penta-Dioxins	ND	U	8.49	50.0			1
Total Hexa-Dioxins	ND	U	7.45	50.0			1
Total Hepta-Dioxins	ND	U	10.1	50.0			1
Total Tetra-Furans	ND	U	10.1	10.1			1
Total Penta-Furans	ND	U	5.97	50.0			1
Total Hexa-Furans	ND	U	5.76	50.0			1
Total Hepta-Furans	ND	U	8.49	50.0			1

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	NA
Sample Matrix:	Air	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ1500085-01	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 12:13
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176195	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1245.051	62		50-120	0.78	1.027
13C-1,2,3,7,8-PeCDD	2000	1589.543	79		50-120	1.58	1.223
13C-1,2,3,6,7,8-HxCDD	2000	1327.914	66		50-120	1.25	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1299.188	65		40-120	1.09	1.070
13C-OCDD	4000	2018.794	50		40-120	0.91	1.140
13C-2,3,7,8-TCDF	2000	1132.292	57		50-120	0.79	0.992
13C-1,2,3,7,8-PeCDF	2000	1435.941	72		50-120	1.59	1.173
13C-1,2,3,6,7,8-HxCDF	2000	1398.046	70		50-120	0.52	0.972
13C-1,2,3,4,6,7,8-HpCDF	2000	1041.406	52		40-120	0.44	1.045
37Cl-2,3,7,8-TCDD	2000	2258.835	113		50-120	NA	1.001
13C-1,2,3,4,7,8-HxCDD	2000	2049.241	102		50-120	1.20	0.998
13C-2,3,4,7,8-PeCDF	2000	1976.100	99		50-120	1.60	1.033
13C-1,2,3,4,7,8-HxCDF	2000	1707.809	85		50-120	0.53	0.997
13C-1,2,3,4,7,8,9-HpCDF	2000	2189.016	109		40-120	0.44	1.036
13C-1,2,3,7,8,9-HxCDF	2000	1345.321	67		50-120	0.52	1.008

Accuracy & Precision

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Analyzed:**	02/07/15
Sample Matrix:	Air	**Date Extracted:**	02/03/15

Duplicate Lab Control Sample Summary
Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Units:**	pg
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	432091

	Lab Control Sample EQ1500085-02			Duplicate Lab Control Sample EQ1500085-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,2,3,4,6,7,8-HpCDD	1930	2000	96	2040	2000	102	70-130	6	30
1,2,3,4,7,8-HxCDD	2080	2000	104	2030	2000	102	70-130	2	30
1,2,3,6,7,8-HxCDD	2130	2000	107	2120	2000	106	70-130	<1	30
1,2,3,7,8,9-HxCDD	2080	2000	104	2100	2000	105	70-130	<1	30
1,2,3,7,8-PeCDD	2130	2000	107	2100	2000	105	70-130	2	30
2,3,7,8-TCDD	444	400	111	439	400	110	70-130	1	30
OCDD	4260	4000	107	4070	4000	102	70-130	5	30
1,2,3,4,6,7,8-HpCDF	1960	2000	98	1940	2000	97	70-130	1	30
1,2,3,4,7,8,9-HpCDF	2230	2000	112	2280	2000	114	70-130	2	30
1,2,3,4,7,8-HxCDF	1680	2000	84	1630	2000	82	70-130	3	30
1,2,3,6,7,8-HxCDF	1820	2000	91	1820	2000	91	70-130	<1	30
1,2,3,7,8,9-HxCDF	1790	2000	89	1810	2000	91	70-130	1	30
1,2,3,7,8-PeCDF	2090	2000	105	2060	2000	103	70-130	2	30
2,3,4,6,7,8-HxCDF	1730	2000	87	1740	2000	87	70-130	<1	30
2,3,4,7,8-PeCDF	1990	2000	100	1940	2000	97	70-130	2	30
2,3,7,8-TCDF	414	400	103	416	400	104	70-130	<1	30
OCDF	3550	4000	89	3550	4000	89	70-130	<1	30

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	NA
Sample Matrix:	Air	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	pg
Lab Code:	EQ1500085-02	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 18:38
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176203	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	444		8.65	10.0	0.75	1.001	1
1,2,3,7,8-PeCDD	2130		4.80	50.0	1.62	1.000	1
1,2,3,4,7,8-HxCDD	2080		3.83	50.0	1.15	0.998	1
1,2,3,6,7,8-HxCDD	2130		3.48	50.0	1.37	1.000	1
1,2,3,7,8,9-HxCDD	2080		3.39	50.0	1.28	1.007	1
1,2,3,4,6,7,8-HpCDD	1930		5.57	50.0	1.06	1.000	1
OCDD	4260		13.1	100	0.93	1.000	1
2,3,7,8-TCDF	414		10.7	10.7	0.78	1.001	1
1,2,3,7,8-PeCDF	2090		4.12	50.0	1.50	1.001	1
2,3,4,7,8-PeCDF	1990		4.22	50.0	1.55	1.033	1
1,2,3,4,7,8-HxCDF	1680		2.90	50.0	1.22	0.997	1
1,2,3,6,7,8-HxCDF	1820		2.60	50.0	1.22	1.000	1
1,2,3,7,8,9-HxCDF	1790		3.49	50.0	1.27	1.037	1
2,3,4,6,7,8-HxCDF	1730		2.92	50.0	1.21	1.016	1
1,2,3,4,6,7,8-HpCDF	1960		5.25	50.0	1.04	1.000	1
1,2,3,4,7,8,9-HpCDF	2230		7.01	50.0	0.99	1.036	1
OCDF	3550		16.7	100	0.94	1.005	1
Total Tetra-Dioxins	449		8.65	10.0	0.75		1
Total Penta-Dioxins	2170		4.80	50.0	1.62		1
Total Hexa-Dioxins	6290		3.56	50.0	1.15		1
Total Hepta-Dioxins	1930		5.57	50.0	1.06		1
Total Tetra-Furans	415		10.7	10.7	0.78		1
Total Penta-Furans	4090		5.21	50.0			1
Total Hexa-Furans	7020		2.95	50.0	1.22		1
Total Hepta-Furans	4200		6.00	50.0	1.04		1

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	NA
Sample Matrix:	Air	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1500085-02	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 18:38
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176203	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1618.259	81		50-120	0.78	1.027
13C-1,2,3,7,8-PeCDD	2000	1971.237	99		50-120	1.59	1.223
13C-1,2,3,6,7,8-HxCDD	2000	1647.094	82		50-120	1.28	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1593.486	80		40-120	1.08	1.070
13C-OCDD	4000	2616.208	65		40-120	0.91	1.140
13C-2,3,7,8-TCDF	2000	1502.592	75		50-120	0.81	0.992
13C-1,2,3,7,8-PeCDF	2000	1778.401	89		50-120	1.57	1.173
13C-1,2,3,6,7,8-HxCDF	2000	1685.535	84		50-120	0.53	0.973
13C-1,2,3,4,6,7,8-HpCDF	2000	1267.693	63		40-120	0.44	1.045
37Cl-2,3,7,8-TCDD	2000	2153.116	108		50-120	NA	1.001
13C-1,2,3,4,7,8-HxCDD	2000	1974.715	99		50-120	1.28	0.998
13C-2,3,4,7,8-PeCDF	2000	1984.249	99		50-120	1.59	1.033
13C-1,2,3,4,7,8-HxCDF	2000	1784.270	89		50-120	0.54	0.996
13C-1,2,3,4,7,8,9-HpCDF	2000	2250.927	113		40-120	0.43	1.036
13C-1,2,3,7,8,9-HxCDF	2000	1665.685	83		50-120	0.52	1.009

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	NA
Sample Matrix:	Air	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	pg
Lab Code:	EQ1500085-03	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 19:26
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176204	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	439		9.28	10.0	0.78	1.001	1
1,2,3,7,8-PeCDD	2100		7.71	50.0	1.53	1.001	1
1,2,3,4,7,8-HxCDD	2030		6.33	50.0	1.20	0.998	1
1,2,3,6,7,8-HxCDD	2120		5.75	50.0	1.29	1.000	1
1,2,3,7,8,9-HxCDD	2100		5.60	50.0	1.21	1.007	1
1,2,3,4,6,7,8-HpCDD	2040		5.52	50.0	1.05	1.000	1
OCDD	4070		13.2	100	0.91	1.000	1
2,3,7,8-TCDF	416		7.07	10.0	0.88	1.001	1
1,2,3,7,8-PeCDF	2060		4.89	50.0	1.60	1.001	1
2,3,4,7,8-PeCDF	1940		5.01	50.0	1.53	1.033	1
1,2,3,4,7,8-HxCDF	1630		5.50	50.0	1.30	0.997	1
1,2,3,6,7,8-HxCDF	1820		4.93	50.0	1.23	1.000	1
1,2,3,7,8,9-HxCDF	1810		6.62	50.0	1.21	1.038	1
2,3,4,6,7,8-HxCDF	1740		5.55	50.0	1.25	1.016	1
1,2,3,4,6,7,8-HpCDF	1940		8.27	50.0	1.06	1.000	1
1,2,3,4,7,8,9-HpCDF	2280		11.1	50.0	1.07	1.036	1
OCDF	3550		6.60	100	0.88	1.004	1
Total Tetra-Dioxins	439		9.28	10.0	0.78		1
Total Penta-Dioxins	2110		7.71	50.0	1.53		1
Total Hexa-Dioxins	6240		5.87	50.0	1.20		1
Total Hepta-Dioxins	2050		5.52	50.0	0.89		1
Total Tetra-Furans	433		7.07	10.0	0.88		1
Total Penta-Furans	4020		3.94	50.0			1
Total Hexa-Furans	7010		5.59	50.0	1.30		1
Total Hepta-Furans	4250		9.46	50.0	1.06		1

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1500356
Project:	Bridgeton/182608020	**Date Collected:**	NA
Sample Matrix:	Air	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1500085-03	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analysis Method:	TO-9A	**Date Analyzed:**	02/07/15 19:26
Prep Method:	Method	**Date Extracted:**	2/3/15
Sample Amount:	0.5000Sample	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5MSUI
Data File Name:	P176204	**Blank File Name:**	P176195
ICAL Date:	10/18/14	**Cal Ver. File Name:**	P176193

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1590.958	80		50-120	0.78	1.026
13C-1,2,3,7,8-PeCDD	2000	2054.713	103		50-120	1.52	1.222
13C-1,2,3,6,7,8-HxCDD	2000	1584.804	79		50-120	1.25	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1477.853	74		40-120	1.01	1.070
13C-OCDD	4000	2380.718	60		40-120	0.88	1.141
13C-2,3,7,8-TCDF	2000	1460.299	73		50-120	0.79	0.992
13C-1,2,3,7,8-PeCDF	2000	1821.418	91		50-120	1.59	1.173
13C-1,2,3,6,7,8-HxCDF	2000	1616.157	81		50-120	0.52	0.972
13C-1,2,3,4,6,7,8-HpCDF	2000	1154.785	58		40-120	0.44	1.045
37Cl-2,3,7,8-TCDD	2000	2229.701	111		50-120	NA	1.001
13C-1,2,3,4,7,8-HxCDD	2000	2110.579	106		50-120	1.24	0.998
13C-2,3,4,7,8-PeCDF	2000	1994.542	100		50-120	1.58	1.033
13C-1,2,3,4,7,8-HxCDF	2000	1782.139	89		50-120	0.53	0.997
13C-1,2,3,4,7,8,9-HpCDF	2000	2378.975	119		40-120	0.46	1.035
13C-1,2,3,7,8,9-HxCDF	2000	1669.610	83		50-120	0.51	1.008

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LABORATORY REPORT

February 16, 2015

Deborah Gray
Stantec Consulting Services, Inc.
1500 Lake Shore Drive Suite 100
Columbus, OH 43204

RE: Bridgeton / 182608020

Dear Deborah:

Enclosed are the results of the samples submitted to our laboratory on January 30, 2015. For your reference, these analyses have been assigned our service request number P1500365.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 2:19 pm, Feb 16, 2015

For Samantha Henningsen
Project Manager

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Client: Stantec Consulting Services, Inc. Service Request No: P1500365
Project: Bridgeton / 182608020

CASE NARRATIVE

The samples were received intact under chain of custody on January 30, 2015 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Fixed Gases Analysis

The samples were analyzed for fixed gases (hydrogen, oxygen/argon, nitrogen, carbon monoxide, methane and carbon dioxide) according to modified EPA Method 3C (single injection) using a gas chromatograph equipped with a thermal conductivity detector (TCD). This procedure is described in laboratory SOP VOA-EPA3C. This method is not included on the laboratory's NELAP or AIHA-LAP scope of accreditation.

Sulfur Analysis

The samples were also analyzed for twenty sulfur compounds per ASTM D 5504-12 using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). All compounds with the exception of hydrogen sulfide and carbonyl sulfide are quantitated against the initial calibration curve for methyl mercaptan. This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP scope of accreditation.

Volatile Organic Compound Analysis

The samples were also analyzed for volatile organic compounds and tentatively identified compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. This procedure is described in laboratory SOP VOA-TO15. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. The method was modified to include the use of helium as a diluent gas in place of zero-grade air for container pressurization. When necessary, analytical sample volumes were adjusted by a correction factor for containers pressurized with helium. A summary sheet has been included listing the affected samples. This method is not included on the laboratory's AIHA-LAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP scope of accreditation.

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Client: Stantec Consulting Services, Inc. Service Request No: P1500365
Project: Bridgeton / 182608020

CASE NARRATIVE

The Summa canisters were cleaned, prior to sampling, down to the method reporting limit (MRL) reported for this project. Please note, projects which require reporting below the MRL could have results between the MRL and method detection limit (MDL) that are biased high.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjlabs.com/search-accredited-labs	L14-2
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	838341
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	CA200007
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-14-5
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272014-4
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Stantec Consulting Services, Inc. Service Request: P1500365
Project ID: Bridgeton / 182608020

Date Received: 1/30/2015
Time Received: 10:00

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pf1 (psig)	3C Modified - Fxd Gases Can	ASTM D5504-08 - Sulfur Can	TO-15 Modified - VOC Cans
128Ns-GRAB	P1500365-001	Air	1/28/2015	16:24	1SS00036	0.46	6.67	X	X	X
128NQs-GRAB	P1500365-002	Air	1/28/2015	14:10	1SS00069	0.47	5.22	X	X	X
128SQs-GRAB	P1500365-003	Air	1/28/2015	17:22	1SS00175	0.53	5.13	X	X	X
128Fs-GRAB	P1500365-004	Air	1/28/2015	13:18	1SS00181	1.30	5.16	X	X	X
128GRAB	P1500365-005	Air	1/28/2015	17:30	1SS00168	-0.04	5.34		X	X
129GRAB2D	P1500365-006	Air	1/29/2015	11:00	1SS00088	-0.18	5.68		X	X
129GRAB3U	P1500365-007	Air	1/29/2015	11:20	1SS00024	-0.11	5.12		X	X
127U1-SUMMA	P1500365-008	Air	1/27/2015	17:45	AS00301	-5.12	3.26	X	X	X
127D1-SUMMA	P1500365-009	Air	1/27/2015	18:27	AS00506	-2.21	3.56	X	X	X
127D2-SUMMA	P1500365-010	Air	1/27/2015	18:32	AS00224	-1.67	3.29		X	X
127F-SUMMA	P1500365-011	Air	1/27/2015	18:23	AS00866	-6.01	3.61	X	X	X
127SQ-SUMMA	P1500365-012	Air	1/27/2015	18:10	AS00544	-1.89	3.46	X	X	X
127-SUMMA-B	P1500365-013	Air	1/27/2015	16:00	AS00796	-14.27	3.69	X	X	X
127DUP10-SUMMA	P1500365-014	Air	1/27/2015	00:00	AS00161	-2.97	3.49	X	X	X
128U1-SUMMA	P1500365-015	Air	1/28/2015	15:12	AS00763	0.19	3.41	X	X	X
128D1-SUMMA	P1500365-016	Air	1/28/2015	14:55	AS00696	-0.88	3.55	X	X	X
128N-SUMMA	P1500365-017	Air	1/28/2015	15:05	AS00598	0.55	3.44	X	X	X
128NQ-SUMMA	P1500365-018	Air	1/28/2015	15:17	AS00798	-0.32	3.52	X	X	X
128DUP11-SUMMA	P1500365-019	Air	1/28/2015	00:00	AS00728	-1.06	3.47	X	X	X

ALS ENVIRONMENTAL
Sample Volume Correction for Helium Pressurization for SCAN Analysis

Sample ID	Pi	Pf	Sample Volume (L)	Adjusted Volume (L)
P1500365-002	0.47	5.22	0.364	0.400
P1500365-005	-0.04	5.34	0.361	0.400
P1500365-006	-0.18	5.68	0.360	0.400
P1500365-007	-0.11	5.12	0.362	0.400
P1500365-008	-5.12	3.26	0.853	1.00
P1500365-009	-2.21	3.56	0.891	1.00
P1500365-010	-1.67	3.29	0.902	1.00
P1500365-011	-6.01	3.61	0.838	1.00
P1500365-012	-1.89	3.46	0.897	1.00
P1500365-013	-14.27	3.69	0.720	1.00
P1500365-014	-2.97	3.49	0.881	1.00
P1500365-015	0.19	3.41	0.926	1.00
P1500365-016	-0.88	3.55	0.910	1.00
P1500365-017	0.55	3.44	0.931	1.00
P1500365-018	-0.32	3.52	0.918	1.00
P1500365-019	-1.06	3.47	0.908	1.00
P1500365-002DIL	0.47	5.22	0.036	0.0400
P1500365-008DIL	-5.12	3.26	0.085	0.100

Validation Date: 10/13/09

Template Name: MFC_GCF_backfill.xls

Air - Chain of Custody Record & Analytical Service Request

Page 1 of 2

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10-Day-Standard

ALS Project No. R1500365

Company Name & Address (Reporting Information)
STANTEC CONSULTING SVCS
1500 LAKE SHORE
COLUMBUS OH

Project Manager: Deb Gray @ STANTEC.com

Phone: 614 643 4362

Fax:

Email Address for Result Reporting: Deb.Gray@stantec.com Chris.Lalonde@stantec.com

Project Name: Bridgeton

Project Number: ~~1826080~~ 18260820

P.O. # / Billing Information: Bridgeton Landfill
AMY HARGROVE

Sampler (Print & Sign): NI/CIL

ALS Contact: Sam Henningsen

Analysis Method

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Canister ID (Bar code # - AC, SC, etc.)	Flow Controller ID (Bar code # - FC #)	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	Sample Volume	TO15+TICS	ASTM D5504	EPA 3cMM	Comments e.g. Actual Preservative or specific instructions
128NS-GRAB	(1)	1/28/2015	16:24	ISS00036	NA	-14.3	NM	1L	X	X	X	end pressure Not Measured
128NQS-GRAB	(2)		14:10	ISS00069			NM					
128SQS-GRAB	(3)		17:22	ISS00175			NM					
128FS-GRAB	(4)		13:18	ISS00181			NM					
128GRAB	(5)		17:30	ISS00168			NM					
129GRAB2D	(6)	1/29/2015	11:00	ISS00088			NM					
129GRAB3D	(7)		11:20	ISS00024			NM					

Report Tier Levels - please select

Tier I - Results (Default in not specified) ____
Tier II (Results + QC Summaries ____
Tier III (Results + QC & Calibration Summaries) X
Tier IV (Date Validation Package) 10% Surcharge ____

EDD required (YES) / No
Type: ____ Units: ug/m3

Chain of Custody Seal: (Circle)
INTACT BROKEN ABSENT

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
FEDEX	1/29/15	1700	FEDEX		
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
				1/30/15	1000

Cooler / Blank Temperature ____ °C

Returned unused cans

7 of 169

Air - Chain of Custody Record & Analytical Service Request

2655 Park Center Drive, Suite A
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Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10-Day-Standard

ALS Project No: R1500365

Company Name & Address (Reporting Information): STANTEC, 1500 Lakeshore, Columbus, OHIO

Project Name: Bridgeton

Project Number: 182608020

Project Manager: Deb Gray

P.O. # / Billing Information: Bridgeton Landfill, AMY Hargrove

Phone: 614 643 4362 | Fax:

Email Address for Result Reporting: Chris.Lalonde@Stantec.com, Deb.Gray@Stantec.com

Sampler (Print & Sign): NI/CIL

ALS Contact: Sam Hennessy

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Canister ID (Bar code # - AC, SC, etc.)	Flow Controller ID (Bar code # - FC #)	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	Sample Volume	Analysis Method: TO15 + TICs	Analysis Method: ASTM D 5504	Analysis Method: EPA 3 cmb	Comments e.g. Actual Preservative or specific instructions
127U1-SUMMA	(8)	1/27/15	17:45	as00301	sfc00041	-28	-12	6L	X	X	X	
127D1-SUMMA	(9)		18:27	as00506	sfc00023	-29	-7.5		X	X	X	
127D2-SUMMA	(10)		18:32	as00224	sfc00046	-29	-6.5		X	X		
127F-SUMMA	(11)		18:23	as00866	sfc00057	-30	-14		X	X	X	
127SG-SUMMA	(12)		18:10	as00544	sfc00027	-29	-7		X	X	X	
127-SUMMA-B	(13)		16:00	as00124	NA	-29	NA		X	X	X	
127DUP10-SUMMA	(14)		NA	as00161	sfc00060	-29	-8		X	X	X	
128U1-SUMMA	(6)	1/28/15	15:12	as00763	sfc00009	-30	-1		X	X	X	
128D1-SUMMA	(15)		14:55	as00696	sfc00001	-30	-4		X	X	X	
128N-SUMMA	(7)		15:05	as00598	sfc00045	-30	-1		X	X	X	
128NQ-SUMMA	(16)		15:17	as00798	sfc00039	-27	-1.5		X	X	X	
128DUP11-SUMMA	(17)		NA	as00778	sfc00043	-30	-4.5		X	X	X	

Report Tier Levels - please select

Tier I - Results (Default in not specified) ____ Tier III (Results + QC & Calibration Summaries) X

Tier II (Results + QC Summaries ____ Tier IV (Date Validation Package) 10% Surcharge ____

EDD required (YES) / No Type: ____ Units: ug/m3

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Matt Dumpe FEDEX	1/29/15	1700	FEDEX		
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date: 1/30/15	Time: 1000

Cooler / Blank Temperature ____ °C

ALS Environmental
Sample Acceptance Check Form

Client: Stantec Consulting Services, Inc. Work order: P1500365

Project: Bridgeton / 182608020

Sample(s) received on: 1/30/2015 Date opened: 1/30/2015 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by ALS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
9	Was a **trip blank** received?	☐	☒	☐
10	Were **custody seals** on outside of cooler/Box?	☒	☐	☐
	Location of seal(s)? _____ Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1500365-001.01	1.0 L Source Silonite Canister					
P1500365-002.01	1.0 L Source Silonite Canister					
P1500365-003.01	1.0 L Source Silonite Canister					
P1500365-004.01	1.0 L Source Silonite Canister					
P1500365-005.01	1.0 L Source Silonite Canister					
P1500365-006.01	1.0 L Source Silonite Canister					
P1500365-007.01	1.0 L Source Silonite Canister					
P1500365-008.01	6.0 L Silonite Can					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: Stantec Consulting Services, Inc. Work order: P1500365

Project: Bridgeton / 182608020

Sample(s) received on: 1/30/2015 Date opened: 1/30/2015 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1500365-009.01	6.0 L Silonite Can					
P1500365-010.01	6.0 L Silonite Can					
P1500365-011.01	6.0 L Silonite Can					
P1500365-012.01	6.0 L Silonite Can					
P1500365-013.01	6.0 L Silonite Can					
P1500365-014.01	6.0 L Silonite Can					
P1500365-015.01	6.0 L Silonite Can					
P1500365-016.01	6.0 L Silonite Can					
P1500365-017.01	6.0 L Silonite Can					
P1500365-018.01	6.0 L Silonite Can					
P1500365-019.01	6.0 L Silonite Can					

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128Ns-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-001

Test Code: EPA Method 3C Modified Date Collected: ########
Instrument ID: HP5890 II/GC1/TCD Date Received: ########
Analyst: Nalini Lall Date Analyzed: 2/4/2015
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: 1SS00036

Initial Pressure (psig): 0.46 Final Pressure (psig): 6.67

Canister Dilution Factor: 1.41

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.14	
7782-44-7	**Oxygen +**			
7440-37-1	**Argon**	**3.26**	0.14	
7727-37-9	**Nitrogen**	**46.5**	0.14	
630-08-0	Carbon Monoxide	ND	0.14	
74-82-8	**Methane**	**21.5**	0.14	
124-38-9	**Carbon Dioxide**	**28.7**	0.14	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQs-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-002

Test Code: EPA Method 3C Modified Date Collected: ########
Instrument ID: HP5890 II/GC1/TCD Date Received: ########
Analyst: Nalini Lall Date Analyzed: 2/4/2015
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: 1SS00069

Initial Pressure (psig): 0.47 Final Pressure (psig): 5.22

Canister Dilution Factor: 1.31

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.13	
7782-44-7	**Oxygen +**			
7440-37-1	**Argon**	**7.63**	0.13	
7727-37-9	**Nitrogen**	**59.0**	0.13	
630-08-0	Carbon Monoxide	ND	0.13	
74-82-8	**Methane**	**18.9**	0.13	
124-38-9	**Carbon Dioxide**	**14.4**	0.13	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128SQs-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-003

Test Code: EPA Method 3C Modified Date Collected: ########
Instrument ID: HP5890 II/GC1/TCD Date Received: ########
Analyst: Nalini Lall Date Analyzed: 2/4/2015
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: 1SS00175

Initial Pressure (psig): 0.53 Final Pressure (psig): 5.13

Canister Dilution Factor: 1.30

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	**Hydrogen**	**0.873**	0.13	
7782-44-7	**Oxygen +**			
7440-37-1	**Argon**	**18.6**	0.13	
7727-37-9	**Nitrogen**	**67.4**	0.13	
630-08-0	Carbon Monoxide	ND	0.13	
74-82-8	**Methane**	**5.02**	0.13	
124-38-9	**Carbon Dioxide**	**8.13**	0.13	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128Fs-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-004

Test Code: EPA Method 3C Modified Date Collected: ########
Instrument ID: HP5890 II/GC1/TCD Date Received: ########
Analyst: Nalini Lall Date Analyzed: 2/4/2015
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: 1SS00181

Initial Pressure (psig): 1.30 Final Pressure (psig): 5.16

Canister Dilution Factor: 1.24

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	**Hydrogen**	**9.81**	0.12	
7782-44-7	**Oxygen +**			
7440-37-1	**Argon**	**9.46**	0.12	
7727-37-9	**Nitrogen**	**35.1**	0.12	
630-08-0	Carbon Monoxide	ND	0.12	
74-82-8	**Methane**	**8.87**	0.12	
124-38-9	**Carbon Dioxide**	**36.6**	0.12	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127U1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-008

Test Code: EPA Method 3C Modified Date Collected: ########
Instrument ID: HP5890 II/GC1/TCD Date Received: ########
Analyst: Nalini Lall Date Analyzed: 2/4/2015
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: AS00301

Initial Pressure (psig): -5.12 Final Pressure (psig): 3.26

Canister Dilution Factor: 1.87

CAS #	Compound	Result %, v/v		MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen		ND	0.19	
7782-44-7	**Oxygen +**				
7440-37-1	**Argon**	**22.3**		0.19	
7727-37-9	**Nitrogen**	**77.6**		0.19	
630-08-0	Carbon Monoxide		ND	0.19	
74-82-8	Methane		ND	0.19	
124-38-9	Carbon Dioxide		ND	0.19	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-009

Test Code: EPA Method 3C Modified Date Collected: ########
Instrument ID: HP5890 II/GC1/TCD Date Received: ########
Analyst: Nalini Lall Date Analyzed: 2/4/2015
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: AS00506

Initial Pressure (psig): -2.21 Final Pressure (psig): 3.56

Canister Dilution Factor: 1.46

CAS #	Compound	Result %, v/v		MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen		ND	0.15	
7782-44-7	**Oxygen +**				
7440-37-1	**Argon**	**22.3**		0.15	
7727-37-9	**Nitrogen**	**77.7**		0.15	
630-08-0	Carbon Monoxide		ND	0.15	
74-82-8	Methane		ND	0.15	
124-38-9	Carbon Dioxide		ND	0.15	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127F-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-011

Test Code: EPA Method 3C Modified Date Collected: ########
Instrument ID: HP5890 II/GC1/TCD Date Received: ########
Analyst: Nalini Lall Date Analyzed: 2/4/2015
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: AS00866

Initial Pressure (psig): -6.01 Final Pressure (psig): 3.61

Canister Dilution Factor: 2.11

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.21	
7782-44-7	**Oxygen +**			
7440-37-1	**Argon**	**22.3**	0.21	
7727-37-9	**Nitrogen**	**77.7**	0.21	
630-08-0	Carbon Monoxide	ND	0.21	
74-82-8	Methane	ND	0.21	
124-38-9	Carbon Dioxide	ND	0.21	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127SQ-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-012

Test Code: EPA Method 3C Modified Date Collected: ########
Instrument ID: HP5890 II/GC1/TCD Date Received: ########
Analyst: Nalini Lall Date Analyzed: 2/4/2015
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: AS00544

Initial Pressure (psig): -1.89 Final Pressure (psig): 3.46

Canister Dilution Factor: 1.42

CAS #	Compound	Result %, v/v		MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen		ND	0.14	
7782-44-7	**Oxygen +**				
7440-37-1	**Argon**	**22.2**		0.14	
7727-37-9	**Nitrogen**	**77.7**		0.14	
630-08-0	Carbon Monoxide		ND	0.14	
74-82-8	Methane		ND	0.14	
124-38-9	Carbon Dioxide		ND	0.14	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127-SUMMA-B** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-013

Test Code: EPA Method 3C Modified Date Collected: ########
Instrument ID: HP5890 II/GC1/TCD Date Received: ########
Analyst: Nalini Lall Date Analyzed: 2/4/2015
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: AS00796

Canister Dilution Factor: 1.00

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.10	
7782-44-7	Oxygen +			
7440-37-1	Argon	ND	0.10	
7727-37-9	**Nitrogen**	**79.6**	0.10	
630-08-0	Carbon Monoxide	ND	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	Carbon Dioxide	ND	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127DUP10-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-014

Test Code: EPA Method 3C Modified Date Collected: ########
Instrument ID: HP5890 II/GC1/TCD Date Received: ########
Analyst: Nalini Lall Date Analyzed: 2/4/2015
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: AS00161

Initial Pressure (psig): -2.97 Final Pressure (psig): 3.49

Canister Dilution Factor: 1.55

CAS #	Compound	Result %, v/v		MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen		ND	0.16	
7782-44-7	**Oxygen +**				
7440-37-1	**Argon**	**22.3**		0.16	
7727-37-9	**Nitrogen**	**77.7**		0.16	
630-08-0	Carbon Monoxide		ND	0.16	
74-82-8	Methane		ND	0.16	
124-38-9	Carbon Dioxide		ND	0.16	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128U1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-015

Test Code: EPA Method 3C Modified Date Collected: ########
Instrument ID: HP5890 II/GC1/TCD Date Received: ########
Analyst: Nalini Lall Date Analyzed: 2/4/2015
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: AS00763

Initial Pressure (psig): 0.19 Final Pressure (psig): 3.41

Canister Dilution Factor: 1.22

CAS #	Compound	Result %, v/v		MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen		ND	0.12	
7782-44-7	**Oxygen +**				
7440-37-1	**Argon**	**22.2**		0.12	
7727-37-9	**Nitrogen**	**77.8**		0.12	
630-08-0	Carbon Monoxide		ND	0.12	
74-82-8	Methane		ND	0.12	
124-38-9	Carbon Dioxide		ND	0.12	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128D1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-016

Test Code: EPA Method 3C Modified Date Collected: ########
Instrument ID: HP5890 II/GC1/TCD Date Received: ########
Analyst: Nalini Lall Date Analyzed: 2/4/2015
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: AS00696

Initial Pressure (psig): -0.88 Final Pressure (psig): 3.55

Canister Dilution Factor: 1.32

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.13	
7782-44-7	**Oxygen +**			
7440-37-1	**Argon**	**22.2**	0.13	
7727-37-9	**Nitrogen**	**77.7**	0.13	
630-08-0	Carbon Monoxide	ND	0.13	
74-82-8	Methane	ND	0.13	
124-38-9	Carbon Dioxide	ND	0.13	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128N-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-017

Test Code: EPA Method 3C Modified Date Collected: ########
Instrument ID: HP5890 II/GC1/TCD Date Received: ########
Analyst: Nalini Lall Date Analyzed: 2/4/2015
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: AS00598

Initial Pressure (psig): 0.55 Final Pressure (psig): 3.44

Canister Dilution Factor: 1.19

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.12	
7782-44-7	**Oxygen +**			
7440-37-1	**Argon**	**22.1**	0.12	
7727-37-9	**Nitrogen**	**77.8**	0.12	
630-08-0	Carbon Monoxide	ND	0.12	
74-82-8	Methane	ND	0.12	
124-38-9	Carbon Dioxide	ND	0.12	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQ-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-018

Test Code: EPA Method 3C Modified Date Collected: ########
Instrument ID: HP5890 II/GC1/TCD Date Received: ########
Analyst: Nalini Lall Date Analyzed: 2/4/2015
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: AS00798

Initial Pressure (psig): -0.32 Final Pressure (psig): 3.52

Canister Dilution Factor: 1.27

CAS #	Compound	Result %, v/v		MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen		ND	0.13	
7782-44-7	**Oxygen +**				
7440-37-1	**Argon**	**22.2**		0.13	
7727-37-9	**Nitrogen**	**77.8**		0.13	
630-08-0	Carbon Monoxide		ND	0.13	
74-82-8	Methane		ND	0.13	
124-38-9	Carbon Dioxide		ND	0.13	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128DUP11-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-019

Test Code: EPA Method 3C Modified Date Collected: ########
Instrument ID: HP5890 II/GC1/TCD Date Received: ########
Analyst: Nalini Lall Date Analyzed: 2/4/2015
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: AS00728

Initial Pressure (psig): -1.06 Final Pressure (psig): 3.47

Canister Dilution Factor: 1.33

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.13	
7782-44-7	**Oxygen +**			
7440-37-1	**Argon**	**22.2**	0.13	
7727-37-9	**Nitrogen**	**77.8**	0.13	
630-08-0	Carbon Monoxide	ND	0.13	
74-82-8	Methane	ND	0.13	
124-38-9	Carbon Dioxide	ND	0.13	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150204-MB

Test Code: EPA Method 3C Modified Date Collected: NA
Instrument ID: HP5890 II/GC1/TCD Date Received: NA
Analyst: Nalini Lall Date Analyzed: 2/04/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.10	
7782-44-7	Oxygen +			
7440-37-1	Argon	ND	0.10	
7727-37-9	Nitrogen	ND	0.10	
630-08-0	Carbon Monoxide	ND	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	Carbon Dioxide	ND	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150204-LCS

Test Code: EPA Method 3C Modified Date Collected: NA
Instrument ID: HP5890 II/GC1/TCD Date Received: NA
Analyst: Nalini Lall Date Analyzed: 2/04/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount ppmV	Result ppmV	% Recovery	ALS Acceptance Limits	Data Qualifier
1333-74-0	Hydrogen	40,000	**41,200**	**103**	83-114	
7782-44-7	Oxygen +					
7440-37-1	Argon	50,000	**54,300**	**109**	84-121	
7727-37-9	Nitrogen	50,000	**53,400**	**107**	88-122	
630-08-0	Carbon Monoxide	50,000	**54,000**	**108**	87-118	
74-82-8	Methane	40,000	**42,300**	**106**	85-116	
124-38-9	Carbon Dioxide	50,000	**52,300**	**105**	84-117	

Method Path : I:\GC01\METHODS\
Method File : 3C112914.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Mon Dec 01 13:41:04 2014
Response Via : Initial Calibration

Calibration Files
1 =11291412.D 2 =11291410.D 3 =11291413.D
4 =11291414.D 5 =11291415.D 6 =11291421.D

	Compound	1	2	3	4	5	6	Avg	%RSD
1)	Hydrogen	1.258	1.246	1.311	1.308	1.519		1.328 E1	8.32
2)	Oxygen	1.420	1.594	1.603	1.604	1.561	1.649	1.572 E1	5.07
3)	Nitrogen	2.029	1.951	1.833	1.829	1.803		1.829 E1	9.36
4)	Carbon Monoxide	1.712	1.637	1.814	1.800	1.763		1.745 E1	4.14
5)	Methane	1.370	1.329	1.353	1.359	1.332		1.348 E1	1.17
6)	Carbon Dioxide	2.104	2.103	2.082	2.080	2.018		2.102 E1	3.20

(#) = Out of Range ### Number of calibration levels exceeded format ###

Modified EPA Method 3C Daily QC Summary

Client : Stantec Consulting Services, Inc.
Analyst : nl
Method Name : EPA 3C, ASTM D 1946-90, VOA-EPA3C

Instrument : GC01
Date Analyzed : 2/4/2015

RT Summaries and QC Check (minutes)

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	File ID	Time
ICAL Mean RT	**0.708**	**2.188**	**2.368**	**3.076**	**5.045**	**6.707**		
RT Windows (+/- min)	**0.072**	**0.133**	**0.146**	**0.034**	**0.130**	**0.145**		
std s30-12161401	0.698	2.196	2.372	3.058	5.049	6.710	02041501.D	08:01
+/- 0.33min of ICAL Mean RT	Pass	Pass	Pass	Pass	Pass	Pass		
mb							02041502.D	08:23
lab air		2.144 Pass	2.281 Pass			6.719 Pass	02041503.D	08:42
0365-001	0.698 Pass	2.169 Pass	2.302 Pass		5.020 Pass	6.675 Pass	02041504.D	08:58
0365-002		2.172 Pass	2.303 Pass		5.034 Pass	6.701 Pass	02041505.D	09:31
0365-003	0.699 Pass	2.146 Pass	2.285 Pass		5.045 Pass	6.705 Pass	02041506.D	09:48
0365-004	0.694 Pass	2.180 Pass	2.336 Pass	3.074 Pass	5.045 Pass	6.677 Pass	02041507.D	10:09
0365-008		2.159 Pass	2.307 Pass			6.725 Pass	02041508.D	10:32
0365-009		2.156 Pass	2.297 Pass			6.713 Pass	02041509.D	10:53
0365-011		2.178 Pass	2.327 Pass			6.727 Pass	02041513.D	12:26
lcs s30-11101403	0.697 Pass	2.195 Pass	2.372 Pass	3.059 Pass	5.051 Pass	6.713 Pass	02041515.D	13:57
lcsd s30-11101403	0.696 Pass	2.193 Pass	2.369 Pass	3.056 Pass	5.048 Pass	6.711 Pass	02041516.D	14:15
std s30-12161401	0.700 Pass	2.199 Pass	2.374 Pass	3.060 Pass	5.051 Pass	6.713 Pass	02041517.D	14:37
0365-012		2.152 Pass	2.293 Pass			6.722 Pass	02041518.D	14:56
0365-013		2.200 Pass	2.383 Pass				02041519.D	15:20
0365-014		2.158 Pass	2.300 Pass			6.727 Pass	02041520.D	15:52
0365-015		2.138 Pass	2.275 Pass			6.719 Pass	02041521.D	16:10
0365-016		2.147 Pass	2.286 Pass			6.721 Pass	02041522.D	16:29
0365-017		2.142 Pass	2.279 Pass			6.730 Pass	02041523.D	16:51
0365-018		2.142 Pass	2.281 Pass			6.729 Pass	02041524.D	17:16
0365-019		2.132 Pass	2.271 Pass			6.713 Pass	02041525.D	17:33
std s30-12161401	0.695 Pass	2.189 Pass	2.365 Pass	3.052 Pass	5.047 Pass	6.710 Pass	02041526.D	17:49

Continuing Calibration Standards Summary (ppm)

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	File ID	Time
ACTUAL	39980.0	40030.0	50000.0	49990.0	40020.0	50040.0		
CCV Criteria (+/- %D)	**15.0%**	**10.0%**	**10.0%**	**10.0%**	**10.0%**	**10.0%**		
std s30-12161401	38818.4 2.9%	40622.1 1.5%	49891.9 0.2%	51035.8 2.1%	39906.8 0.3%	49067.2 1.9%	02041501.D	08:01
std s30-12161401	37713.4 5.7%	41224.4 3.0%	54216.9 8.4%	49444.5 1.1%	38421.2 4.0%	47775.1 4.5%	02041517.D	14:37
std s30-12161401	38969.6 2.5%	41044.7 2.5%	51428.4 2.9%	50944.5 1.9%	39662.0 0.9%	48906.0 2.3%	02041526.D	17:49
	#####	#####	#####	#####	#####	#####		

Lab Dup Summary (ppm, without DF correction and nomalization)

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	File ID	Time

LCS / LCS Dup Summary (ppm, without DF correction)

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	File ID	Time
LCS Actual Conc. (ppm)	40000.0	50000.0	50000.0	50000.0	40000.0	50000.0		
LCS Criteria (% Range)	**83%-114%**	**84%-121%**	**88%-122%**	**87%-118%**	**85%-116%**	**84%-117%**		
lcs s30-11101403	41220.6	54257.3	53416.9	53952.0	42250.2	52262.2	02041515.D	13:57
LCS % Recovery	103% Pass	109% Pass	107% Pass	108% Pass	106% Pass	105% Pass		
lcsd s30-11101403	40780.9	53917.7	53433.6	53464.2	41950.4	51840.8	02041516.D	14:15
LCS % Recovery	102% Pass	108% Pass	107% Pass	107% Pass	105% Pass	104% Pass		
Duplicate % RPD	1.1%	0.6%	0.0%	0.9%	0.7%	0.8%		
Duplicate Criteria % RPD	**16%** Pass	**16%** Pass	**21%** Pass	**16%** Pass	**16%** Pass	**16%** Pass		

Lab Air QC Summary

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxid	Methane	Carbon Dioxide	Lab Air Criteria Total (90%-110%)
lab air		213825.6	753124.5			507.7	96.7% Pass
Lab Air Normalized (%)		22.10%	77.84%			0.05%	100.0%

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128Ns-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-001

Test Code:	ASTM D 5504-12	Date Collected:	1/28/15
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	16:24
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	1.0 L Silonite Summa Canister	Date Analyzed:	2/2/15
Test Notes:		Time Analyzed:	12:02
Container ID:	1SS00036	Volume(s) Analyzed:	0.50 ml(s)

Initial Pressure (psig): 0.46 Final Pressure (psig): 6.67

Canister Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	20	5.9	ND	14	4.2	
463-58-1	Carbonyl Sulfide	ND	35	NA	ND	14	NA	
74-93-1	Methyl Mercaptan	ND	28	8.9	ND	14	4.5	
75-08-1	Ethyl Mercaptan	ND	36	11	ND	14	4.5	
75-18-3	Dimethyl Sulfide	**28,000**	36	11	**11,000**	14	4.5	
75-15-0	Carbon Disulfide	ND	22	NA	ND	7.1	NA	
75-33-2	Isopropyl Mercaptan	ND	44	14	ND	14	4.5	
75-66-1	tert-Butyl Mercaptan	ND	52	17	ND	14	4.5	
107-03-9	n-Propyl Mercaptan	ND	44	14	ND	14	4.5	
624-89-5	Ethyl Methyl Sulfide	**120**	44	14	**40**	14	4.5	
110-02-1	Thiophene	**630**	49	16	**180**	14	4.5	
513-44-0	Isobutyl Mercaptan	ND	52	17	ND	14	4.5	
352-93-2	Diethyl Sulfide	ND	52	17	ND	14	4.5	
109-79-5	n-Butyl Mercaptan	ND	52	17	ND	14	4.5	
624-92-0	Dimethyl Disulfide	**2,400**	27	8.7	**620**	7.1	2.3	
616-44-4	3-Methylthiophene	ND	57	18	ND	14	4.5	
110-01-0	Tetrahydrothiophene	ND	51	16	ND	14	4.5	
638-02-8	2,5-Dimethylthiophene	ND	65	21	ND	14	4.5	
872-55-9	2-Ethylthiophene	ND	65	21	ND	14	4.5	
110-81-6	Diethyl Disulfide	ND	35	11	ND	7.1	2.3	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQs-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-002

Test Code:	ASTM D 5504-12	Date Collected:	1/28/15
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	14:10
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	1.0 L Silonite Summa Canister	Date Analyzed:	2/2/15
Test Notes:		Time Analyzed:	13:57
Container ID:	1SS00069	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): 0.47 Final Pressure (psig): 5.22

Canister Dilution Factor: 1.31

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.1	2.7	ND	6.6	2.0	
463-58-1	Carbonyl Sulfide	ND	16	NA	ND	6.6	NA	
74-93-1	Methyl Mercaptan	ND	13	4.1	ND	6.6	2.1	
75-08-1	Ethyl Mercaptan	ND	17	5.3	ND	6.6	2.1	
75-18-3	Dimethyl Sulfide	ND	17	5.3	ND	6.6	2.1	
75-15-0	Carbon Disulfide	ND	10	NA	ND	3.3	NA	
75-33-2	Isopropyl Mercaptan	ND	20	6.5	ND	6.6	2.1	
75-66-1	tert-Butyl Mercaptan	ND	24	7.7	ND	6.6	2.1	
107-03-9	n-Propyl Mercaptan	ND	20	6.5	ND	6.6	2.1	
624-89-5	Ethyl Methyl Sulfide	ND	20	6.5	ND	6.6	2.1	
110-02-1	Thiophene	ND	23	7.2	ND	6.6	2.1	
513-44-0	Isobutyl Mercaptan	ND	24	7.7	ND	6.6	2.1	
352-93-2	Diethyl Sulfide	ND	24	7.7	ND	6.6	2.1	
109-79-5	n-Butyl Mercaptan	ND	24	7.7	ND	6.6	2.1	
624-92-0	Dimethyl Disulfide	ND	13	4.0	ND	3.3	1.0	
616-44-4	3-Methylthiophene	ND	26	8.4	ND	6.6	2.1	
110-01-0	Tetrahydrothiophene	ND	24	7.6	ND	6.6	2.1	
638-02-8	2,5-Dimethylthiophene	ND	30	9.6	ND	6.6	2.1	
872-55-9	2-Ethylthiophene	ND	30	9.6	ND	6.6	2.1	
110-81-6	Diethyl Disulfide	ND	16	5.2	ND	3.3	1.0	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128SQs-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-003

Test Code:	ASTM D 5504-12	Date Collected:	1/28/15
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	17:22
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	1.0 L Silonite Summa Canister	Date Analyzed:	2/2/15
Test Notes:		Time Analyzed:	14:18
Container ID:	1SS00175	Volume(s) Analyzed:	0.10 ml(s)

Initial Pressure (psig): 0.53 Final Pressure (psig): 5.13

Canister Dilution Factor: 1.30

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	91	27	ND	65	20	
463-58-1	Carbonyl Sulfide	ND	160	NA	ND	65	NA	
74-93-1	Methyl Mercaptan	**730**	130	41	**370**	65	21	
75-08-1	Ethyl Mercaptan	ND	170	53	ND	65	21	
75-18-3	Dimethyl Sulfide	**51,000**	170	53	**20,000**	65	21	
75-15-0	Carbon Disulfide	ND	100	NA	ND	33	NA	
75-33-2	Isopropyl Mercaptan	ND	200	65	ND	65	21	
75-66-1	tert-Butyl Mercaptan	ND	240	77	ND	65	21	
107-03-9	n-Propyl Mercaptan	ND	200	65	ND	65	21	
624-89-5	Ethyl Methyl Sulfide	**730**	200	65	**230**	65	21	
110-02-1	Thiophene	**1,600**	220	72	**470**	65	21	
513-44-0	Isobutyl Mercaptan	ND	240	77	ND	65	21	
352-93-2	Diethyl Sulfide	ND	240	77	ND	65	21	
109-79-5	n-Butyl Mercaptan	**300**	240	77	**82**	65	21	
624-92-0	Dimethyl Disulfide	**9,800**	130	40	**2,600**	33	10	
616-44-4	3-Methylthiophene	ND	260	83	ND	65	21	
110-01-0	Tetrahydrothiophene	**240**	230	75	**67**	65	21	
638-02-8	2,5-Dimethylthiophene	ND	300	95	ND	65	21	
872-55-9	2-Ethylthiophene	ND	300	95	ND	65	21	
110-81-6	Diethyl Disulfide	ND	160	52	ND	33	10	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128Fs-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-004

Test Code:	ASTM D 5504-12	Date Collected:	1/28/15
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	13:18
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	1.0 L Silonite Summa Canister	Date Analyzed:	2/2/15
Test Notes:		Time Analyzed:	11:31
Container ID:	1SS00181	Volume(s) Analyzed:	0.010 ml(s)

Initial Pressure (psig): 1.30 Final Pressure (psig): 5.16

Canister Dilution Factor: 1.24

CAS #	Compound	Result µg/m³		MRL µg/m³	MDL µg/m³	Result ppbV		MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	**34,000**		860	260	**24,000**		620	190	
463-58-1	Carbonyl Sulfide		ND	1,500	NA		ND	620	NA	
74-93-1	Methyl Mercaptan	**260,000**		1,200	390	**130,000**		620	200	
75-08-1	Ethyl Mercaptan	**1,900**		1,600	500	**730**		620	200	
75-18-3	Dimethyl Sulfide	**990,000**		1,600	500	**390,000**		620	200	
75-15-0	Carbon Disulfide		ND	960	NA		ND	310	NA	
75-33-2	Isopropyl Mercaptan		ND	1,900	620		ND	620	200	
75-66-1	tert-Butyl Mercaptan		ND	2,300	730		ND	620	200	
107-03-9	n-Propyl Mercaptan		ND	1,900	620		ND	620	200	
624-89-5	Ethyl Methyl Sulfide	**7,300**		1,900	620	**2,300**		620	200	
110-02-1	Thiophene	**18,000**		2,100	680	**5,200**		620	200	
513-44-0	Isobutyl Mercaptan		ND	2,300	730		ND	620	200	
352-93-2	Diethyl Sulfide		ND	2,300	730		ND	620	200	
109-79-5	n-Butyl Mercaptan	**3,100**		2,300	730	**830**		620	200	
624-92-0	Dimethyl Disulfide	**79,000**		1,200	380	**21,000**		310	99	
616-44-4	3-Methylthiophene		ND	2,500	800		ND	620	200	
110-01-0	Tetrahydrothiophene	**3,300**		2,200	720	**900**		620	200	
638-02-8	2,5-Dimethylthiophene		ND	2,800	910		ND	620	200	
872-55-9	2-Ethylthiophene		ND	2,800	910		ND	620	200	
110-81-6	Diethyl Disulfide		ND	1,500	500		ND	310	99	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-005

Test Code:	ASTM D 5504-12	Date Collected:	1/28/15
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	17:30
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	1.0 L Silonite Summa Canister	Date Analyzed:	2/2/15
Test Notes:		Time Analyzed:	14:41
Container ID:	1SS00168	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -0.04 Final Pressure (psig): 5.34

Canister Dilution Factor: 1.37

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.5	2.9	ND	6.9	2.1	
463-58-1	Carbonyl Sulfide	ND	17	NA	ND	6.9	NA	
74-93-1	Methyl Mercaptan	ND	13	4.3	ND	6.9	2.2	
75-08-1	Ethyl Mercaptan	ND	17	5.6	ND	6.9	2.2	
75-18-3	Dimethyl Sulfide	ND	17	5.6	ND	6.9	2.2	
75-15-0	Carbon Disulfide	ND	11	NA	ND	3.4	NA	
75-33-2	Isopropyl Mercaptan	ND	21	6.8	ND	6.9	2.2	
75-66-1	tert-Butyl Mercaptan	ND	25	8.1	ND	6.9	2.2	
107-03-9	n-Propyl Mercaptan	ND	21	6.8	ND	6.9	2.2	
624-89-5	Ethyl Methyl Sulfide	ND	21	6.8	ND	6.9	2.2	
110-02-1	Thiophene	ND	24	7.5	ND	6.9	2.2	
513-44-0	Isobutyl Mercaptan	ND	25	8.1	ND	6.9	2.2	
352-93-2	Diethyl Sulfide	ND	25	8.1	ND	6.9	2.2	
109-79-5	n-Butyl Mercaptan	ND	25	8.1	ND	6.9	2.2	
624-92-0	Dimethyl Disulfide	ND	13	4.2	ND	3.4	1.1	
616-44-4	3-Methylthiophene	ND	27	8.8	ND	6.9	2.2	
110-01-0	Tetrahydrothiophene	ND	25	7.9	ND	6.9	2.2	
638-02-8	2,5-Dimethylthiophene	ND	31	10	ND	6.9	2.2	
872-55-9	2-Ethylthiophene	ND	31	10	ND	6.9	2.2	
110-81-6	Diethyl Disulfide	ND	17	5.5	ND	3.4	1.1	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **129GRAB2D** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-006

Test Code:	ASTM D 5504-12	Date Collected:	1/29/15
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	11:00
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	1.0 L Silonite Summa Canister	Date Analyzed:	2/2/15
Test Notes:		Time Analyzed:	15:18
Container ID:	1SS00088	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -0.18 Final Pressure (psig): 5.68

Canister Dilution Factor: 1.40

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.8	2.9	ND	7.0	2.1	
463-58-1	Carbonyl Sulfide	ND	17	NA	ND	7.0	NA	
74-93-1	Methyl Mercaptan	ND	14	4.4	ND	7.0	2.2	
75-08-1	Ethyl Mercaptan	ND	18	5.7	ND	7.0	2.2	
75-18-3	Dimethyl Sulfide	ND	18	5.7	ND	7.0	2.2	
75-15-0	Carbon Disulfide	ND	11	NA	ND	3.5	NA	
75-33-2	Isopropyl Mercaptan	ND	22	7.0	ND	7.0	2.2	
75-66-1	tert-Butyl Mercaptan	ND	26	8.3	ND	7.0	2.2	
107-03-9	n-Propyl Mercaptan	ND	22	7.0	ND	7.0	2.2	
624-89-5	Ethyl Methyl Sulfide	ND	22	7.0	ND	7.0	2.2	
110-02-1	Thiophene	ND	24	7.7	ND	7.0	2.2	
513-44-0	Isobutyl Mercaptan	ND	26	8.3	ND	7.0	2.2	
352-93-2	Diethyl Sulfide	ND	26	8.3	ND	7.0	2.2	
109-79-5	n-Butyl Mercaptan	ND	26	8.3	ND	7.0	2.2	
624-92-0	Dimethyl Disulfide	ND	13	4.3	ND	3.5	1.1	
616-44-4	3-Methylthiophene	ND	28	9.0	ND	7.0	2.2	
110-01-0	Tetrahydrothiophene	ND	25	8.1	ND	7.0	2.2	
638-02-8	2,5-Dimethylthiophene	ND	32	10	ND	7.0	2.2	
872-55-9	2-Ethylthiophene	ND	32	10	ND	7.0	2.2	
110-81-6	Diethyl Disulfide	ND	17	5.6	ND	3.5	1.1	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **129GRAB3U** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-007

Test Code:	ASTM D 5504-12	Date Collected:	1/29/15
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	11:20
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	1.0 L Silonite Summa Canister	Date Analyzed:	2/2/15
Test Notes:		Time Analyzed:	15:02
Container ID:	1SS00024	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -0.11 Final Pressure (psig): 5.12

Canister Dilution Factor: 1.36

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.5	2.8	ND	6.8	2.0	
463-58-1	Carbonyl Sulfide	ND	17	NA	ND	6.8	NA	
74-93-1	Methyl Mercaptan	ND	13	4.3	ND	6.8	2.2	
75-08-1	Ethyl Mercaptan	ND	17	5.5	ND	6.8	2.2	
75-18-3	Dimethyl Sulfide	ND	17	5.5	ND	6.8	2.2	
75-15-0	Carbon Disulfide	ND	11	NA	ND	3.4	NA	
75-33-2	Isopropyl Mercaptan	ND	21	6.8	ND	6.8	2.2	
75-66-1	tert-Butyl Mercaptan	ND	25	8.0	ND	6.8	2.2	
107-03-9	n-Propyl Mercaptan	ND	21	6.8	ND	6.8	2.2	
624-89-5	Ethyl Methyl Sulfide	ND	21	6.8	ND	6.8	2.2	
110-02-1	Thiophene	ND	23	7.5	ND	6.8	2.2	
513-44-0	Isobutyl Mercaptan	ND	25	8.0	ND	6.8	2.2	
352-93-2	Diethyl Sulfide	ND	25	8.0	ND	6.8	2.2	
109-79-5	n-Butyl Mercaptan	ND	25	8.0	ND	6.8	2.2	
624-92-0	Dimethyl Disulfide	ND	13	4.2	ND	3.4	1.1	
616-44-4	3-Methylthiophene	ND	27	8.7	ND	6.8	2.2	
110-01-0	Tetrahydrothiophene	ND	25	7.8	ND	6.8	2.2	
638-02-8	2,5-Dimethylthiophene	ND	31	10	ND	6.8	2.2	
872-55-9	2-Ethylthiophene	ND	31	10	ND	6.8	2.2	
110-81-6	Diethyl Disulfide	ND	17	5.4	ND	3.4	1.1	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127U1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-008

Test Code:	ASTM D 5504-12	Date Collected:	1/27/15
Instrument ID:	Agilent 6890A/GC13/SCD	Time Collected:	17:45
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	2/3/15
Test Notes:		Time Analyzed:	08:56
Container ID:	AS00301	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -5.12 Final Pressure (psig): 3.26

Canister Dilution Factor: 1.87

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	13	3.9	ND	9.4	2.8	
463-58-1	Carbonyl Sulfide	ND	23	NA	ND	9.4	NA	
74-93-1	Methyl Mercaptan	ND	18	5.9	ND	9.4	3.0	
75-08-1	Ethyl Mercaptan	ND	24	7.6	ND	9.4	3.0	
75-18-3	Dimethyl Sulfide	ND	24	7.6	ND	9.4	3.0	
75-15-0	Carbon Disulfide	ND	15	NA	ND	4.7	NA	
75-33-2	Isopropyl Mercaptan	ND	29	9.3	ND	9.4	3.0	
75-66-1	tert-Butyl Mercaptan	ND	34	11	ND	9.4	3.0	
107-03-9	n-Propyl Mercaptan	ND	29	9.3	ND	9.4	3.0	
624-89-5	Ethyl Methyl Sulfide	ND	29	9.3	ND	9.4	3.0	
110-02-1	Thiophene	ND	32	10	ND	9.4	3.0	
513-44-0	Isobutyl Mercaptan	ND	34	11	ND	9.4	3.0	
352-93-2	Diethyl Sulfide	ND	34	11	ND	9.4	3.0	
109-79-5	n-Butyl Mercaptan	ND	34	11	ND	9.4	3.0	
624-92-0	Dimethyl Disulfide	ND	18	5.8	ND	4.7	1.5	
616-44-4	3-Methylthiophene	ND	38	12	ND	9.4	3.0	
110-01-0	Tetrahydrothiophene	ND	34	11	ND	9.4	3.0	
638-02-8	2,5-Dimethylthiophene	ND	43	14	ND	9.4	3.0	
872-55-9	2-Ethylthiophene	ND	43	14	ND	9.4	3.0	
110-81-6	Diethyl Disulfide	ND	23	7.5	ND	4.7	1.5	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-009

Test Code:	ASTM D 5504-12	Date Collected:	1/27/15
Instrument ID:	Agilent 6890A/GC13/SCD	Time Collected:	18:27
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	2/3/15
Test Notes:		Time Analyzed:	08:40
Container ID:	AS00506	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -2.21 Final Pressure (psig): 3.56

Canister Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.1	ND	7.3	2.2	
463-58-1	Carbonyl Sulfide	ND	18	NA	ND	7.3	NA	
74-93-1	Methyl Mercaptan	ND	14	4.6	ND	7.3	2.3	
75-08-1	Ethyl Mercaptan	ND	19	5.9	ND	7.3	2.3	
75-18-3	Dimethyl Sulfide	ND	19	5.9	ND	7.3	2.3	
75-15-0	Carbon Disulfide	ND	11	NA	ND	3.7	NA	
75-33-2	Isopropyl Mercaptan	ND	23	7.3	ND	7.3	2.3	
75-66-1	tert-Butyl Mercaptan	ND	27	8.6	ND	7.3	2.3	
107-03-9	n-Propyl Mercaptan	ND	23	7.3	ND	7.3	2.3	
624-89-5	Ethyl Methyl Sulfide	ND	23	7.3	ND	7.3	2.3	
110-02-1	Thiophene	ND	25	8.0	ND	7.3	2.3	
513-44-0	Isobutyl Mercaptan	ND	27	8.6	ND	7.3	2.3	
352-93-2	Diethyl Sulfide	ND	27	8.6	ND	7.3	2.3	
109-79-5	n-Butyl Mercaptan	ND	27	8.6	ND	7.3	2.3	
624-92-0	Dimethyl Disulfide	ND	14	4.5	ND	3.7	1.2	
616-44-4	3-Methylthiophene	ND	29	9.4	ND	7.3	2.3	
110-01-0	Tetrahydrothiophene	ND	26	8.4	ND	7.3	2.3	
638-02-8	2,5-Dimethylthiophene	ND	33	11	ND	7.3	2.3	
872-55-9	2-Ethylthiophene	ND	33	11	ND	7.3	2.3	
110-81-6	Diethyl Disulfide	ND	18	5.8	ND	3.7	1.2	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D2-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-010

Test Code:	ASTM D 5504-12	Date Collected:	1/27/15
Instrument ID:	Agilent 6890A/GC13/SCD	Time Collected:	18:32
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	2/3/15
Test Notes:		Time Analyzed:	09:12
Container ID:	AS00224	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.67 Final Pressure (psig): 3.29

Canister Dilution Factor: 1.38

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.6	2.9	ND	6.9	2.1	
463-58-1	Carbonyl Sulfide	ND	17	NA	ND	6.9	NA	
74-93-1	Methyl Mercaptan	ND	14	4.3	ND	6.9	2.2	
75-08-1	Ethyl Mercaptan	ND	18	5.6	ND	6.9	2.2	
75-18-3	Dimethyl Sulfide	ND	18	5.6	ND	6.9	2.2	
75-15-0	Carbon Disulfide	ND	11	NA	ND	3.5	NA	
75-33-2	Isopropyl Mercaptan	ND	21	6.9	ND	6.9	2.2	
75-66-1	tert-Butyl Mercaptan	ND	25	8.1	ND	6.9	2.2	
107-03-9	n-Propyl Mercaptan	ND	21	6.9	ND	6.9	2.2	
624-89-5	Ethyl Methyl Sulfide	ND	21	6.9	ND	6.9	2.2	
110-02-1	Thiophene	ND	24	7.6	ND	6.9	2.2	
513-44-0	Isobutyl Mercaptan	ND	25	8.1	ND	6.9	2.2	
352-93-2	Diethyl Sulfide	ND	25	8.1	ND	6.9	2.2	
109-79-5	n-Butyl Mercaptan	ND	25	8.1	ND	6.9	2.2	
624-92-0	Dimethyl Disulfide	ND	13	4.3	ND	3.5	1.1	
616-44-4	3-Methylthiophene	ND	28	8.9	ND	6.9	2.2	
110-01-0	Tetrahydrothiophene	ND	25	8.0	ND	6.9	2.2	
638-02-8	2,5-Dimethylthiophene	ND	32	10	ND	6.9	2.2	
872-55-9	2-Ethylthiophene	ND	32	10	ND	6.9	2.2	
110-81-6	Diethyl Disulfide	ND	17	5.5	ND	3.5	1.1	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127F-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-011

Test Code: ASTM D 5504-12 Date Collected: 1/27/15
Instrument ID: Agilent 6890A/GC13/SCD Time Collected: 18:23
Analyst: Mike Conejo Date Received: 1/30/15
Sample Type: 6.0 L Silonite Canister Date Analyzed: 2/3/15
Test Notes: Time Analyzed: 09:30
Container ID: AS00866 Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -6.01 Final Pressure (psig): 3.61

Canister Dilution Factor: 2.11

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	15	4.4	ND	11	3.2	
463-58-1	Carbonyl Sulfide	ND	26	NA	ND	11	NA	
74-93-1	Methyl Mercaptan	ND	21	6.6	ND	11	3.4	
75-08-1	Ethyl Mercaptan	ND	27	8.6	ND	11	3.4	
75-18-3	Dimethyl Sulfide	ND	27	8.6	ND	11	3.4	
75-15-0	Carbon Disulfide	ND	16	NA	ND	5.3	NA	
75-33-2	Isopropyl Mercaptan	ND	33	11	ND	11	3.4	
75-66-1	tert-Butyl Mercaptan	ND	39	12	ND	11	3.4	
107-03-9	n-Propyl Mercaptan	ND	33	11	ND	11	3.4	
624-89-5	Ethyl Methyl Sulfide	ND	33	11	ND	11	3.4	
110-02-1	Thiophene	ND	36	12	ND	11	3.4	
513-44-0	Isobutyl Mercaptan	ND	39	12	ND	11	3.4	
352-93-2	Diethyl Sulfide	ND	39	12	ND	11	3.4	
109-79-5	n-Butyl Mercaptan	ND	39	12	ND	11	3.4	
624-92-0	Dimethyl Disulfide	ND	20	6.5	ND	5.3	1.7	
616-44-4	3-Methylthiophene	ND	42	14	ND	11	3.4	
110-01-0	Tetrahydrothiophene	ND	38	12	ND	11	3.4	
638-02-8	2,5-Dimethylthiophene	ND	48	15	ND	11	3.4	
872-55-9	2-Ethylthiophene	ND	48	15	ND	11	3.4	
110-81-6	Diethyl Disulfide	ND	26	8.4	ND	5.3	1.7	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127SQ-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-012

Test Code:	ASTM D 5504-12	Date Collected:	1/27/15
Instrument ID:	Agilent 6890A/GC13/SCD	Time Collected:	18:10
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	2/3/15
Test Notes:		Time Analyzed:	10:04
Container ID:	AS00544	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.89 Final Pressure (psig): 3.46

Canister Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.9	3.0	ND	7.1	2.1	
463-58-1	Carbonyl Sulfide	ND	17	NA	ND	7.1	NA	
74-93-1	Methyl Mercaptan	ND	14	4.5	ND	7.1	2.3	
75-08-1	Ethyl Mercaptan	ND	18	5.8	ND	7.1	2.3	
75-18-3	Dimethyl Sulfide	ND	18	5.8	ND	7.1	2.3	
75-15-0	Carbon Disulfide	ND	11	NA	ND	3.6	NA	
75-33-2	Isopropyl Mercaptan	ND	22	7.1	ND	7.1	2.3	
75-66-1	tert-Butyl Mercaptan	ND	26	8.4	ND	7.1	2.3	
107-03-9	n-Propyl Mercaptan	ND	22	7.1	ND	7.1	2.3	
624-89-5	Ethyl Methyl Sulfide	ND	22	7.1	ND	7.1	2.3	
110-02-1	Thiophene	ND	24	7.8	ND	7.1	2.3	
513-44-0	Isobutyl Mercaptan	ND	26	8.4	ND	7.1	2.3	
352-93-2	Diethyl Sulfide	ND	26	8.4	ND	7.1	2.3	
109-79-5	n-Butyl Mercaptan	ND	26	8.4	ND	7.1	2.3	
624-92-0	Dimethyl Disulfide	ND	14	4.4	ND	3.6	1.1	
616-44-4	3-Methylthiophene	ND	28	9.1	ND	7.1	2.3	
110-01-0	Tetrahydrothiophene	ND	26	8.2	ND	7.1	2.3	
638-02-8	2,5-Dimethylthiophene	ND	33	10	ND	7.1	2.3	
872-55-9	2-Ethylthiophene	ND	33	10	ND	7.1	2.3	
110-81-6	Diethyl Disulfide	ND	18	5.7	ND	3.6	1.1	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127-SUMMA-B** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-013

Test Code:	ASTM D 5504-12	Date Collected:	1/27/15
Instrument ID:	Agilent 6890A/GC13/SCD	Time Collected:	16:00
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	2/3/15
Test Notes:		Time Analyzed:	09:45
Container ID:	AS00796	Volume(s) Analyzed:	1.0 ml(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	2.1	ND	5.0	1.5	
463-58-1	Carbonyl Sulfide	ND	12	NA	ND	5.0	NA	
74-93-1	Methyl Mercaptan	ND	9.8	3.1	ND	5.0	1.6	
75-08-1	Ethyl Mercaptan	ND	13	4.1	ND	5.0	1.6	
75-18-3	Dimethyl Sulfide	ND	13	4.1	ND	5.0	1.6	
75-15-0	Carbon Disulfide	ND	7.8	NA	ND	2.5	NA	
75-33-2	Isopropyl Mercaptan	ND	16	5.0	ND	5.0	1.6	
75-66-1	tert-Butyl Mercaptan	ND	18	5.9	ND	5.0	1.6	
107-03-9	n-Propyl Mercaptan	ND	16	5.0	ND	5.0	1.6	
624-89-5	Ethyl Methyl Sulfide	ND	16	5.0	ND	5.0	1.6	
110-02-1	Thiophene	ND	17	5.5	ND	5.0	1.6	
513-44-0	Isobutyl Mercaptan	ND	18	5.9	ND	5.0	1.6	
352-93-2	Diethyl Sulfide	ND	18	5.9	ND	5.0	1.6	
109-79-5	n-Butyl Mercaptan	ND	18	5.9	ND	5.0	1.6	
624-92-0	Dimethyl Disulfide	ND	9.6	3.1	ND	2.5	0.80	
616-44-4	3-Methylthiophene	ND	20	6.4	ND	5.0	1.6	
110-01-0	Tetrahydrothiophene	ND	18	5.8	ND	5.0	1.6	
638-02-8	2,5-Dimethylthiophene	ND	23	7.3	ND	5.0	1.6	
872-55-9	2-Ethylthiophene	ND	23	7.3	ND	5.0	1.6	
110-81-6	Diethyl Disulfide	ND	12	4.0	ND	2.5	0.80	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127DUP10-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-014

Test Code:	ASTM D 5504-12	Date Collected:	1/27/15
Instrument ID:	Agilent 6890A/GC13/SCD	Time Collected:	
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	2/3/15
Test Notes:		Time Analyzed:	11:00
Container ID:	AS00161	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -2.97 Final Pressure (psig): 3.49

Canister Dilution Factor: 1.55

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	11	3.2	ND	7.8	2.3	
463-58-1	Carbonyl Sulfide	ND	19	NA	ND	7.8	NA	
74-93-1	Methyl Mercaptan	ND	15	4.9	ND	7.8	2.5	
75-08-1	Ethyl Mercaptan	ND	20	6.3	ND	7.8	2.5	
75-18-3	Dimethyl Sulfide	ND	20	6.3	ND	7.8	2.5	
75-15-0	Carbon Disulfide	ND	12	NA	ND	3.9	NA	
75-33-2	Isopropyl Mercaptan	ND	24	7.7	ND	7.8	2.5	
75-66-1	tert-Butyl Mercaptan	ND	29	9.1	ND	7.8	2.5	
107-03-9	n-Propyl Mercaptan	ND	24	7.7	ND	7.8	2.5	
624-89-5	Ethyl Methyl Sulfide	ND	24	7.7	ND	7.8	2.5	
110-02-1	Thiophene	ND	27	8.5	ND	7.8	2.5	
513-44-0	Isobutyl Mercaptan	ND	29	9.1	ND	7.8	2.5	
352-93-2	Diethyl Sulfide	ND	29	9.1	ND	7.8	2.5	
109-79-5	n-Butyl Mercaptan	ND	29	9.1	ND	7.8	2.5	
624-92-0	Dimethyl Disulfide	ND	15	4.8	ND	3.9	1.2	
616-44-4	3-Methylthiophene	ND	31	10	ND	7.8	2.5	
110-01-0	Tetrahydrothiophene	ND	28	8.9	ND	7.8	2.5	
638-02-8	2,5-Dimethylthiophene	ND	36	11	ND	7.8	2.5	
872-55-9	2-Ethylthiophene	ND	36	11	ND	7.8	2.5	
110-81-6	Diethyl Disulfide	ND	19	6.2	ND	3.9	1.2	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128U1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-015

Test Code:	ASTM D 5504-12	Date Collected:	1/28/15
Instrument ID:	Agilent 6890A/GC13/SCD	Time Collected:	15:12
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	2/3/15
Test Notes:		Time Analyzed:	11:20
Container ID:	AS00763	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): 0.19 Final Pressure (psig): 3.41

Canister Dilution Factor: 1.22

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	8.5	2.5	ND	6.1	1.8	
463-58-1	Carbonyl Sulfide	ND	15	NA	ND	6.1	NA	
74-93-1	Methyl Mercaptan	ND	12	3.8	ND	6.1	2.0	
75-08-1	Ethyl Mercaptan	ND	15	5.0	ND	6.1	2.0	
75-18-3	Dimethyl Sulfide	ND	15	5.0	ND	6.1	2.0	
75-15-0	Carbon Disulfide	ND	9.5	NA	ND	3.1	NA	
75-33-2	Isopropyl Mercaptan	ND	19	6.1	ND	6.1	2.0	
75-66-1	tert-Butyl Mercaptan	ND	22	7.2	ND	6.1	2.0	
107-03-9	n-Propyl Mercaptan	ND	19	6.1	ND	6.1	2.0	
624-89-5	Ethyl Methyl Sulfide	ND	19	6.1	ND	6.1	2.0	
110-02-1	Thiophene	ND	21	6.7	ND	6.1	2.0	
513-44-0	Isobutyl Mercaptan	ND	22	7.2	ND	6.1	2.0	
352-93-2	Diethyl Sulfide	ND	22	7.2	ND	6.1	2.0	
109-79-5	n-Butyl Mercaptan	ND	22	7.2	ND	6.1	2.0	
624-92-0	Dimethyl Disulfide	ND	12	3.8	ND	3.1	0.98	
616-44-4	3-Methylthiophene	ND	24	7.8	ND	6.1	2.0	
110-01-0	Tetrahydrothiophene	ND	22	7.0	ND	6.1	2.0	
638-02-8	2,5-Dimethylthiophene	ND	28	9.0	ND	6.1	2.0	
872-55-9	2-Ethylthiophene	ND	28	9.0	ND	6.1	2.0	
110-81-6	Diethyl Disulfide	ND	15	4.9	ND	3.1	0.98	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128D1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-016

Test Code: ASTM D 5504-12 Date Collected: 1/28/15
Instrument ID: Agilent 6890A/GC13/SCD Time Collected: 14:55
Analyst: Mike Conejo Date Received: 1/30/15
Sample Type: 6.0 L Silonite Canister Date Analyzed: 2/3/15
Test Notes: Time Analyzed: 11:53
Container ID: AS00696 Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -0.88 Final Pressure (psig): 3.55

Canister Dilution Factor: 1.32

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.2	2.8	ND	6.6	2.0	
463-58-1	Carbonyl Sulfide	ND	16	NA	ND	6.6	NA	
74-93-1	Methyl Mercaptan	ND	13	4.2	ND	6.6	2.1	
75-08-1	Ethyl Mercaptan	ND	17	5.4	ND	6.6	2.1	
75-18-3	Dimethyl Sulfide	ND	17	5.4	ND	6.6	2.1	
75-15-0	Carbon Disulfide	ND	10	NA	ND	3.3	NA	
75-33-2	Isopropyl Mercaptan	ND	21	6.6	ND	6.6	2.1	
75-66-1	tert-Butyl Mercaptan	ND	24	7.8	ND	6.6	2.1	
107-03-9	n-Propyl Mercaptan	ND	21	6.6	ND	6.6	2.1	
624-89-5	Ethyl Methyl Sulfide	ND	21	6.6	ND	6.6	2.1	
110-02-1	Thiophene	ND	23	7.3	ND	6.6	2.1	
513-44-0	Isobutyl Mercaptan	ND	24	7.8	ND	6.6	2.1	
352-93-2	Diethyl Sulfide	ND	24	7.8	ND	6.6	2.1	
109-79-5	n-Butyl Mercaptan	ND	24	7.8	ND	6.6	2.1	
624-92-0	Dimethyl Disulfide	ND	13	4.1	ND	3.3	1.1	
616-44-4	3-Methylthiophene	ND	26	8.5	ND	6.6	2.1	
110-01-0	Tetrahydrothiophene	ND	24	7.6	ND	6.6	2.1	
638-02-8	2,5-Dimethylthiophene	ND	30	9.7	ND	6.6	2.1	
872-55-9	2-Ethylthiophene	ND	30	9.7	ND	6.6	2.1	
110-81-6	Diethyl Disulfide	ND	16	5.3	ND	3.3	1.1	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128N-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-017

Test Code:	ASTM D 5504-12	Date Collected:	1/28/15
Instrument ID:	Agilent 6890A/GC13/SCD	Time Collected:	15:05
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	2/3/15
Test Notes:		Time Analyzed:	11:37
Container ID:	AS00598	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): 0.55 Final Pressure (psig): 3.44

Canister Dilution Factor: 1.19

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	8.3	2.5	ND	6.0	1.8	
463-58-1	Carbonyl Sulfide	ND	15	NA	ND	6.0	NA	
74-93-1	Methyl Mercaptan	ND	12	3.7	ND	6.0	1.9	
75-08-1	Ethyl Mercaptan	ND	15	4.8	ND	6.0	1.9	
75-18-3	Dimethyl Sulfide	ND	15	4.8	ND	6.0	1.9	
75-15-0	Carbon Disulfide	ND	9.3	NA	ND	3.0	NA	
75-33-2	Isopropyl Mercaptan	ND	19	5.9	ND	6.0	1.9	
75-66-1	tert-Butyl Mercaptan	ND	22	7.0	ND	6.0	1.9	
107-03-9	n-Propyl Mercaptan	ND	19	5.9	ND	6.0	1.9	
624-89-5	Ethyl Methyl Sulfide	ND	19	5.9	ND	6.0	1.9	
110-02-1	Thiophene	ND	20	6.5	ND	6.0	1.9	
513-44-0	Isobutyl Mercaptan	ND	22	7.0	ND	6.0	1.9	
352-93-2	Diethyl Sulfide	ND	22	7.0	ND	6.0	1.9	
109-79-5	n-Butyl Mercaptan	ND	22	7.0	ND	6.0	1.9	
624-92-0	Dimethyl Disulfide	ND	11	3.7	ND	3.0	0.95	
616-44-4	3-Methylthiophene	ND	24	7.6	ND	6.0	1.9	
110-01-0	Tetrahydrothiophene	ND	21	6.9	ND	6.0	1.9	
638-02-8	2,5-Dimethylthiophene	ND	27	8.7	ND	6.0	1.9	
872-55-9	2-Ethylthiophene	ND	27	8.7	ND	6.0	1.9	
110-81-6	Diethyl Disulfide	ND	15	4.8	ND	3.0	0.95	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQ-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-018

Test Code:	ASTM D 5504-12	Date Collected:	1/28/15
Instrument ID:	Agilent 6890A/GC13/SCD	Time Collected:	15:17
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	2/3/15
Test Notes:		Time Analyzed:	13:45
Container ID:	AS00798	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -0.32 Final Pressure (psig): 3.52

Canister Dilution Factor: 1.27

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	8.8	2.7	ND	6.4	1.9	
463-58-1	Carbonyl Sulfide	ND	16	NA	ND	6.4	NA	
74-93-1	Methyl Mercaptan	ND	12	4.0	ND	6.4	2.0	
75-08-1	Ethyl Mercaptan	ND	16	5.2	ND	6.4	2.0	
75-18-3	Dimethyl Sulfide	ND	16	5.2	ND	6.4	2.0	
75-15-0	Carbon Disulfide	ND	9.9	NA	ND	3.2	NA	
75-33-2	Isopropyl Mercaptan	ND	20	6.3	ND	6.4	2.0	
75-66-1	tert-Butyl Mercaptan	ND	23	7.5	ND	6.4	2.0	
107-03-9	n-Propyl Mercaptan	ND	20	6.3	ND	6.4	2.0	
624-89-5	Ethyl Methyl Sulfide	ND	20	6.3	ND	6.4	2.0	
110-02-1	Thiophene	ND	22	7.0	ND	6.4	2.0	
513-44-0	Isobutyl Mercaptan	ND	23	7.5	ND	6.4	2.0	
352-93-2	Diethyl Sulfide	ND	23	7.5	ND	6.4	2.0	
109-79-5	n-Butyl Mercaptan	ND	23	7.5	ND	6.4	2.0	
624-92-0	Dimethyl Disulfide	ND	12	3.9	ND	3.2	1.0	
616-44-4	3-Methylthiophene	ND	25	8.2	ND	6.4	2.0	
110-01-0	Tetrahydrothiophene	ND	23	7.3	ND	6.4	2.0	
638-02-8	2,5-Dimethylthiophene	ND	29	9.3	ND	6.4	2.0	
872-55-9	2-Ethylthiophene	ND	29	9.3	ND	6.4	2.0	
110-81-6	Diethyl Disulfide	ND	16	5.1	ND	3.2	1.0	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128DUP11-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-019

Test Code:	ASTM D 5504-12	Date Collected:	1/28/15
Instrument ID:	Agilent 6890A/GC13/SCD	Time Collected:	
Analyst:	Mike Conejo	Date Received:	1/30/15
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	2/3/15
Test Notes:		Time Analyzed:	13:20
Container ID:	AS00728	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.06 Final Pressure (psig): 3.47

Canister Dilution Factor: 1.33

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.3	2.8	ND	6.7	2.0	
463-58-1	Carbonyl Sulfide	ND	16	NA	ND	6.7	NA	
74-93-1	Methyl Mercaptan	ND	13	4.2	ND	6.7	2.1	
75-08-1	Ethyl Mercaptan	ND	17	5.4	ND	6.7	2.1	
75-18-3	Dimethyl Sulfide	ND	17	5.4	ND	6.7	2.1	
75-15-0	Carbon Disulfide	ND	10	NA	ND	3.3	NA	
75-33-2	Isopropyl Mercaptan	ND	21	6.6	ND	6.7	2.1	
75-66-1	tert-Butyl Mercaptan	ND	25	7.8	ND	6.7	2.1	
107-03-9	n-Propyl Mercaptan	ND	21	6.6	ND	6.7	2.1	
624-89-5	Ethyl Methyl Sulfide	ND	21	6.6	ND	6.7	2.1	
110-02-1	Thiophene	ND	23	7.3	ND	6.7	2.1	
513-44-0	Isobutyl Mercaptan	ND	25	7.8	ND	6.7	2.1	
352-93-2	Diethyl Sulfide	ND	25	7.8	ND	6.7	2.1	
109-79-5	n-Butyl Mercaptan	ND	25	7.8	ND	6.7	2.1	
624-92-0	Dimethyl Disulfide	ND	13	4.1	ND	3.3	1.1	
616-44-4	3-Methylthiophene	ND	27	8.5	ND	6.7	2.1	
110-01-0	Tetrahydrothiophene	ND	24	7.7	ND	6.7	2.1	
638-02-8	2,5-Dimethylthiophene	ND	31	9.8	ND	6.7	2.1	
872-55-9	2-Ethylthiophene	ND	31	9.8	ND	6.7	2.1	
110-81-6	Diethyl Disulfide	ND	17	5.3	ND	3.3	1.1	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150202-MB

Test Code: ASTM D 5504-12 Date Collected: NA
Instrument ID: Agilent 7890A/GC22/SCD Time Collected: NA
Analyst: Mike Conejo Date Received: NA
Sample Type: 1.0 L Silonite Summa Canister Date Analyzed: 2/02/15
Test Notes: Time Analyzed: 07:11
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	2.1	ND	5.0	1.5	
463-58-1	Carbonyl Sulfide	ND	12	NA	ND	5.0	NA	
74-93-1	Methyl Mercaptan	ND	9.8	3.1	ND	5.0	1.6	
75-08-1	Ethyl Mercaptan	ND	13	4.1	ND	5.0	1.6	
75-18-3	Dimethyl Sulfide	ND	13	4.1	ND	5.0	1.6	
75-15-0	Carbon Disulfide	ND	7.8	NA	ND	2.5	NA	
75-33-2	Isopropyl Mercaptan	ND	16	5.0	ND	5.0	1.6	
75-66-1	tert-Butyl Mercaptan	ND	18	5.9	ND	5.0	1.6	
107-03-9	n-Propyl Mercaptan	ND	16	5.0	ND	5.0	1.6	
624-89-5	Ethyl Methyl Sulfide	ND	16	5.0	ND	5.0	1.6	
110-02-1	Thiophene	ND	17	5.5	ND	5.0	1.6	
513-44-0	Isobutyl Mercaptan	ND	18	5.9	ND	5.0	1.6	
352-93-2	Diethyl Sulfide	ND	18	5.9	ND	5.0	1.6	
109-79-5	n-Butyl Mercaptan	ND	18	5.9	ND	5.0	1.6	
624-92-0	Dimethyl Disulfide	ND	9.6	3.1	ND	2.5	0.80	
616-44-4	3-Methylthiophene	ND	20	6.4	ND	5.0	1.6	
110-01-0	Tetrahydrothiophene	ND	18	5.8	ND	5.0	1.6	
638-02-8	2,5-Dimethylthiophene	ND	23	7.3	ND	5.0	1.6	
872-55-9	2-Ethylthiophene	ND	23	7.3	ND	5.0	1.6	
110-81-6	Diethyl Disulfide	ND	12	4.0	ND	2.5	0.80	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150203-MB

Test Code: ASTM D 5504-12 Date Collected: NA
Instrument ID: Agilent 6890A/GC13/SCD Time Collected: NA
Analyst: Mike Conejo Date Received: NA
Sample Type: 1.0 L Silonite Summa Canister Date Analyzed: 2/03/15
Test Notes: Time Analyzed: 08:00
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	2.1	ND	5.0	1.5	
463-58-1	Carbonyl Sulfide	ND	12	NA	ND	5.0	NA	
74-93-1	Methyl Mercaptan	ND	9.8	3.1	ND	5.0	1.6	
75-08-1	Ethyl Mercaptan	ND	13	4.1	ND	5.0	1.6	
75-18-3	Dimethyl Sulfide	ND	13	4.1	ND	5.0	1.6	
75-15-0	Carbon Disulfide	ND	7.8	NA	ND	2.5	NA	
75-33-2	Isopropyl Mercaptan	ND	16	5.0	ND	5.0	1.6	
75-66-1	tert-Butyl Mercaptan	ND	18	5.9	ND	5.0	1.6	
107-03-9	n-Propyl Mercaptan	ND	16	5.0	ND	5.0	1.6	
624-89-5	Ethyl Methyl Sulfide	ND	16	5.0	ND	5.0	1.6	
110-02-1	Thiophene	ND	17	5.5	ND	5.0	1.6	
513-44-0	Isobutyl Mercaptan	ND	18	5.9	ND	5.0	1.6	
352-93-2	Diethyl Sulfide	ND	18	5.9	ND	5.0	1.6	
109-79-5	n-Butyl Mercaptan	ND	18	5.9	ND	5.0	1.6	
624-92-0	Dimethyl Disulfide	ND	9.6	3.1	ND	2.5	0.80	
616-44-4	3-Methylthiophene	ND	20	6.4	ND	5.0	1.6	
110-01-0	Tetrahydrothiophene	ND	18	5.8	ND	5.0	1.6	
638-02-8	2,5-Dimethylthiophene	ND	23	7.3	ND	5.0	1.6	
872-55-9	2-Ethylthiophene	ND	23	7.3	ND	5.0	1.6	
110-81-6	Diethyl Disulfide	ND	12	4.0	ND	2.5	0.80	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150202-LCS

Test Code: ASTM D 5504-12 Date Collected: NA
Instrument ID: Agilent 7890A/GC22/SCD Date Received: NA
Analyst: Mike Conejo Date Analyzed: 2/02/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount ppbV	Result ppbV	% Recovery	ALS Acceptance Limits	Data Qualifier
7783-06-4	Hydrogen Sulfide	1,990	**1,690**	**85**	66-131	
463-58-1	Carbonyl Sulfide	2,030	**1,620**	**80**	64-131	
74-93-1	Methyl Mercaptan	2,020	**1,620**	**80**	68-160	

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150203-LCS

Test Code: ASTM D 5504-12 Date Collected: NA
Instrument ID: Agilent 6890A/GC13/SCD Date Received: NA
Analyst: Mike Conejo Date Analyzed: 2/03/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount ppbV	Result ppbV	% Recovery	ALS Acceptance Limits	Data Qualifier
7783-06-4	Hydrogen Sulfide	1,990	**1,730**	**87**	66-131	
463-58-1	Carbonyl Sulfide	2,030	**1,630**	**80**	64-131	
74-93-1	Methyl Mercaptan	2,020	**1,650**	**82**	68-160	

Response Factor Report HP G1530A

Method Path : J:\GC13\METHODS\
Method File : GC13060914.M
Title : 20 Sulfurs
Last Update : Tue Jun 10 08:59:05 2014
Response Via : Initial Calibration

Calibration Files
1 =06091443.D 2 =06091444.D 3 =06091445.D
4 =06091446.D 5 =06091447.D 6 =06091448.D

		Compound	1	2	3	4	5	6	Avg		%RSD
1)	Z	Hydrogen_Sulfide	2.336	1.893	2.371	2.846	2.611	2.902	2.493	E4	15.07
2)	W	Carbonyl_Sulfide	2.626	2.301	2.596	2.909	2.906	2.864	2.700	E4	8.91
3)	T	Methyl_Mercaptan	2.249	1.887	2.358	2.733	2.671	2.730	2.438	E4	13.87
4)	T	Ethyl_Mercaptan	2.249	1.887	2.358	2.733	2.671	2.730	2.438	E4	13.87
5)	T	Dimethyl_Sulfide	2.249	1.887	2.358	2.733	2.671	2.730	2.438	E4	13.87
6)	T	Carbon_Disulfide	4.499	3.775	4.716	5.467	5.343	5.459	4.877	E4	13.87
7)	T	2-Propyl_Merc...	2.249	1.887	2.358	2.733	2.671	2.730	2.438	E4	13.87
8)	T	t-Butyl_Merca...	2.249	1.887	2.358	2.733	2.671	2.730	2.438	E4	13.87
9)	T	Propyl_Mercaptan	2.249	1.887	2.358	2.733	2.671	2.730	2.438	E4	13.87
10)	T	Ethyl_Methyl_...	2.249	1.887	2.358	2.733	2.671	2.730	2.438	E4	13.87
11)	T	Thiophene	2.249	1.887	2.358	2.733	2.671	2.730	2.438	E4	13.87
12)	T	i-Butyl_Merca...	2.249	1.887	2.358	2.733	2.671	2.730	2.438	E4	13.87
13)	T	Diethyl_Sulfide	2.249	1.887	2.358	2.733	2.671	2.730	2.438	E4	13.87
14)		n-Butyl_Merca...	2.249	1.887	2.358	2.733	2.671	2.730	2.438	E4	13.87
15)		Dimethyl_Disu...	4.499	3.775	4.716	5.467	5.343	5.459	4.877	E4	13.87
16)	T	2-Methyl_Thio...	2.249	1.887	2.358	2.733	2.671	2.730	2.438	E4	13.87
17)		3-Methyl_Thio...	2.249	1.887	2.358	2.733	2.671	2.730	2.438	E4	13.87
18)	T	Tetrahydrothi...	2.249	1.887	2.358	2.733	2.671	2.730	2.438	E4	13.87
19)		2,5-Dimethyl_...	2.249	1.887	2.358	2.733	2.671	2.730	2.438	E4	13.87
20)	T	2-Ethyl_Thiop...	2.249	1.887	2.358	2.733	2.671	2.730	2.438	E4	13.87
21)	T	Diethyl_Disul...	4.499	3.775	4.716	5.467	5.343	5.459	4.877	E4	13.87
22)	T	Methyltrisulfide	6.748	5.662	7.075	8.200	8.014	8.189	7.315	E4	13.87

(#) = Out of Range

GC13060914.M Tue Jun 10 08:59:12 2014

Response Factor Report GC #22

Method Path : J:\GC22\METHODS\
Method File : GC22060914.M
Title : 20 Sulfurs Initial Calibration
Last Update : Tue Jun 10 08:39:05 2014
Response Via : Initial Calibration

Calibration Files
1 =06091401.d 2 =06091402.d 3 =06091403.d
4 =06091404.d 5 =06091405.d 6 =06091406.d

		Compound	1	2	3	4	5	6	Avg		%RSD
1)	Z	Hydrogen_Sulfide	2.724	1.858	2.695	2.696	2.262	2.639	2.479	E4	14.11
2)	W	Carbonyl_Sulfide	2.645	2.540	3.022	2.923	2.721	2.810	2.777	E4	6.43
3)	T	Methyl_Mercaptan	2.537	2.016	2.745	2.717	2.397	2.746	2.526	E4	11.33
4)	T	Ethyl_Mercaptan	2.537	2.016	2.745	2.717	2.397	2.746	2.526	E4	11.33
5)	T	Dimethyl_Sulfide	2.537	2.016	2.745	2.717	2.397	2.746	2.526	E4	11.33
6)	T	Carbon_Disulfide	5.073	4.032	5.489	5.433	4.794	5.491	5.052	E4	11.33
7)	T	2-Propyl_Merc...	2.537	2.016	2.745	2.717	2.397	2.746	2.526	E4	11.33
8)	T	t-Butyl_Merca...	2.537	2.016	2.745	2.717	2.397	2.746	2.526	E4	11.33
9)	T	Propyl_Mercaptan	2.537	2.016	2.745	2.717	2.397	2.746	2.526	E4	11.33
10)	T	Ethyl_Methyl_...	2.537	2.016	2.745	2.717	2.397	2.746	2.526	E4	11.33
11)	T	Thiophene	2.537	2.016	2.745	2.717	2.397	2.746	2.526	E4	11.33
12)	T	i-Butyl_Merca...	2.537	2.016	2.745	2.717	2.397	2.746	2.526	E4	11.33
13)	T	Diethyl_Sulfide	2.537	2.016	2.745	2.717	2.397	2.746	2.526	E4	11.33
14)	T	n-Butyl_Merca...	2.537	2.016	2.745	2.717	2.397	2.746	2.526	E4	11.33
15)	T	Dimethyl_Disu...	5.073	4.032	5.489	5.433	4.794	5.491	5.052	E4	11.33
16)	T	2-Methylthiop...	2.537	2.016	2.745	2.717	2.397	2.746	2.526	E4	11.33
17)	T	3-Methylthiop...	2.537	2.016	2.745	2.717	2.397	2.746	2.526	E4	11.33
18)	T	Tetrahydrothi...	2.537	2.016	2.745	2.717	2.397	2.746	2.526	E4	11.33
19)	T	2,5-Dimethylt...	2.537	2.016	2.745	2.717	2.397	2.746	2.526	E4	11.33
20)	T	2-Ethylthiophene	2.537	2.016	2.745	2.717	2.397	2.746	2.526	E4	11.33
21)	T	Diethyl_Disul...	5.073	4.032	5.489	5.433	4.794	5.491	5.052	E4	11.33
22)	T	Methyltrisulfide	7.610	6.048	8.234	8.150	7.191	8.237	7.578	E4	11.33

(#) = Out of Range

GC22060914.M Tue Jun 10 08:59:29 2014

ALS Environmental

REPORT SUMMARY

Method : 20 Sulfurs Initial Calibration
Client : Stantec Consulting Services, Inc.
Analyst : MC

Service Request : P1500365
Instrument : GC #22
Date Acquired : 2 Feb 2015 3:45 pm

Compounds	MDL	RL	MB QC		Dry Wall QC		Lab Dup			Continuing Calibration Standards Summary (ppbv)											
			MB					dup	%RSD	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff
Sample Information :	ppb	ppb	mb 1ml				0	0		std 2000ppb s30-12221402		std 2000ppb s30-1221402		std 2000ppb s30-12221402		std 2000ppb s30-12221402					
Inj. Vol. (ml)	1.0	1.0	1.00		1.0	1.0	1.0	1.0		0.20		0.20		0.20		0.20		0.20		0.20	
Dilution	1.0	1.0	1.00		1.0	1.0	1.0	1.0													
Pi:	1.0	1.0	1.0		1.0	1.0	1.0	1.0													
Pi:	1.0	1.0	1.0		1.0	1.0	1.0	1.0													
PiPf DF:	1.0	1.0	1.0		1.0	1.0	1.0	1.0													
Hydrogen_Sulfide	1.700	5.000	ND	P						1543.87	23.6%	1954.295	3.3%	2027.262	0.4%	1577.330	21.9%				
Carbonyl_Sulfide	1.900	5.000	ND	P						1562.05	21.9%	1899.822	5.0%	2107.156	5.4%	1523.909	23.8%				
Methyl_Mercaptan	2.200	5.000	ND	P						1573.52	21.3%	1960.349	2.0%	2045.065	2.3%	1510.677	24.5%				
Ethyl_Mercaptan	2.200	5.000	ND	P																	
Dimethyl_Sulfide	2.200	5.000	ND	P						2 Feb 2015 6:36 am		2 Feb 2015 3:45 pm		2 Feb 2015 7:32 am		2 Feb 2015 12:38 pm					
Carbon_Disulfide	1.100	2.500	ND	P						02021502.d		02021532.d		02021507.d		02021524.d					
2-Propyl_Mercaptan	2.200	5.000	ND	P																	
t-Butyl_Mercaptan	2.200	5.000	ND	P																	
Propyl_Mercaptan	2.200	5.000	ND	P																	
Ethyl_Methyl_Sulfide	2.200	5.000	ND	P																	
Thiophene	2.200	5.000	ND	P																	
i-Butyl_Mercaptan	2.200	5.000	ND	P																	
Diethyl_Sulfide	2.200	5.000	ND	P																	
n-Butyl_Mercaptan	2.200	5.000	ND	P																	
Dimethyl_Disulfide	1.100	2.500	ND	P																	
2-Methylthiophene	2.200	5.000	ND	P																	
3-Methylthiophene	2.200	5.000	ND	P																	
Tetrahydrothiophene	2.200	5.000	ND	P																	
2,5-Dimethylthiophene	2.200	5.000	ND	P																	
2-Ethylthiophene	2.200	5.000	ND	P																	
Diethyl_Disulfide	1.100	2.500	ND	P																	
Methyltrisulfide	1.100	2.500	ND	P																	
Acqisition Time		2 Feb 2015 7:11 am																			
DataFile		02021506.d																			

LCS / LCS Dup Summary (ppbv)

	ppbv	%R		ppbv	% R	%RPD	Actual
Hydrogen_Sulfide	1691.67	84.9%					1992.00
Carbonyl_Sulfide	1616.31	79.5%					2032.00
Methyl_Mercaptan	1615.06	79.9%					2022.00
Acqisition Time	2 Feb 2015 6:41 am						
DataFile	02021503.d						

MC 2/4/15

ALS Environmental

REPORT SUMMARY

Method : 20 Sulfurs
Client : Stantec Consulting Services, Inc.
Analyst : MC

Service Request : P1500365
Instrument : GC13
Date Acquired : 2/3/15

Compounds	MDL	RL	MB QC		Dry Wall QC		Lab Dup			Continuing Calibration Standards Summary (ppbv)											
			MB					dup	%RSD	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff
Sample Information :	ppb	ppb	mb 1ml				0	0		std 2000ppb s30-02031501		std 2000ppb s30-02031501		std 2000ppb s30-02031501		std 2000ppb s30-02031501					
Inj. Vol. (ml)	1.0	1.0	1.00		1.0	1.0	1.0	1.0		0.20		0.20		0.20		0.20		0.20		0.20	
Dilution	1.0	1.0	1.00		1.0	1.0	1.0	1.0													
Pi:	1.0	1.0	1.0		1.0	1.0	1.0	1.0													
Pi:	1.0	1.0	1.0		1.0	1.0	1.0	1.0													
PiPf DF:	1.0	1.0	1.0		1.0	1.0	1.0	1.0													
Hydrogen_Sulfide	1.700	5.000	ND	P						1961.47	2.9%	2144.074	6.1%	2012.951	0.3%	1540.938	23.7%				
Carbonyl_Sulfide	1.900	5.000	ND	P						1888.35	5.6%	2177.978	8.9%	1929.527	3.5%	1564.888	21.8%				
Methyl_Mercaptan	2.200	5.000	ND	P						1857.85	7.1%	2048.028	2.4%	1863.919	6.8%	1444.521	27.8%				
Ethyl_Mercaptan	2.200	5.000	ND	P																	
Dimethyl_Sulfide	2.200	5.000	ND	P						7:27 AM		8:24 AM		12:14 PM		2:09 PM					
Carbon_Disulfide	1.100	2.500	ND	P						02031502.D		02031507.D		02031524.D		02031527.D					
2-Propyl_Mercaptan	2.200	5.000	ND	P																	
t-Butyl_Mercaptan	2.200	5.000	ND	P																	
Propyl_Mercaptan	2.200	5.000	ND	P																	
Ethyl_Methyl_Sulfide	2.200	5.000	ND	P																	
Thiophene	2.200	5.000	ND	P																	
i-Butyl_Mercaptan	2.200	5.000	ND	P																	
Diethyl_Sulfide	2.200	5.000	ND	P																	
n-Butyl_Mercaptan	2.200	5.000	ND	P																	
Dimethyl_Disulfide	1.100	2.500	ND	P																	
2-Methylthiophene	2.200	5.000	ND	P																	
3-Methylthiophene	2.200	5.000	ND	P																	
Tetrahydrothiophene	2.200	5.000	ND	P																	
2,5-Dimethylthiophene	2.200	5.000	ND	P																	
2-Ethylthiophene	2.200	5.000	ND	P																	
Diethyl_Disulfide	1.100	2.500	ND	P																	
Methyltrisulfide	1.100	2.500	ND	P																	
Acqisition Time			8:00 AM																		
DataFile			02031506.D																		

LCS / LCS Dup Summary (ppbv)

	ppbv	%R		ppbv	% R	%RPD	Actual
Hydrogen_Sulfide	1733.46	87.0%					1992.00
Carbonyl_Sulfide	1625.08	80.0%					2032.00
Methyl_Mercaptan	1651.80	81.7%					2022.00
Acqisition Time	7:31 AM						
DataFile	02031503.D						

MC 2/3/15

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128Ns-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-001

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.0060 Liter(s)
Test Notes:
Container ID: 1SS00036

Initial Pressure (psig): 0.46 Final Pressure (psig): 6.67

Canister Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	**21,000**	120	33	**12,000**	68	19	
75-71-8	Dichlorodifluoromethane (CFC 12)	**88**	120	40	**18**	24	8.1	**J**
74-87-3	Chloromethane	**60**	120	35	**29**	57	17	**J**
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	120	45	ND	17	6.4	
75-01-4	Vinyl Chloride	ND	120	40	ND	46	16	
106-99-0	1,3-Butadiene	**430**	120	52	**190**	53	23	
74-83-9	Bromomethane	ND	120	45	ND	30	12	
75-00-3	Chloroethane	ND	120	40	ND	45	15	
64-17-5	Ethanol	ND	1,200	190	ND	620	100	
75-05-8	Acetonitrile	ND	120	42	ND	70	25	
107-02-8	Acrolein	ND	470	40	ND	210	17	
67-64-1	Acetone	**470**	1,200	180	**200**	490	76	**J**
75-69-4	Trichlorofluoromethane	ND	120	40	ND	21	7.1	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1,200	99	ND	480	40	
107-13-1	Acrylonitrile	ND	120	40	ND	54	18	
75-35-4	1,1-Dichloroethene	ND	120	40	ND	30	10	
75-09-2	Methylene Chloride	ND	120	40	ND	34	12	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	120	38	ND	38	12	
76-13-1	Trichlorotrifluoroethane	ND	120	40	ND	15	5.2	
75-15-0	Carbon Disulfide	ND	1,200	35	ND	380	11	
156-60-5	trans-1,2-Dichloroethene	ND	120	45	ND	30	11	
75-34-3	1,1-Dichloroethane	ND	120	38	ND	29	9.3	
1634-04-4	Methyl tert-Butyl Ether	**110**	120	40	**30**	33	11	**J**
108-05-4	Vinyl Acetate	ND	1,200	150	ND	330	43	
78-93-3	2-Butanone (MEK)	ND	1,200	49	ND	400	17	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **128Ns-GRAB** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-001

Test Code: EPA TO-15 Modified Date Collected: 1/28/15

Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15

Analyst: Lusine Hakobyan Date Analyzed: 2/9/15

Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.0060 Liter(s)

Test Notes:

Container ID: 1SS00036

Initial Pressure (psig): 0.46 Final Pressure (psig): 6.67

Canister Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	120	38	ND	30	9.5	
141-78-6	Ethyl Acetate	ND	240	82	ND	65	23	
110-54-3	n-Hexane	**1,100**	120	35	**300**	33	10	
67-66-3	Chloroform	ND	120	40	ND	24	8.2	
109-99-9	Tetrahydrofuran (THF)	**1,900**	120	47	**660**	40	16	
107-06-2	1,2-Dichloroethane	ND	120	38	ND	29	9.3	
71-55-6	1,1,1-Trichloroethane	ND	120	40	ND	22	7.3	
71-43-2	Benzene	**12,000**	120	38	**3,600**	37	12	
56-23-5	Carbon Tetrachloride	ND	120	35	ND	19	5.6	
110-82-7	Cyclohexane	**310**	240	68	**89**	68	20	
78-87-5	1,2-Dichloropropane	ND	120	38	ND	25	8.1	
75-27-4	Bromodichloromethane	ND	120	35	ND	18	5.3	
79-01-6	Trichloroethene	ND	120	33	ND	22	6.1	
123-91-1	1,4-Dioxane	ND	120	38	ND	33	10	
80-62-6	Methyl Methacrylate	ND	240	73	ND	57	18	
142-82-5	n-Heptane	**640**	120	40	**160**	29	9.8	
10061-01-5	cis-1,3-Dichloropropene	ND	120	33	ND	26	7.2	
108-10-1	4-Methyl-2-pentanone	ND	120	38	ND	29	9.2	
10061-02-6	trans-1,3-Dichloropropene	ND	120	38	ND	26	8.3	
79-00-5	1,1,2-Trichloroethane	ND	120	38	ND	22	6.9	
108-88-3	Toluene	**1,800**	120	40	**490**	31	11	
591-78-6	2-Hexanone	ND	120	38	ND	29	9.2	
124-48-1	Dibromochloromethane	ND	120	38	ND	14	4.4	
106-93-4	1,2-Dibromoethane	ND	120	38	ND	15	4.9	
123-86-4	n-Butyl Acetate	ND	120	38	ND	25	7.9	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128Ns-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-001

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.0060 Liter(s)
Test Notes:
Container ID: 1SS00036

Initial Pressure (psig): 0.46 Final Pressure (psig): 6.67

Canister Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	**1,300**	120	42	**270**	25	9.1	
127-18-4	Tetrachloroethene	ND	120	33	ND	17	4.9	
108-90-7	Chlorobenzene	**860**	120	38	**190**	26	8.2	
100-41-4	Ethylbenzene	**640**	120	38	**150**	27	8.7	
179601-23-1	m,p-Xylenes	**2,100**	240	71	**490**	54	16	
75-25-2	Bromoform	ND	120	35	ND	11	3.4	
100-42-5	Styrene	ND	120	35	ND	28	8.3	
95-47-6	o-Xylene	**2,600**	120	35	**600**	27	8.1	
111-84-2	n-Nonane	**1,100**	120	35	**220**	22	6.7	
79-34-5	1,1,2,2-Tetrachloroethane	ND	120	35	ND	17	5.1	
98-82-8	Cumene	**120**	120	35	**24**	24	7.2	
80-56-8	alpha-Pinene	**2,600**	120	33	**470**	21	5.9	
103-65-1	n-Propylbenzene	ND	120	38	ND	24	7.7	
622-96-8	4-Ethyltoluene	**240**	120	38	**49**	24	7.7	
108-67-8	1,3,5-Trimethylbenzene	**720**	120	38	**150**	24	7.7	
95-63-6	1,2,4-Trimethylbenzene	**230**	120	35	**47**	24	7.2	
100-44-7	Benzyl Chloride	ND	120	26	ND	23	5.0	
541-73-1	1,3-Dichlorobenzene	ND	120	35	ND	20	5.9	
106-46-7	1,4-Dichlorobenzene	**900**	120	33	**150**	20	5.5	
95-50-1	1,2-Dichlorobenzene	ND	120	35	ND	20	5.9	
5989-27-5	d-Limonene	**530**	120	33	**95**	21	5.9	
96-12-8	1,2-Dibromo-3-chloropropane	ND	120	23	ND	12	2.4	
120-82-1	1,2,4-Trichlorobenzene	ND	120	38	ND	16	5.1	
91-20-3	Naphthalene	ND	120	42	ND	22	8.1	
87-68-3	Hexachlorobutadiene	ND	120	33	ND	11	3.1	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **128Ns-GRAB** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-001

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/28/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/9/15
Sample Type:	1.0 L Silonite Summa Canister	Volume(s) Analyzed:	0.0060 Liter(s)
Test Notes:	**T**		
Container ID:	1SS00036		

Initial Pressure (psig): 0.46 Final Pressure (psig): 6.67

Canister Dilution Factor: 1.41

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.16	Propane	**4,100**	
4.51	Dimethyl Ether	**4,100**	
5.18	2-Methyl-1-propene	**24,000**	
5.35	n-Butane	**12,000**	
5.54	C4H8 Alkene	**15,000**	
5.83	C4H8 Alkene	**11,000**	
7.57	Furan	**14,000**	
8.17	Dimethyl Sulfide	**44,000**	
8.56	C5H10 Alkene	**6,200**	
9.67	Cyclopentene	**6,500**	
10.31	C6H12 Alkene	**2,800**	
11.11	2-Methylfuran	**8,200**	
19.75	Camphene	**4,700**	
20.56	4-Isopropyltoluene + 4-Methyldecane	**3,400**	
20.84	unknown	**3,000**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQs-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-002

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15 & 2/9/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.40 Liter(s)
Test Notes: 0.040 Liter(s)
Container ID: 1SS00069

Initial Pressure (psig): 0.47 Final Pressure (psig): 5.22

Canister Dilution Factor: 1.31

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	**1,500**	16	4.6	**880**	9.5	2.7	**D**
75-71-8	Dichlorodifluoromethane (CFC 12)	**140**	1.6	0.56	**28**	0.33	0.11	
74-87-3	Chloromethane	ND	1.6	0.49	ND	0.79	0.24	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	**28**	1.6	0.62	**4.0**	0.23	0.089	
75-01-4	Vinyl Chloride	**200**	1.6	0.56	**78**	0.64	0.22	
106-99-0	1,3-Butadiene	**8.1**	1.6	0.72	**3.7**	0.74	0.33	
74-83-9	Bromomethane	ND	1.6	0.62	ND	0.42	0.16	
75-00-3	Chloroethane	**8.5**	1.6	0.56	**3.2**	0.62	0.21	
64-17-5	Ethanol	ND	16	2.6	ND	8.7	1.4	
75-05-8	Acetonitrile	ND	1.6	0.59	ND	0.98	0.35	
107-02-8	Acrolein	ND	6.6	0.56	ND	2.9	0.24	
67-64-1	Acetone	**9.9**	16	2.5	**4.2**	6.9	1.1	**J, B**
75-69-4	Trichlorofluoromethane	**6.8**	1.6	0.56	**1.2**	0.29	0.099	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	16	1.4	ND	6.7	0.56	
107-13-1	Acrylonitrile	ND	1.6	0.56	ND	0.75	0.26	
75-35-4	1,1-Dichloroethene	ND	1.6	0.56	ND	0.41	0.14	
75-09-2	Methylene Chloride	ND	1.6	0.56	ND	0.47	0.16	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	1.6	0.52	ND	0.52	0.17	
76-13-1	Trichlorotrifluoroethane	ND	1.6	0.56	ND	0.21	0.073	
75-15-0	Carbon Disulfide	**12**	16	0.49	**3.7**	5.3	0.16	**J**
156-60-5	trans-1,2-Dichloroethene	ND	1.6	0.62	ND	0.41	0.16	
75-34-3	1,1-Dichloroethane	**1.1**	1.6	0.52	**0.28**	0.40	0.13	**J**
1634-04-4	Methyl tert-Butyl Ether	ND	1.6	0.56	ND	0.45	0.15	
108-05-4	Vinyl Acetate	ND	16	2.1	ND	4.7	0.60	
78-93-3	2-Butanone (MEK)	**3.8**	16	0.69	**1.3**	5.6	0.23	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
B = Analyte detected in both the sample and associated method blank.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQs-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-002

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15 & 2/9/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.40 Liter(s)
Test Notes: 0.040 Liter(s)
Container ID: 1SS00069

Initial Pressure (psig): 0.47 Final Pressure (psig): 5.22

Canister Dilution Factor: 1.31

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	**1.1**	1.6	0.52	**0.28**	0.41	0.13	**J**
141-78-6	Ethyl Acetate	ND	3.3	1.1	ND	0.91	0.32	
110-54-3	n-Hexane	**100**	1.6	0.49	**29**	0.46	0.14	
67-66-3	Chloroform	**1.1**	1.6	0.56	**0.23**	0.34	0.11	**J**
109-99-9	Tetrahydrofuran (THF)	ND	1.6	0.66	ND	0.56	0.22	
107-06-2	1,2-Dichloroethane	ND	1.6	0.52	ND	0.40	0.13	
71-55-6	1,1,1-Trichloroethane	ND	1.6	0.56	ND	0.30	0.10	
71-43-2	Benzene	**12**	1.6	0.52	**3.7**	0.51	0.16	
56-23-5	Carbon Tetrachloride	ND	1.6	0.49	ND	0.26	0.078	
110-82-7	Cyclohexane	**140**	3.3	0.95	**41**	0.95	0.28	
78-87-5	1,2-Dichloropropane	ND	1.6	0.52	ND	0.35	0.11	
75-27-4	Bromodichloromethane	ND	1.6	0.49	ND	0.24	0.073	
79-01-6	Trichloroethene	ND	1.6	0.46	ND	0.30	0.085	
123-91-1	1,4-Dioxane	ND	1.6	0.52	ND	0.45	0.15	
80-62-6	Methyl Methacrylate	ND	3.3	1.0	ND	0.80	0.25	
142-82-5	n-Heptane	**56**	1.6	0.56	**14**	0.40	0.14	
10061-01-5	cis-1,3-Dichloropropene	ND	1.6	0.46	ND	0.36	0.10	
108-10-1	4-Methyl-2-pentanone	ND	1.6	0.52	ND	0.40	0.13	
10061-02-6	trans-1,3-Dichloropropene	ND	1.6	0.52	ND	0.36	0.12	
79-00-5	1,1,2-Trichloroethane	ND	1.6	0.52	ND	0.30	0.096	
108-88-3	Toluene	**2.5**	1.6	0.56	**0.67**	0.43	0.15	
591-78-6	2-Hexanone	ND	1.6	0.52	ND	0.40	0.13	
124-48-1	Dibromochloromethane	ND	1.6	0.52	ND	0.19	0.062	
106-93-4	1,2-Dibromoethane	ND	1.6	0.52	ND	0.21	0.068	
123-86-4	n-Butyl Acetate	ND	1.6	0.52	ND	0.34	0.11	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQs-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-002

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15 & 2/9/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.40 Liter(s)
Test Notes: 0.040 Liter(s)
Container ID: 1SS00069

Initial Pressure (psig): 0.47 Final Pressure (psig): 5.22

Canister Dilution Factor: 1.31

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	**4.9**	1.6	0.59	**1.1**	0.35	0.13	
127-18-4	Tetrachloroethene	**1.5**	1.6	0.46	**0.22**	0.24	0.068	**J**
108-90-7	Chlorobenzene	**4.2**	1.6	0.52	**0.91**	0.36	0.11	
100-41-4	Ethylbenzene	**3.4**	1.6	0.52	**0.79**	0.38	0.12	
179601-23-1	m,p-Xylenes	**6.8**	3.3	0.98	**1.6**	0.75	0.23	
75-25-2	Bromoform	ND	1.6	0.49	ND	0.16	0.048	
100-42-5	Styrene	ND	1.6	0.49	ND	0.38	0.12	
95-47-6	o-Xylene	**4.0**	1.6	0.49	**0.91**	0.38	0.11	
111-84-2	n-Nonane	**1.6**	1.6	0.49	**0.31**	0.31	0.094	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.6	0.49	ND	0.24	0.072	
98-82-8	Cumene	**2.0**	1.6	0.49	**0.41**	0.33	0.10	
80-56-8	alpha-Pinene	**5.6**	1.6	0.46	**1.0**	0.29	0.082	
103-65-1	n-Propylbenzene	**0.99**	1.6	0.52	**0.20**	0.33	0.11	**J**
622-96-8	4-Ethyltoluene	**1.2**	1.6	0.52	**0.24**	0.33	0.11	**J**
108-67-8	1,3,5-Trimethylbenzene	**2.7**	1.6	0.52	**0.56**	0.33	0.11	
95-63-6	1,2,4-Trimethylbenzene	**3.4**	1.6	0.49	**0.68**	0.33	0.10	
100-44-7	Benzyl Chloride	ND	1.6	0.36	ND	0.32	0.070	
541-73-1	1,3-Dichlorobenzene	ND	1.6	0.49	ND	0.27	0.082	
106-46-7	1,4-Dichlorobenzene	**1.7**	1.6	0.46	**0.28**	0.27	0.076	
95-50-1	1,2-Dichlorobenzene	ND	1.6	0.49	ND	0.27	0.082	
5989-27-5	d-Limonene	**1.8**	1.6	0.46	**0.32**	0.29	0.082	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.6	0.32	ND	0.17	0.034	
120-82-1	1,2,4-Trichlorobenzene	ND	1.6	0.52	ND	0.22	0.071	
91-20-3	Naphthalene	ND	1.6	0.59	ND	0.31	0.11	
87-68-3	Hexachlorobutadiene	ND	1.6	0.46	ND	0.15	0.043	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **128NQs-GRAB** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-002

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/28/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/6/15 & 2/9/15
Sample Type:	1.0 L Silonite Summa Canister	Volume(s) Analyzed:	0.40 Liter(s)
Test Notes:	**T**		0.040 Liter(s)
Container ID:	1SS00069		

Initial Pressure (psig): 0.47 Final Pressure (psig): 5.22

Canister Dilution Factor: 1.31

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.19	Propane	**830**	
4.84	Isobutane	**1,400**	
5.20	2-Methyl-1-propene	**1,000**	
5.37	n-Butane	**950**	
5.57	C4H8 Alkene	**350**	
5.85	C4H8 Alkene	**250**	
7.10	2-Methylbutane	**400**	
7.90	n-Pentane	**310**	
8.57	C5H10 Alkene	**220**	
9.10	2,2-Dimethylbutane	**270**	
10.27	2-Methylpentane	**230**	
10.75	3-Methylpentane	**160**	
13.71	3-Methylhexane	**260**	
14.04	Hexamethyldisiloxane	**170**	
20.13	unknown	**160**	
21.83	Unidentified Siloxane	**52**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128SQs-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-003

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.0013 Liter(s)
Test Notes:
Container ID: 1SS00175

Initial Pressure (psig): 0.53 Final Pressure (psig): 5.13

Canister Dilution Factor: 1.30

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	**25,000**	500	140	**14,000**	290	81	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	500	170	ND	100	34	
74-87-3	Chloromethane	**480**	500	150	**230**	240	73	**J**
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	500	190	ND	72	27	
75-01-4	Vinyl Chloride	ND	500	170	ND	200	67	
106-99-0	1,3-Butadiene	**740**	500	220	**340**	230	99	
74-83-9	Bromomethane	ND	500	190	ND	130	49	
75-00-3	Chloroethane	**390**	500	170	**150**	190	64	**J**
64-17-5	Ethanol	**4,700**	5,000	800	**2,500**	2,700	420	**J**
75-05-8	Acetonitrile	ND	500	180	ND	300	110	
107-02-8	Acrolein	ND	2,000	170	ND	870	74	
67-64-1	Acetone	**31,000**	5,000	770	**13,000**	2,100	320	
75-69-4	Trichlorofluoromethane	ND	500	170	ND	89	30	
67-63-0	2-Propanol (Isopropyl Alcohol)	**12,000**	5,000	420	**4,900**	2,000	170	
107-13-1	Acrylonitrile	ND	500	170	ND	230	78	
75-35-4	1,1-Dichloroethene	ND	500	170	ND	130	43	
75-09-2	Methylene Chloride	ND	500	170	ND	140	49	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	500	160	ND	160	51	
76-13-1	Trichlorotrifluoroethane	ND	500	170	ND	65	22	
75-15-0	Carbon Disulfide	ND	5,000	150	ND	1,600	48	
156-60-5	trans-1,2-Dichloroethene	ND	500	190	ND	130	48	
75-34-3	1,1-Dichloroethane	ND	500	160	ND	120	40	
1634-04-4	Methyl tert-Butyl Ether	ND	500	170	ND	140	47	
108-05-4	Vinyl Acetate	ND	5,000	650	ND	1,400	180	
78-93-3	2-Butanone (MEK)	**27,000**	5,000	210	**9,000**	1,700	71	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128SQs-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-003

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.0013 Liter(s)
Test Notes:
Container ID: 1SS00175

Initial Pressure (psig): 0.53 Final Pressure (psig): 5.13

Canister Dilution Factor: 1.30

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	500	160	ND	130	40	
141-78-6	Ethyl Acetate	ND	1,000	350	ND	280	97	
110-54-3	n-Hexane	**950**	500	150	**270**	140	43	
67-66-3	Chloroform	ND	500	170	ND	100	35	
109-99-9	Tetrahydrofuran (THF)	**28,000**	500	200	**9,700**	170	68	
107-06-2	1,2-Dichloroethane	ND	500	160	ND	120	40	
71-55-6	1,1,1-Trichloroethane	ND	500	170	ND	92	31	
71-43-2	Benzene	**87,000**	500	160	**27,000**	160	50	
56-23-5	Carbon Tetrachloride	ND	500	150	ND	80	24	
110-82-7	Cyclohexane	ND	1,000	290	ND	290	84	
78-87-5	1,2-Dichloropropane	ND	500	160	ND	110	35	
75-27-4	Bromodichloromethane	ND	500	150	ND	75	22	
79-01-6	Trichloroethene	ND	500	140	ND	93	26	
123-91-1	1,4-Dioxane	**290**	500	160	**80**	140	44	**J**
80-62-6	Methyl Methacrylate	ND	1,000	310	ND	240	76	
142-82-5	n-Heptane	**800**	500	170	**190**	120	41	
10061-01-5	cis-1,3-Dichloropropene	ND	500	140	ND	110	31	
108-10-1	4-Methyl-2-pentanone	**2,100**	500	160	**520**	120	39	
10061-02-6	trans-1,3-Dichloropropene	ND	500	160	ND	110	35	
79-00-5	1,1,2-Trichloroethane	ND	500	160	ND	92	29	
108-88-3	Toluene	**9,600**	500	170	**2,600**	130	45	
591-78-6	2-Hexanone	**720**	500	160	**180**	120	39	
124-48-1	Dibromochloromethane	ND	500	160	ND	59	19	
106-93-4	1,2-Dibromoethane	ND	500	160	ND	65	21	
123-86-4	n-Butyl Acetate	**1,100**	500	160	**220**	110	34	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128SQs-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-003

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.0013 Liter(s)
Test Notes:
Container ID: 1SS00175

Initial Pressure (psig): 0.53 Final Pressure (psig): 5.13

Canister Dilution Factor: 1.30

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	**2,400**	500	180	**520**	110	39	
127-18-4	Tetrachloroethene	ND	500	140	ND	74	21	
108-90-7	Chlorobenzene	**220**	500	160	**47**	110	35	**J**
100-41-4	Ethylbenzene	**5,000**	500	160	**1,200**	120	37	
179601-23-1	m,p-Xylenes	**9,400**	1,000	300	**2,200**	230	69	
75-25-2	Bromoform	ND	500	150	ND	48	15	
100-42-5	Styrene	**250**	500	150	**58**	120	35	**J**
95-47-6	o-Xylene	**4,000**	500	150	**920**	120	35	
111-84-2	n-Nonane	**2,600**	500	150	**490**	95	29	
79-34-5	1,1,2,2-Tetrachloroethane	ND	500	150	ND	73	22	
98-82-8	Cumene	**1,200**	500	150	**250**	100	31	
80-56-8	alpha-Pinene	**7,700**	500	140	**1,400**	90	25	
103-65-1	n-Propylbenzene	**770**	500	160	**160**	100	33	
622-96-8	4-Ethyltoluene	**1,000**	500	160	**210**	100	33	
108-67-8	1,3,5-Trimethylbenzene	**1,200**	500	160	**240**	100	33	
95-63-6	1,2,4-Trimethylbenzene	**3,800**	500	150	**780**	100	31	
100-44-7	Benzyl Chloride	ND	500	110	ND	97	21	
541-73-1	1,3-Dichlorobenzene	ND	500	150	ND	83	25	
106-46-7	1,4-Dichlorobenzene	**1,600**	500	140	**270**	83	23	
95-50-1	1,2-Dichlorobenzene	ND	500	150	ND	83	25	
5989-27-5	d-Limonene	**12,000**	500	140	**2,100**	90	25	
96-12-8	1,2-Dibromo-3-chloropropane	ND	500	99	ND	52	10	
120-82-1	1,2,4-Trichlorobenzene	ND	500	160	ND	67	22	
91-20-3	Naphthalene	ND	500	180	ND	95	34	
87-68-3	Hexachlorobutadiene	ND	500	140	ND	47	13	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **128SQs-GRAB** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-003

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/28/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/9/15
Sample Type:	1.0 L Silonite Summa Canister	Volume(s) Analyzed:	0.0013 Liter(s)
Test Notes:	**T**		
Container ID:	1SS00175		

Initial Pressure (psig): 0.53 Final Pressure (psig): 5.13

Canister Dilution Factor: 1.30

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.51	Dimethyl Ether	**15,000**	
5.17	2-Methyl-1-propene	**29,000**	
5.53	C4H8 Alkene	**10,000**	
5.81	C4H8 Alkene	**10,000**	
7.57	Furan	**70,000**	
8.16	Dimethyl Sulfide	**90,000**	
8.55	C5H10 Alkene	**7,300**	
9.67	Cyclopentene	**13,000**	
10.95	2-Butanol	**11,000**	
11.11	2-Methylfuran	**66,000**	
14.54	Methyl Butyrate	**11,000**	
15.15	Dimethyl disulfide	**11,000**	
16.98	3-Ethylcyclohexene	**6,600**	
20.27	n-Decane	**6,500**	
20.55	p-Isopropyltoluene	**19,000**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128Fs-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-004

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.00015 Liter(s)
Test Notes:
Container ID: 1SS00181

Initial Pressure (psig): 1.30 Final Pressure (psig): 5.16

Canister Dilution Factor: 1.24

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	**94,000**	4,100	1,200	**55,000**	2,400	670	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	4,100	1,400	ND	840	280	
74-87-3	Chloromethane	**10,000**	4,100	1,200	**4,800**	2,000	600	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	4,100	1,600	ND	590	220	
75-01-4	Vinyl Chloride	ND	4,100	1,400	ND	1,600	550	
106-99-0	1,3-Butadiene	**3,400**	4,100	1,800	**1,500**	1,900	820	**J**
74-83-9	Bromomethane	ND	4,100	1,600	ND	1,100	400	
75-00-3	Chloroethane	**2,500**	4,100	1,400	**940**	1,600	530	**J**
64-17-5	Ethanol	**500,000**	41,000	6,600	**260,000**	22,000	3,500	
75-05-8	Acetonitrile	ND	4,100	1,500	ND	2,500	890	
107-02-8	Acrolein	ND	17,000	1,400	ND	7,200	610	
67-64-1	Acetone	**930,000**	41,000	6,400	**390,000**	17,000	2,700	
75-69-4	Trichlorofluoromethane	ND	4,100	1,400	ND	740	250	
67-63-0	2-Propanol (Isopropyl Alcohol)	**140,000**	41,000	3,500	**57,000**	17,000	1,400	
107-13-1	Acrylonitrile	ND	4,100	1,400	ND	1,900	650	
75-35-4	1,1-Dichloroethene	ND	4,100	1,400	ND	1,000	350	
75-09-2	Methylene Chloride	ND	4,100	1,400	ND	1,200	400	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	4,100	1,300	ND	1,300	420	
76-13-1	Trichlorotrifluoroethane	ND	4,100	1,400	ND	540	180	
75-15-0	Carbon Disulfide	ND	41,000	1,200	ND	13,000	400	
156-60-5	trans-1,2-Dichloroethene	ND	4,100	1,600	ND	1,000	400	
75-34-3	1,1-Dichloroethane	ND	4,100	1,300	ND	1,000	330	
1634-04-4	Methyl tert-Butyl Ether	ND	4,100	1,400	ND	1,100	390	
108-05-4	Vinyl Acetate	ND	41,000	5,400	ND	12,000	1,500	
78-93-3	2-Butanone (MEK)	**600,000**	41,000	1,700	**200,000**	14,000	590	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **128Fs-GRAB** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-004

Test Code: EPA TO-15 Modified Date Collected: 1/28/15

Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15

Analyst: Lusine Hakobyan Date Analyzed: 2/9/15

Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.00015 Liter(s)

Test Notes:

Container ID: 1SS00181

Initial Pressure (psig): 1.30 Final Pressure (psig): 5.16

Canister Dilution Factor: 1.24

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	4,100	1,300	ND	1,000	330	
141-78-6	Ethyl Acetate	**130,000**	8,300	2,900	**35,000**	2,300	800	
110-54-3	n-Hexane	**4,100**	4,100	1,200	**1,200**	1,200	350	**J**
67-66-3	Chloroform	ND	4,100	1,400	ND	850	290	
109-99-9	Tetrahydrofuran (THF)	**340,000**	4,100	1,700	**110,000**	1,400	560	
107-06-2	1,2-Dichloroethane	ND	4,100	1,300	ND	1,000	330	
71-55-6	1,1,1-Trichloroethane	ND	4,100	1,400	ND	760	260	
71-43-2	Benzene	**460,000**	4,100	1,300	**140,000**	1,300	410	
56-23-5	Carbon Tetrachloride	ND	4,100	1,200	ND	660	200	
110-82-7	Cyclohexane	ND	8,300	2,400	ND	2,400	700	
78-87-5	1,2-Dichloropropane	ND	4,100	1,300	ND	890	290	
75-27-4	Bromodichloromethane	ND	4,100	1,200	ND	620	190	
79-01-6	Trichloroethene	ND	4,100	1,200	ND	770	220	
123-91-1	1,4-Dioxane	**5,300**	4,100	1,300	**1,500**	1,100	370	
80-62-6	Methyl Methacrylate	ND	8,300	2,600	ND	2,000	630	
142-82-5	n-Heptane	**4,200**	4,100	1,400	**1,000**	1,000	340	
10061-01-5	cis-1,3-Dichloropropene	ND	4,100	1,200	ND	910	260	
108-10-1	4-Methyl-2-pentanone	**18,000**	4,100	1,300	**4,300**	1,000	320	
10061-02-6	trans-1,3-Dichloropropene	ND	4,100	1,300	ND	910	290	
79-00-5	1,1,2-Trichloroethane	ND	4,100	1,300	ND	760	240	
108-88-3	Toluene	**60,000**	4,100	1,400	**16,000**	1,100	370	
591-78-6	2-Hexanone	**6,700**	4,100	1,300	**1,600**	1,000	320	
124-48-1	Dibromochloromethane	ND	4,100	1,300	ND	490	160	
106-93-4	1,2-Dibromoethane	ND	4,100	1,300	ND	540	170	
123-86-4	n-Butyl Acetate	**42,000**	4,100	1,300	**8,900**	870	280	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128Fs-GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-004

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.00015 Liter(s)
Test Notes:
Container ID: 1SS00181

Initial Pressure (psig): 1.30 Final Pressure (psig): 5.16

Canister Dilution Factor: 1.24

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	**11,000**	4,100	1,500	**2,400**	890	320	
127-18-4	Tetrachloroethene	ND	4,100	1,200	ND	610	170	
108-90-7	Chlorobenzene	ND	4,100	1,300	ND	900	290	
100-41-4	Ethylbenzene	**19,000**	4,100	1,300	**4,400**	950	300	
179601-23-1	m,p-Xylenes	**31,000**	8,300	2,500	**7,200**	1,900	570	
75-25-2	Bromoform	ND	4,100	1,200	ND	400	120	
100-42-5	Styrene	ND	4,100	1,200	ND	970	290	
95-47-6	o-Xylene	**9,900**	4,100	1,200	**2,300**	950	290	
111-84-2	n-Nonane	**8,300**	4,100	1,200	**1,600**	790	240	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4,100	1,200	ND	600	180	
98-82-8	Cumene	**2,800**	4,100	1,200	**580**	840	250	**J**
80-56-8	alpha-Pinene	**11,000**	4,100	1,200	**1,900**	740	210	
103-65-1	n-Propylbenzene	ND	4,100	1,300	ND	840	270	
622-96-8	4-Ethyltoluene	**1,600**	4,100	1,300	**320**	840	270	**J**
108-67-8	1,3,5-Trimethylbenzene	**1,500**	4,100	1,300	**310**	840	270	**J**
95-63-6	1,2,4-Trimethylbenzene	**4,000**	4,100	1,200	**820**	840	250	**J**
100-44-7	Benzyl Chloride	ND	4,100	910	ND	800	180	
541-73-1	1,3-Dichlorobenzene	ND	4,100	1,200	ND	690	210	
106-46-7	1,4-Dichlorobenzene	**2,200**	4,100	1,200	**360**	690	190	**J**
95-50-1	1,2-Dichlorobenzene	ND	4,100	1,200	ND	690	210	
5989-27-5	d-Limonene	**8,300**	4,100	1,200	**1,500**	740	210	
96-12-8	1,2-Dibromo-3-chloropropane	ND	4,100	820	ND	430	85	
120-82-1	1,2,4-Trichlorobenzene	ND	4,100	1,300	ND	560	180	
91-20-3	Naphthalene	ND	4,100	1,500	ND	790	280	
87-68-3	Hexachlorobutadiene	ND	4,100	1,200	ND	390	110	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **128Fs-GRAB** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-004

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/28/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/9/15
Sample Type:	1.0 L Silonite Summa Canister	Volume(s) Analyzed:	0.00015 Liter(s)
Test Notes:	**T**		
Container ID:	1SS00181		

Initial Pressure (psig): 1.30 Final Pressure (psig): 5.16

Canister Dilution Factor: 1.24

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.51	Dimethyl Ether	**140,000**	
5.16	2-Methyl-1-propene	**95,000**	
5.52	C4H8 Alkene	**55,000**	
5.81	C4H8 Alkene	**57,000**	
8.17	Dimethyl Sulfide	**1,300,000**	
9.58	1-Propanol	**79,000**	
10.95	2-Butanol	**100,000**	
11.12	2-Methylfuran	**390,000**	
11.87	Methyl Propionate	**380,000**	
13.40	2-Pentanone	**56,000**	
13.58	Falsefalse	**94,000**	
14.54	Methyl Butyrate	**530,000**	
15.15	Dimethyl disulfide	**120,000**	
15.95	Methyl isovalerate	**60,000**	
17.02	Methyl valerate	**55,000**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-005

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.40 Liter(s)
Test Notes:
Container ID: 1SS00168

Initial Pressure (psig): -0.04 Final Pressure (psig): 5.34

Canister Dilution Factor: 1.37

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	**0.48**	1.7	0.48	**0.28**	1.0	0.28	**J**
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.1**	1.7	0.58	**0.42**	0.35	0.12	
74-87-3	Chloromethane	**0.83**	1.7	0.51	**0.40**	0.83	0.25	**J**
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	1.7	0.65	ND	0.25	0.093	
75-01-4	Vinyl Chloride	ND	1.7	0.58	ND	0.67	0.23	
106-99-0	1,3-Butadiene	ND	1.7	0.75	ND	0.77	0.34	
74-83-9	Bromomethane	ND	1.7	0.65	ND	0.44	0.17	
75-00-3	Chloroethane	ND	1.7	0.58	ND	0.65	0.22	
64-17-5	Ethanol	**6.0**	17	2.7	**3.2**	9.1	1.5	**J**
75-05-8	Acetonitrile	ND	1.7	0.62	ND	1.0	0.37	
107-02-8	Acrolein	ND	6.9	0.58	ND	3.0	0.25	
67-64-1	Acetone	**8.3**	17	2.6	**3.5**	7.2	1.1	**J, B**
75-69-4	Trichlorofluoromethane	**1.2**	1.7	0.58	**0.22**	0.30	0.10	**J**
67-63-0	2-Propanol (Isopropyl Alcohol)	**1.6**	17	1.4	**0.65**	7.0	0.59	**J**
107-13-1	Acrylonitrile	ND	1.7	0.58	ND	0.79	0.27	
75-35-4	1,1-Dichloroethene	ND	1.7	0.58	ND	0.43	0.15	
75-09-2	Methylene Chloride	ND	1.7	0.58	ND	0.49	0.17	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	1.7	0.55	ND	0.55	0.18	
76-13-1	Trichlorotrifluoroethane	ND	1.7	0.58	ND	0.22	0.076	
75-15-0	Carbon Disulfide	ND	17	0.51	ND	5.5	0.17	
156-60-5	trans-1,2-Dichloroethene	ND	1.7	0.65	ND	0.43	0.16	
75-34-3	1,1-Dichloroethane	ND	1.7	0.55	ND	0.42	0.14	
1634-04-4	Methyl tert-Butyl Ether	ND	1.7	0.58	ND	0.48	0.16	
108-05-4	Vinyl Acetate	ND	17	2.2	ND	4.9	0.63	
78-93-3	2-Butanone (MEK)	**2.7**	17	0.72	**0.92**	5.8	0.24	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
B = Analyte detected in both the sample and associated method blank.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-005

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.40 Liter(s)
Test Notes:
Container ID: 1SS00168

Initial Pressure (psig): -0.04 Final Pressure (psig): 5.34

Canister Dilution Factor: 1.37

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	1.7	0.55	ND	0.43	0.14	
141-78-6	Ethyl Acetate	ND	3.4	1.2	ND	0.95	0.33	
110-54-3	n-Hexane	ND	1.7	0.51	ND	0.49	0.15	
67-66-3	Chloroform	ND	1.7	0.58	ND	0.35	0.12	
109-99-9	Tetrahydrofuran (THF)	**0.84**	1.7	0.69	**0.28**	0.58	0.23	**J**
107-06-2	1,2-Dichloroethane	ND	1.7	0.55	ND	0.42	0.14	
71-55-6	1,1,1-Trichloroethane	ND	1.7	0.58	ND	0.31	0.11	
71-43-2	Benzene	**2.4**	1.7	0.55	**0.76**	0.54	0.17	
56-23-5	Carbon Tetrachloride	ND	1.7	0.51	ND	0.27	0.082	
110-82-7	Cyclohexane	ND	3.4	0.99	ND	1.0	0.29	
78-87-5	1,2-Dichloropropane	ND	1.7	0.55	ND	0.37	0.12	
75-27-4	Bromodichloromethane	ND	1.7	0.51	ND	0.26	0.077	
79-01-6	Trichloroethene	ND	1.7	0.48	ND	0.32	0.089	
123-91-1	1,4-Dioxane	ND	1.7	0.55	ND	0.48	0.15	
80-62-6	Methyl Methacrylate	ND	3.4	1.1	ND	0.84	0.26	
142-82-5	n-Heptane	ND	1.7	0.58	ND	0.42	0.14	
10061-01-5	cis-1,3-Dichloropropene	ND	1.7	0.48	ND	0.38	0.11	
108-10-1	4-Methyl-2-pentanone	ND	1.7	0.55	ND	0.42	0.13	
10061-02-6	trans-1,3-Dichloropropene	ND	1.7	0.55	ND	0.38	0.12	
79-00-5	1,1,2-Trichloroethane	ND	1.7	0.55	ND	0.31	0.10	
108-88-3	Toluene	**0.71**	1.7	0.58	**0.19**	0.45	0.15	**J**
591-78-6	2-Hexanone	ND	1.7	0.55	ND	0.42	0.13	
124-48-1	Dibromochloromethane	ND	1.7	0.55	ND	0.20	0.064	
106-93-4	1,2-Dibromoethane	ND	1.7	0.55	ND	0.22	0.071	
123-86-4	n-Butyl Acetate	ND	1.7	0.55	ND	0.36	0.12	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128GRAB** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-005

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.40 Liter(s)
Test Notes:
Container ID: 1SS00168

Initial Pressure (psig): -0.04 Final Pressure (psig): 5.34

Canister Dilution Factor: 1.37

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	ND	1.7	0.62	ND	0.37	0.13	
127-18-4	Tetrachloroethene	ND	1.7	0.48	ND	0.25	0.071	
108-90-7	Chlorobenzene	ND	1.7	0.55	ND	0.37	0.12	
100-41-4	Ethylbenzene	ND	1.7	0.55	ND	0.39	0.13	
179601-23-1	m,p-Xylenes	ND	3.4	1.0	ND	0.79	0.24	
75-25-2	Bromoform	ND	1.7	0.51	ND	0.17	0.050	
100-42-5	Styrene	ND	1.7	0.51	ND	0.40	0.12	
95-47-6	o-Xylene	ND	1.7	0.51	ND	0.39	0.12	
111-84-2	n-Nonane	ND	1.7	0.51	ND	0.33	0.098	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.7	0.51	ND	0.25	0.075	
98-82-8	Cumene	ND	1.7	0.51	ND	0.35	0.10	
80-56-8	alpha-Pinene	ND	1.7	0.48	ND	0.31	0.086	
103-65-1	n-Propylbenzene	ND	1.7	0.55	ND	0.35	0.11	
622-96-8	4-Ethyltoluene	ND	1.7	0.55	ND	0.35	0.11	
108-67-8	1,3,5-Trimethylbenzene	ND	1.7	0.55	ND	0.35	0.11	
95-63-6	1,2,4-Trimethylbenzene	ND	1.7	0.51	ND	0.35	0.10	
100-44-7	Benzyl Chloride	ND	1.7	0.38	ND	0.33	0.073	
541-73-1	1,3-Dichlorobenzene	ND	1.7	0.51	ND	0.28	0.085	
106-46-7	1,4-Dichlorobenzene	ND	1.7	0.48	ND	0.28	0.080	
95-50-1	1,2-Dichlorobenzene	ND	1.7	0.51	ND	0.28	0.085	
5989-27-5	d-Limonene	ND	1.7	0.48	ND	0.31	0.086	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.7	0.34	ND	0.18	0.035	
120-82-1	1,2,4-Trichlorobenzene	ND	1.7	0.55	ND	0.23	0.074	
91-20-3	Naphthalene	ND	1.7	0.62	ND	0.33	0.12	
87-68-3	Hexachlorobutadiene	ND	1.7	0.48	ND	0.16	0.045	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **128GRAB** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-005

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/28/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/6/15
Sample Type:	1.0 L Silonite Summa Canister	Volume(s) Analyzed:	0.40 Liter(s)
Test Notes:			
Container ID:	1SS00168		

Initial Pressure (psig): -0.04 Final Pressure (psig): 5.34

Canister Dilution Factor: 1.37

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
	No Compounds Detected		

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **129GRAB2D** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-006

Test Code: EPA TO-15 Modified Date Collected: 1/29/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.40 Liter(s)
Test Notes:
Container ID: 1SS00088

Initial Pressure (psig): -0.18 Final Pressure (psig): 5.68

Canister Dilution Factor: 1.40

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	ND	1.8	0.49	ND	1.0	0.28	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.2**	1.8	0.60	**0.44**	0.35	0.12	
74-87-3	Chloromethane	**0.79**	1.8	0.53	**0.38**	0.85	0.25	**J**
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	1.8	0.67	ND	0.25	0.095	
75-01-4	Vinyl Chloride	ND	1.8	0.60	ND	0.68	0.23	
106-99-0	1,3-Butadiene	ND	1.8	0.77	ND	0.79	0.35	
74-83-9	Bromomethane	ND	1.8	0.67	ND	0.45	0.17	
75-00-3	Chloroethane	ND	1.8	0.60	ND	0.66	0.23	
64-17-5	Ethanol	ND	18	2.8	ND	9.3	1.5	
75-05-8	Acetonitrile	ND	1.8	0.63	ND	1.0	0.38	
107-02-8	Acrolein	ND	7.0	0.60	ND	3.1	0.26	
67-64-1	Acetone	**2.8**	18	2.7	**1.2**	7.4	1.1	**J, B**
75-69-4	Trichlorofluoromethane	**1.3**	1.8	0.60	**0.22**	0.31	0.11	**J**
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	18	1.5	ND	7.1	0.60	
107-13-1	Acrylonitrile	ND	1.8	0.60	ND	0.81	0.27	
75-35-4	1,1-Dichloroethene	ND	1.8	0.60	ND	0.44	0.15	
75-09-2	Methylene Chloride	ND	1.8	0.60	ND	0.50	0.17	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	1.8	0.56	ND	0.56	0.18	
76-13-1	Trichlorotrifluoroethane	ND	1.8	0.60	ND	0.23	0.078	
75-15-0	Carbon Disulfide	ND	18	0.53	ND	5.6	0.17	
156-60-5	trans-1,2-Dichloroethene	ND	1.8	0.67	ND	0.44	0.17	
75-34-3	1,1-Dichloroethane	ND	1.8	0.56	ND	0.43	0.14	
1634-04-4	Methyl tert-Butyl Ether	ND	1.8	0.60	ND	0.49	0.17	
108-05-4	Vinyl Acetate	ND	18	2.3	ND	5.0	0.65	
78-93-3	2-Butanone (MEK)	ND	18	0.74	ND	5.9	0.25	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
B = Analyte detected in both the sample and associated method blank.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **129GRAB2D** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-006

Test Code: EPA TO-15 Modified Date Collected: 1/29/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.40 Liter(s)
Test Notes:
Container ID: 1SS00088

Initial Pressure (psig): -0.18 Final Pressure (psig): 5.68

Canister Dilution Factor: 1.40

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	1.8	0.56	ND	0.44	0.14	
141-78-6	Ethyl Acetate	ND	3.5	1.2	ND	0.97	0.34	
110-54-3	n-Hexane	ND	1.8	0.53	ND	0.50	0.15	
67-66-3	Chloroform	ND	1.8	0.60	ND	0.36	0.12	
109-99-9	Tetrahydrofuran (THF)	ND	1.8	0.70	ND	0.59	0.24	
107-06-2	1,2-Dichloroethane	ND	1.8	0.56	ND	0.43	0.14	
71-55-6	1,1,1-Trichloroethane	ND	1.8	0.60	ND	0.32	0.11	
71-43-2	Benzene	**0.87**	1.8	0.56	**0.27**	0.55	0.18	**J**
56-23-5	Carbon Tetrachloride	ND	1.8	0.53	ND	0.28	0.083	
110-82-7	Cyclohexane	ND	3.5	1.0	ND	1.0	0.29	
78-87-5	1,2-Dichloropropane	ND	1.8	0.56	ND	0.38	0.12	
75-27-4	Bromodichloromethane	ND	1.8	0.53	ND	0.26	0.078	
79-01-6	Trichloroethene	ND	1.8	0.49	ND	0.33	0.091	
123-91-1	1,4-Dioxane	ND	1.8	0.56	ND	0.49	0.16	
80-62-6	Methyl Methacrylate	ND	3.5	1.1	ND	0.86	0.27	
142-82-5	n-Heptane	ND	1.8	0.60	ND	0.43	0.15	
10061-01-5	cis-1,3-Dichloropropene	ND	1.8	0.49	ND	0.39	0.11	
108-10-1	4-Methyl-2-pentanone	ND	1.8	0.56	ND	0.43	0.14	
10061-02-6	trans-1,3-Dichloropropene	ND	1.8	0.56	ND	0.39	0.12	
79-00-5	1,1,2-Trichloroethane	ND	1.8	0.56	ND	0.32	0.10	
108-88-3	Toluene	ND	1.8	0.60	ND	0.46	0.16	
591-78-6	2-Hexanone	ND	1.8	0.56	ND	0.43	0.14	
124-48-1	Dibromochloromethane	ND	1.8	0.56	ND	0.21	0.066	
106-93-4	1,2-Dibromoethane	ND	1.8	0.56	ND	0.23	0.073	
123-86-4	n-Butyl Acetate	ND	1.8	0.56	ND	0.37	0.12	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **129GRAB2D** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-006

Test Code: EPA TO-15 Modified Date Collected: 1/29/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.40 Liter(s)
Test Notes:
Container ID: 1SS00088

Initial Pressure (psig): -0.18 Final Pressure (psig): 5.68

Canister Dilution Factor: 1.40

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	ND	1.8	0.63	ND	0.37	0.13	
127-18-4	Tetrachloroethene	ND	1.8	0.49	ND	0.26	0.072	
108-90-7	Chlorobenzene	ND	1.8	0.56	ND	0.38	0.12	
100-41-4	Ethylbenzene	ND	1.8	0.56	ND	0.40	0.13	
179601-23-1	m,p-Xylenes	ND	3.5	1.1	ND	0.81	0.24	
75-25-2	Bromoform	ND	1.8	0.53	ND	0.17	0.051	
100-42-5	Styrene	ND	1.8	0.53	ND	0.41	0.12	
95-47-6	o-Xylene	ND	1.8	0.53	ND	0.40	0.12	
111-84-2	n-Nonane	ND	1.8	0.53	ND	0.33	0.10	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.8	0.53	ND	0.25	0.076	
98-82-8	Cumene	ND	1.8	0.53	ND	0.36	0.11	
80-56-8	alpha-Pinene	ND	1.8	0.49	ND	0.31	0.088	
103-65-1	n-Propylbenzene	ND	1.8	0.56	ND	0.36	0.11	
622-96-8	4-Ethyltoluene	ND	1.8	0.56	ND	0.36	0.11	
108-67-8	1,3,5-Trimethylbenzene	ND	1.8	0.56	ND	0.36	0.11	
95-63-6	1,2,4-Trimethylbenzene	ND	1.8	0.53	ND	0.36	0.11	
100-44-7	Benzyl Chloride	ND	1.8	0.39	ND	0.34	0.074	
541-73-1	1,3-Dichlorobenzene	ND	1.8	0.53	ND	0.29	0.087	
106-46-7	1,4-Dichlorobenzene	ND	1.8	0.49	ND	0.29	0.082	
95-50-1	1,2-Dichlorobenzene	ND	1.8	0.53	ND	0.29	0.087	
5989-27-5	d-Limonene	ND	1.8	0.49	ND	0.31	0.088	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.8	0.35	ND	0.18	0.036	
120-82-1	1,2,4-Trichlorobenzene	ND	1.8	0.56	ND	0.24	0.075	
91-20-3	Naphthalene	ND	1.8	0.63	ND	0.33	0.12	
87-68-3	Hexachlorobutadiene	ND	1.8	0.49	ND	0.16	0.046	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **129GRAB2D** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-006

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/29/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/6/15
Sample Type:	1.0 L Silonite Summa Canister	Volume(s) Analyzed:	0.40 Liter(s)
Test Notes:			
Container ID:	1SS00088		

Initial Pressure (psig): -0.18 Final Pressure (psig): 5.68

Canister Dilution Factor: 1.40

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
	No Compounds Detected		

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **129GRAB3U** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-007

Test Code: EPA TO-15 Modified Date Collected: 1/29/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.40 Liter(s)
Test Notes:
Container ID: 1SS00024

Initial Pressure (psig): -0.11 Final Pressure (psig): 5.12

Canister Dilution Factor: 1.36

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	ND	1.7	0.48	ND	0.99	0.28	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.4**	1.7	0.58	**0.48**	0.34	0.12	
74-87-3	Chloromethane	**0.76**	1.7	0.51	**0.37**	0.82	0.25	**J**
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	1.7	0.65	ND	0.24	0.092	
75-01-4	Vinyl Chloride	ND	1.7	0.58	ND	0.67	0.23	
106-99-0	1,3-Butadiene	ND	1.7	0.75	ND	0.77	0.34	
74-83-9	Bromomethane	ND	1.7	0.65	ND	0.44	0.17	
75-00-3	Chloroethane	ND	1.7	0.58	ND	0.64	0.22	
64-17-5	Ethanol	ND	17	2.7	ND	9.0	1.4	
75-05-8	Acetonitrile	ND	1.7	0.61	ND	1.0	0.36	
107-02-8	Acrolein	ND	6.8	0.58	ND	3.0	0.25	
67-64-1	Acetone	**4.1**	17	2.6	**1.7**	7.2	1.1	**J, B**
75-69-4	Trichlorofluoromethane	**1.3**	1.7	0.58	**0.22**	0.30	0.10	**J**
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	17	1.4	ND	6.9	0.58	
107-13-1	Acrylonitrile	ND	1.7	0.58	ND	0.78	0.27	
75-35-4	1,1-Dichloroethene	ND	1.7	0.58	ND	0.43	0.15	
75-09-2	Methylene Chloride	**0.85**	1.7	0.58	**0.25**	0.49	0.17	**J**
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	1.7	0.54	ND	0.54	0.17	
76-13-1	Trichlorotrifluoroethane	ND	1.7	0.58	ND	0.22	0.075	
75-15-0	Carbon Disulfide	**0.88**	17	0.51	**0.28**	5.5	0.16	**J**
156-60-5	trans-1,2-Dichloroethene	ND	1.7	0.65	ND	0.43	0.16	
75-34-3	1,1-Dichloroethane	ND	1.7	0.54	ND	0.42	0.13	
1634-04-4	Methyl tert-Butyl Ether	ND	1.7	0.58	ND	0.47	0.16	
108-05-4	Vinyl Acetate	ND	17	2.2	ND	4.8	0.63	
78-93-3	2-Butanone (MEK)	ND	17	0.71	ND	5.8	0.24	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
B = Analyte detected in both the sample and associated method blank.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **129GRAB3U** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-007

Test Code: EPA TO-15 Modified Date Collected: 1/29/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.40 Liter(s)
Test Notes:
Container ID: 1SS00024

Initial Pressure (psig): -0.11 Final Pressure (psig): 5.12

Canister Dilution Factor: 1.36

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	1.7	0.54	ND	0.43	0.14	
141-78-6	Ethyl Acetate	ND	3.4	1.2	ND	0.94	0.33	
110-54-3	n-Hexane	ND	1.7	0.51	ND	0.48	0.14	
67-66-3	Chloroform	ND	1.7	0.58	ND	0.35	0.12	
109-99-9	Tetrahydrofuran (THF)	ND	1.7	0.68	ND	0.58	0.23	
107-06-2	1,2-Dichloroethane	ND	1.7	0.54	ND	0.42	0.13	
71-55-6	1,1,1-Trichloroethane	ND	1.7	0.58	ND	0.31	0.11	
71-43-2	Benzene	ND	1.7	0.54	ND	0.53	0.17	
56-23-5	Carbon Tetrachloride	ND	1.7	0.51	ND	0.27	0.081	
110-82-7	Cyclohexane	ND	3.4	0.99	ND	0.99	0.29	
78-87-5	1,2-Dichloropropane	ND	1.7	0.54	ND	0.37	0.12	
75-27-4	Bromodichloromethane	ND	1.7	0.51	ND	0.25	0.076	
79-01-6	Trichloroethene	ND	1.7	0.48	ND	0.32	0.089	
123-91-1	1,4-Dioxane	ND	1.7	0.54	ND	0.47	0.15	
80-62-6	Methyl Methacrylate	ND	3.4	1.1	ND	0.83	0.26	
142-82-5	n-Heptane	ND	1.7	0.58	ND	0.41	0.14	
10061-01-5	cis-1,3-Dichloropropene	ND	1.7	0.48	ND	0.37	0.10	
108-10-1	4-Methyl-2-pentanone	ND	1.7	0.54	ND	0.41	0.13	
10061-02-6	trans-1,3-Dichloropropene	ND	1.7	0.54	ND	0.37	0.12	
79-00-5	1,1,2-Trichloroethane	ND	1.7	0.54	ND	0.31	0.10	
108-88-3	Toluene	ND	1.7	0.58	ND	0.45	0.15	
591-78-6	2-Hexanone	ND	1.7	0.54	ND	0.42	0.13	
124-48-1	Dibromochloromethane	ND	1.7	0.54	ND	0.20	0.064	
106-93-4	1,2-Dibromoethane	ND	1.7	0.54	ND	0.22	0.071	
123-86-4	n-Butyl Acetate	ND	1.7	0.54	ND	0.36	0.11	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **129GRAB3U** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-007

Test Code: EPA TO-15 Modified Date Collected: 1/29/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.40 Liter(s)
Test Notes:
Container ID: 1SS00024

Initial Pressure (psig): -0.11 Final Pressure (psig): 5.12

Canister Dilution Factor: 1.36

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	ND	1.7	0.61	ND	0.36	0.13	
127-18-4	Tetrachloroethene	ND	1.7	0.48	ND	0.25	0.070	
108-90-7	Chlorobenzene	ND	1.7	0.54	ND	0.37	0.12	
100-41-4	Ethylbenzene	ND	1.7	0.54	ND	0.39	0.13	
179601-23-1	m,p-Xylenes	ND	3.4	1.0	ND	0.78	0.23	
75-25-2	Bromoform	ND	1.7	0.51	ND	0.16	0.049	
100-42-5	Styrene	ND	1.7	0.51	ND	0.40	0.12	
95-47-6	o-Xylene	ND	1.7	0.51	ND	0.39	0.12	
111-84-2	n-Nonane	ND	1.7	0.51	ND	0.32	0.097	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.7	0.51	ND	0.25	0.074	
98-82-8	Cumene	ND	1.7	0.51	ND	0.35	0.10	
80-56-8	alpha-Pinene	ND	1.7	0.48	ND	0.31	0.085	
103-65-1	n-Propylbenzene	ND	1.7	0.54	ND	0.35	0.11	
622-96-8	4-Ethyltoluene	ND	1.7	0.54	ND	0.35	0.11	
108-67-8	1,3,5-Trimethylbenzene	ND	1.7	0.54	ND	0.35	0.11	
95-63-6	1,2,4-Trimethylbenzene	ND	1.7	0.51	ND	0.35	0.10	
100-44-7	Benzyl Chloride	ND	1.7	0.37	ND	0.33	0.072	
541-73-1	1,3-Dichlorobenzene	ND	1.7	0.51	ND	0.28	0.085	
106-46-7	1,4-Dichlorobenzene	ND	1.7	0.48	ND	0.28	0.079	
95-50-1	1,2-Dichlorobenzene	ND	1.7	0.51	ND	0.28	0.085	
5989-27-5	d-Limonene	ND	1.7	0.48	ND	0.31	0.085	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.7	0.34	ND	0.18	0.035	
120-82-1	1,2,4-Trichlorobenzene	ND	1.7	0.54	ND	0.23	0.073	
91-20-3	Naphthalene	ND	1.7	0.61	ND	0.32	0.12	
87-68-3	Hexachlorobutadiene	ND	1.7	0.48	ND	0.16	0.045	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **129GRAB3U** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-007

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/29/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/6/15
Sample Type:	1.0 L Silonite Summa Canister	Volume(s) Analyzed:	0.40 Liter(s)
Test Notes:	**T**		
Container ID:	1SS00024		

Initial Pressure (psig): -0.11 Final Pressure (psig): 5.12

Canister Dilution Factor: 1.36

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.20	Sulfur Dioxide	**> 26**	**!**
17.30	Hexamethylcyclotrisiloxane	**16**	

T = Analyte is a tentatively identified compound, result is estimated.

! = Previous studies have shown that EPA Method TO-15 is not an appropriate method for quantifying Sulfur Dioxide.

The TIC results fro this compound is reported as "greater than" since the numeric value is probably biased low.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127U1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-008

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15 & 2/9/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: 0.10 Liter(s)
Container ID: AS00301

Initial Pressure (psig): -5.12 Final Pressure (psig): 3.26

Canister Dilution Factor: 1.87

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	**2.0**	0.94	0.26	**1.2**	0.54	0.15	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.3**	0.94	0.32	**0.46**	0.19	0.064	
74-87-3	Chloromethane	**0.50**	0.94	0.28	**0.24**	0.45	0.14	**J**
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.94	0.36	ND	0.13	0.051	
75-01-4	Vinyl Chloride	ND	0.94	0.32	ND	0.37	0.12	
106-99-0	1,3-Butadiene	ND	0.94	0.41	ND	0.42	0.19	
74-83-9	Bromomethane	ND	0.94	0.36	ND	0.24	0.092	
75-00-3	Chloroethane	ND	0.94	0.32	ND	0.35	0.12	
64-17-5	Ethanol	**1.9**	9.4	1.5	**1.0**	5.0	0.79	**J**
75-05-8	Acetonitrile	**240**	9.4	3.4	**150**	5.6	2.0	**D**
107-02-8	Acrolein	ND	3.7	0.32	ND	1.6	0.14	
67-64-1	Acetone	**4.2**	9.4	1.4	**1.7**	3.9	0.61	**J, B**
75-69-4	Trichlorofluoromethane	**1.3**	0.94	0.32	**0.23**	0.17	0.057	
67-63-0	2-Propanol (Isopropyl Alcohol)	**4.3**	9.4	0.79	**1.7**	3.8	0.32	**J**
107-13-1	Acrylonitrile	ND	0.94	0.32	ND	0.43	0.15	
75-35-4	1,1-Dichloroethene	ND	0.94	0.32	ND	0.24	0.080	
75-09-2	Methylene Chloride	**3.4**	0.94	0.32	**0.97**	0.27	0.092	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.94	0.30	ND	0.30	0.096	
76-13-1	Trichlorotrifluoroethane	**0.47**	0.94	0.32	**0.061**	0.12	0.041	**J**
75-15-0	Carbon Disulfide	ND	9.4	0.28	ND	3.0	0.090	
156-60-5	trans-1,2-Dichloroethene	ND	0.94	0.36	ND	0.24	0.090	
75-34-3	1,1-Dichloroethane	ND	0.94	0.30	ND	0.23	0.074	
1634-04-4	Methyl tert-Butyl Ether	ND	0.94	0.32	ND	0.26	0.088	
108-05-4	Vinyl Acetate	ND	9.4	1.2	ND	2.7	0.35	
78-93-3	2-Butanone (MEK)	**0.42**	9.4	0.39	**0.14**	3.2	0.13	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
B = Analyte detected in both the sample and associated method blank.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127U1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-008

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15 & 2/9/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: 0.10 Liter(s)
Container ID: AS00301

Initial Pressure (psig): -5.12 Final Pressure (psig): 3.26

Canister Dilution Factor: 1.87

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.94	0.30	ND	0.24	0.075	
141-78-6	Ethyl Acetate	**6.8**	1.9	0.65	**1.9**	0.52	0.18	
110-54-3	n-Hexane	**0.50**	0.94	0.28	**0.14**	0.27	0.080	**J**
67-66-3	Chloroform	ND	0.94	0.32	ND	0.19	0.065	
109-99-9	Tetrahydrofuran (THF)	ND	0.94	0.37	ND	0.32	0.13	
107-06-2	1,2-Dichloroethane	ND	0.94	0.30	ND	0.23	0.074	
71-55-6	1,1,1-Trichloroethane	ND	0.94	0.32	ND	0.17	0.058	
71-43-2	Benzene	**0.38**	0.94	0.30	**0.12**	0.29	0.094	**J**
56-23-5	Carbon Tetrachloride	**0.49**	0.94	0.28	**0.078**	0.15	0.045	**J**
110-82-7	Cyclohexane	ND	1.9	0.54	ND	0.54	0.16	
78-87-5	1,2-Dichloropropane	ND	0.94	0.30	ND	0.20	0.065	
75-27-4	Bromodichloromethane	ND	0.94	0.28	ND	0.14	0.042	
79-01-6	Trichloroethene	ND	0.94	0.26	ND	0.17	0.049	
123-91-1	1,4-Dioxane	ND	0.94	0.30	ND	0.26	0.083	
80-62-6	Methyl Methacrylate	ND	1.9	0.58	ND	0.46	0.14	
142-82-5	n-Heptane	ND	0.94	0.32	ND	0.23	0.078	
10061-01-5	cis-1,3-Dichloropropene	ND	0.94	0.26	ND	0.21	0.058	
108-10-1	4-Methyl-2-pentanone	ND	0.94	0.30	ND	0.23	0.073	
10061-02-6	trans-1,3-Dichloropropene	ND	0.94	0.30	ND	0.21	0.066	
79-00-5	1,1,2-Trichloroethane	ND	0.94	0.30	ND	0.17	0.055	
108-88-3	Toluene	**0.88**	0.94	0.32	**0.23**	0.25	0.084	**J**
591-78-6	2-Hexanone	ND	0.94	0.30	ND	0.23	0.073	
124-48-1	Dibromochloromethane	ND	0.94	0.30	ND	0.11	0.035	
106-93-4	1,2-Dibromoethane	ND	0.94	0.30	ND	0.12	0.039	
123-86-4	n-Butyl Acetate	ND	0.94	0.30	ND	0.20	0.063	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127U1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-008

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15 & 2/9/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: 0.10 Liter(s)
Container ID: AS00301

Initial Pressure (psig): -5.12 Final Pressure (psig): 3.26

Canister Dilution Factor: 1.87

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.94	0.34	ND	0.20	0.072	
127-18-4	Tetrachloroethene	ND	0.94	0.26	ND	0.14	0.039	
108-90-7	Chlorobenzene	ND	0.94	0.30	ND	0.20	0.065	
100-41-4	Ethylbenzene	ND	0.94	0.30	ND	0.22	0.069	
179601-23-1	m,p-Xylenes	ND	1.9	0.56	ND	0.43	0.13	
75-25-2	Bromoform	ND	0.94	0.28	ND	0.090	0.027	
100-42-5	Styrene	ND	0.94	0.28	ND	0.22	0.066	
95-47-6	o-Xylene	ND	0.94	0.28	ND	0.22	0.065	
111-84-2	n-Nonane	ND	0.94	0.28	ND	0.18	0.053	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.94	0.28	ND	0.14	0.041	
98-82-8	Cumene	ND	0.94	0.28	ND	0.19	0.057	
80-56-8	alpha-Pinene	ND	0.94	0.26	ND	0.17	0.047	
103-65-1	n-Propylbenzene	ND	0.94	0.30	ND	0.19	0.061	
622-96-8	4-Ethyltoluene	ND	0.94	0.30	ND	0.19	0.061	
108-67-8	1,3,5-Trimethylbenzene	ND	0.94	0.30	ND	0.19	0.061	
95-63-6	1,2,4-Trimethylbenzene	ND	0.94	0.28	ND	0.19	0.057	
100-44-7	Benzyl Chloride	ND	0.94	0.21	ND	0.18	0.040	
541-73-1	1,3-Dichlorobenzene	ND	0.94	0.28	ND	0.16	0.047	
106-46-7	1,4-Dichlorobenzene	ND	0.94	0.26	ND	0.16	0.044	
95-50-1	1,2-Dichlorobenzene	ND	0.94	0.28	ND	0.16	0.047	
5989-27-5	d-Limonene	ND	0.94	0.26	ND	0.17	0.047	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.94	0.19	ND	0.097	0.019	
120-82-1	1,2,4-Trichlorobenzene	ND	0.94	0.30	ND	0.13	0.040	
91-20-3	Naphthalene	ND	0.94	0.34	ND	0.18	0.064	
87-68-3	Hexachlorobutadiene	ND	0.94	0.26	ND	0.088	0.025	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **127U1-SUMMA** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-008

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/27/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/6/15 & 2/9/15
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:			0.10 Liter(s)
Container ID:	AS00301		

Initial Pressure (psig): -5.12 Final Pressure (psig): 3.26

Canister Dilution Factor: 1.87

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
	No Compounds Detected		

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-009

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00506

Initial Pressure (psig): -2.21 Final Pressure (psig): 3.56

Canister Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	**1.7**	0.73	0.20	**0.97**	0.42	0.12	**M1**
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.1**	0.73	0.25	**0.43**	0.15	0.050	
74-87-3	Chloromethane	**0.52**	0.73	0.22	**0.25**	0.35	0.11	**J**
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.73	0.28	ND	0.10	0.040	
75-01-4	Vinyl Chloride	ND	0.73	0.25	ND	0.29	0.097	
106-99-0	1,3-Butadiene	ND	0.73	0.32	ND	0.33	0.15	
74-83-9	Bromomethane	ND	0.73	0.28	ND	0.19	0.071	
75-00-3	Chloroethane	ND	0.73	0.25	ND	0.28	0.094	
64-17-5	Ethanol	**2.6**	7.3	1.2	**1.4**	3.9	0.62	**J**
75-05-8	Acetonitrile	**8.1**	0.73	0.26	**4.8**	0.43	0.16	
107-02-8	Acrolein	**0.29**	2.9	0.25	**0.13**	1.3	0.11	**J**
67-64-1	Acetone	**4.7**	7.3	1.1	**2.0**	3.1	0.47	**J**
75-69-4	Trichlorofluoromethane	**1.3**	0.73	0.25	**0.23**	0.13	0.044	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.79**	7.3	0.61	**0.32**	3.0	0.25	**J**
107-13-1	Acrylonitrile	ND	0.73	0.25	ND	0.34	0.11	
75-35-4	1,1-Dichloroethene	ND	0.73	0.25	ND	0.18	0.063	
75-09-2	Methylene Chloride	**0.43**	0.73	0.25	**0.12**	0.21	0.071	**J**
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.73	0.23	ND	0.23	0.075	
76-13-1	Trichlorotrifluoroethane	**0.53**	0.73	0.25	**0.070**	0.095	0.032	**J**
75-15-0	Carbon Disulfide	ND	7.3	0.22	ND	2.3	0.070	
156-60-5	trans-1,2-Dichloroethene	ND	0.73	0.28	ND	0.18	0.070	
75-34-3	1,1-Dichloroethane	ND	0.73	0.23	ND	0.18	0.058	
1634-04-4	Methyl tert-Butyl Ether	ND	0.73	0.25	ND	0.20	0.069	
108-05-4	Vinyl Acetate	ND	7.3	0.95	ND	2.1	0.27	
78-93-3	2-Butanone (MEK)	**0.51**	7.3	0.31	**0.17**	2.5	0.10	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
M1 = Matrix interference due to coelution with a non-target compound; results may be biased high.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-009

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00506

Initial Pressure (psig): -2.21 Final Pressure (psig): 3.56

Canister Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.73	0.23	ND	0.18	0.059	
141-78-6	Ethyl Acetate	**1.9**	1.5	0.51	**0.53**	0.41	0.14	
110-54-3	n-Hexane	**0.66**	0.73	0.22	**0.19**	0.21	0.062	**J**
67-66-3	Chloroform	ND	0.73	0.25	ND	0.15	0.051	
109-99-9	Tetrahydrofuran (THF)	ND	0.73	0.29	ND	0.25	0.099	
107-06-2	1,2-Dichloroethane	ND	0.73	0.23	ND	0.18	0.058	
71-55-6	1,1,1-Trichloroethane	ND	0.73	0.25	ND	0.13	0.046	
71-43-2	Benzene	**2.0**	0.73	0.23	**0.62**	0.23	0.073	
56-23-5	Carbon Tetrachloride	**0.49**	0.73	0.22	**0.078**	0.12	0.035	**J**
110-82-7	Cyclohexane	ND	1.5	0.42	ND	0.42	0.12	
78-87-5	1,2-Dichloropropane	ND	0.73	0.23	ND	0.16	0.051	
75-27-4	Bromodichloromethane	ND	0.73	0.22	ND	0.11	0.033	
79-01-6	Trichloroethene	ND	0.73	0.20	ND	0.14	0.038	
123-91-1	1,4-Dioxane	ND	0.73	0.23	ND	0.20	0.065	
80-62-6	Methyl Methacrylate	ND	1.5	0.45	ND	0.36	0.11	
142-82-5	n-Heptane	ND	0.73	0.25	ND	0.18	0.061	
10061-01-5	cis-1,3-Dichloropropene	ND	0.73	0.20	ND	0.16	0.045	
108-10-1	4-Methyl-2-pentanone	ND	0.73	0.23	ND	0.18	0.057	
10061-02-6	trans-1,3-Dichloropropene	ND	0.73	0.23	ND	0.16	0.051	
79-00-5	1,1,2-Trichloroethane	ND	0.73	0.23	ND	0.13	0.043	
108-88-3	Toluene	**1.8**	0.73	0.25	**0.47**	0.19	0.066	
591-78-6	2-Hexanone	ND	0.73	0.23	ND	0.18	0.057	
124-48-1	Dibromochloromethane	ND	0.73	0.23	ND	0.086	0.027	
106-93-4	1,2-Dibromoethane	ND	0.73	0.23	ND	0.095	0.030	
123-86-4	n-Butyl Acetate	ND	0.73	0.23	ND	0.15	0.049	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-009

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00506

Initial Pressure (psig): -2.21 Final Pressure (psig): 3.56

Canister Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.73	0.26	ND	0.16	0.056	
127-18-4	Tetrachloroethene	ND	0.73	0.20	ND	0.11	0.030	
108-90-7	Chlorobenzene	ND	0.73	0.23	ND	0.16	0.051	
100-41-4	Ethylbenzene	ND	0.73	0.23	ND	0.17	0.054	
179601-23-1	m,p-Xylenes	**0.60**	1.5	0.44	**0.14**	0.34	0.10	**J**
75-25-2	Bromoform	ND	0.73	0.22	ND	0.071	0.021	
100-42-5	Styrene	ND	0.73	0.22	ND	0.17	0.051	
95-47-6	o-Xylene	ND	0.73	0.22	ND	0.17	0.050	
111-84-2	n-Nonane	ND	0.73	0.22	ND	0.14	0.042	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.73	0.22	ND	0.11	0.032	
98-82-8	Cumene	ND	0.73	0.22	ND	0.15	0.045	
80-56-8	alpha-Pinene	ND	0.73	0.20	ND	0.13	0.037	
103-65-1	n-Propylbenzene	ND	0.73	0.23	ND	0.15	0.048	
622-96-8	4-Ethyltoluene	ND	0.73	0.23	ND	0.15	0.048	
108-67-8	1,3,5-Trimethylbenzene	ND	0.73	0.23	ND	0.15	0.048	
95-63-6	1,2,4-Trimethylbenzene	ND	0.73	0.22	ND	0.15	0.045	
100-44-7	Benzyl Chloride	ND	0.73	0.16	ND	0.14	0.031	
541-73-1	1,3-Dichlorobenzene	ND	0.73	0.22	ND	0.12	0.036	
106-46-7	1,4-Dichlorobenzene	ND	0.73	0.20	ND	0.12	0.034	
95-50-1	1,2-Dichlorobenzene	ND	0.73	0.22	ND	0.12	0.036	
5989-27-5	d-Limonene	ND	0.73	0.20	ND	0.13	0.037	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.73	0.14	ND	0.076	0.015	
120-82-1	1,2,4-Trichlorobenzene	ND	0.73	0.23	ND	0.098	0.031	
91-20-3	Naphthalene	**0.50**	0.73	0.26	**0.095**	0.14	0.050	**J**
87-68-3	Hexachlorobutadiene	ND	0.73	0.20	ND	0.068	0.019	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **127D1-SUMMA** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-009

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/27/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/7/15
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AS00506		

Initial Pressure (psig): -2.21 Final Pressure (psig): 3.56

Canister Dilution Factor: 1.46

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
21.24	n-Nonanal	**8.4**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D2-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-010

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00224

Initial Pressure (psig): -1.67 Final Pressure (psig): 3.29

Canister Dilution Factor: 1.38

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	ND	0.69	0.19	ND	0.40	0.11	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.3**	0.69	0.23	**0.47**	0.14	0.047	
74-87-3	Chloromethane	**0.50**	0.69	0.21	**0.24**	0.33	0.10	**J**
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.69	0.26	ND	0.099	0.038	
75-01-4	Vinyl Chloride	ND	0.69	0.23	ND	0.27	0.092	
106-99-0	1,3-Butadiene	ND	0.69	0.30	ND	0.31	0.14	
74-83-9	Bromomethane	ND	0.69	0.26	ND	0.18	0.068	
75-00-3	Chloroethane	ND	0.69	0.23	ND	0.26	0.089	
64-17-5	Ethanol	**1.7**	6.9	1.1	**0.88**	3.7	0.59	**J**
75-05-8	Acetonitrile	ND	0.69	0.25	ND	0.41	0.15	
107-02-8	Acrolein	ND	2.8	0.23	ND	1.2	0.10	
67-64-1	Acetone	**3.9**	6.9	1.1	**1.6**	2.9	0.45	**J**
75-69-4	Trichlorofluoromethane	**1.3**	0.69	0.23	**0.24**	0.12	0.042	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	6.9	0.58	ND	2.8	0.24	
107-13-1	Acrylonitrile	ND	0.69	0.23	ND	0.32	0.11	
75-35-4	1,1-Dichloroethene	ND	0.69	0.23	ND	0.17	0.059	
75-09-2	Methylene Chloride	**0.41**	0.69	0.23	**0.12**	0.20	0.068	**J**
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.69	0.22	ND	0.22	0.071	
76-13-1	Trichlorotrifluoroethane	**0.55**	0.69	0.23	**0.072**	0.090	0.031	**J**
75-15-0	Carbon Disulfide	ND	6.9	0.21	ND	2.2	0.066	
156-60-5	trans-1,2-Dichloroethene	ND	0.69	0.26	ND	0.17	0.066	
75-34-3	1,1-Dichloroethane	ND	0.69	0.22	ND	0.17	0.055	
1634-04-4	Methyl tert-Butyl Ether	ND	0.69	0.23	ND	0.19	0.065	
108-05-4	Vinyl Acetate	ND	6.9	0.90	ND	2.0	0.25	
78-93-3	2-Butanone (MEK)	**0.43**	6.9	0.29	**0.15**	2.3	0.098	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **127D2-SUMMA** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-010

Test Code: EPA TO-15 Modified Date Collected: 1/27/15

Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15

Analyst: Lusine Hakobyan Date Analyzed: 2/7/15

Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container ID: AS00224

Initial Pressure (psig): -1.67 Final Pressure (psig): 3.29

Canister Dilution Factor: 1.38

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.69	0.22	ND	0.17	0.056	
141-78-6	Ethyl Acetate	**2.3**	1.4	0.48	**0.64**	0.38	0.13	
110-54-3	n-Hexane	**0.46**	0.69	0.21	**0.13**	0.20	0.059	**J**
67-66-3	Chloroform	ND	0.69	0.23	ND	0.14	0.048	
109-99-9	Tetrahydrofuran (THF)	ND	0.69	0.28	ND	0.23	0.094	
107-06-2	1,2-Dichloroethane	ND	0.69	0.22	ND	0.17	0.055	
71-55-6	1,1,1-Trichloroethane	ND	0.69	0.23	ND	0.13	0.043	
71-43-2	Benzene	**0.52**	0.69	0.22	**0.16**	0.22	0.069	**J**
56-23-5	Carbon Tetrachloride	**0.49**	0.69	0.21	**0.078**	0.11	0.033	**J**
110-82-7	Cyclohexane	ND	1.4	0.40	ND	0.40	0.12	
78-87-5	1,2-Dichloropropane	ND	0.69	0.22	ND	0.15	0.048	
75-27-4	Bromodichloromethane	ND	0.69	0.21	ND	0.10	0.031	
79-01-6	Trichloroethene	ND	0.69	0.19	ND	0.13	0.036	
123-91-1	1,4-Dioxane	ND	0.69	0.22	ND	0.19	0.061	
80-62-6	Methyl Methacrylate	ND	1.4	0.43	ND	0.34	0.10	
142-82-5	n-Heptane	ND	0.69	0.23	ND	0.17	0.057	
10061-01-5	cis-1,3-Dichloropropene	ND	0.69	0.19	ND	0.15	0.043	
108-10-1	4-Methyl-2-pentanone	ND	0.69	0.22	ND	0.17	0.054	
10061-02-6	trans-1,3-Dichloropropene	ND	0.69	0.22	ND	0.15	0.049	
79-00-5	1,1,2-Trichloroethane	ND	0.69	0.22	ND	0.13	0.040	
108-88-3	Toluene	**0.45**	0.69	0.23	**0.12**	0.18	0.062	**J**
591-78-6	2-Hexanone	ND	0.69	0.22	ND	0.17	0.054	
124-48-1	Dibromochloromethane	ND	0.69	0.22	ND	0.081	0.026	
106-93-4	1,2-Dibromoethane	ND	0.69	0.22	ND	0.090	0.029	
123-86-4	n-Butyl Acetate	ND	0.69	0.22	ND	0.15	0.046	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D2-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-010

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00224

Initial Pressure (psig): -1.67 Final Pressure (psig): 3.29

Canister Dilution Factor: 1.38

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.69	0.25	ND	0.15	0.053	
127-18-4	Tetrachloroethene	ND	0.69	0.19	ND	0.10	0.029	
108-90-7	Chlorobenzene	ND	0.69	0.22	ND	0.15	0.048	
100-41-4	Ethylbenzene	ND	0.69	0.22	ND	0.16	0.051	
179601-23-1	m,p-Xylenes	ND	1.4	0.41	ND	0.32	0.095	
75-25-2	Bromoform	ND	0.69	0.21	ND	0.067	0.020	
100-42-5	Styrene	ND	0.69	0.21	ND	0.16	0.049	
95-47-6	o-Xylene	ND	0.69	0.21	ND	0.16	0.048	
111-84-2	n-Nonane	ND	0.69	0.21	ND	0.13	0.039	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.69	0.21	ND	0.10	0.030	
98-82-8	Cumene	ND	0.69	0.21	ND	0.14	0.042	
80-56-8	alpha-Pinene	ND	0.69	0.19	ND	0.12	0.035	
103-65-1	n-Propylbenzene	ND	0.69	0.22	ND	0.14	0.045	
622-96-8	4-Ethyltoluene	ND	0.69	0.22	ND	0.14	0.045	
108-67-8	1,3,5-Trimethylbenzene	ND	0.69	0.22	ND	0.14	0.045	
95-63-6	1,2,4-Trimethylbenzene	ND	0.69	0.21	ND	0.14	0.042	
100-44-7	Benzyl Chloride	ND	0.69	0.15	ND	0.13	0.029	
541-73-1	1,3-Dichlorobenzene	ND	0.69	0.21	ND	0.11	0.034	
106-46-7	1,4-Dichlorobenzene	ND	0.69	0.19	ND	0.11	0.032	
95-50-1	1,2-Dichlorobenzene	ND	0.69	0.21	ND	0.11	0.034	
5989-27-5	d-Limonene	ND	0.69	0.19	ND	0.12	0.035	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.69	0.14	ND	0.071	0.014	
120-82-1	1,2,4-Trichlorobenzene	ND	0.69	0.22	ND	0.093	0.030	
91-20-3	Naphthalene	ND	0.69	0.25	ND	0.13	0.047	
87-68-3	Hexachlorobutadiene	ND	0.69	0.19	ND	0.065	0.018	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **127D2-SUMMA** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-010

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/27/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/7/15
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AS00224		

Initial Pressure (psig): -1.67 Final Pressure (psig): 3.29

Canister Dilution Factor: 1.38

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.15	Propane	**3.6**	
20.13	unknown	**3.0**	
21.83	Unidentified Siloxane	**5.3**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127F-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-011

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00866

Initial Pressure (psig): -6.01 Final Pressure (psig): 3.61

Canister Dilution Factor: 2.11

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	ND	1.1	0.30	ND	0.61	0.17	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.1**	1.1	0.36	**0.43**	0.21	0.073	
74-87-3	Chloromethane	**0.54**	1.1	0.32	**0.26**	0.51	0.15	**J**
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	1.1	0.40	ND	0.15	0.057	
75-01-4	Vinyl Chloride	ND	1.1	0.36	ND	0.41	0.14	
106-99-0	1,3-Butadiene	ND	1.1	0.46	ND	0.48	0.21	
74-83-9	Bromomethane	ND	1.1	0.40	ND	0.27	0.10	
75-00-3	Chloroethane	ND	1.1	0.36	ND	0.40	0.14	
64-17-5	Ethanol	**3.0**	11	1.7	**1.6**	5.6	0.90	**J**
75-05-8	Acetonitrile	**9.1**	1.1	0.38	**5.4**	0.63	0.23	
107-02-8	Acrolein	ND	4.2	0.36	ND	1.8	0.16	
67-64-1	Acetone	**4.4**	11	1.6	**1.8**	4.4	0.68	**J**
75-69-4	Trichlorofluoromethane	**1.3**	1.1	0.36	**0.23**	0.19	0.064	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	11	0.89	ND	4.3	0.36	
107-13-1	Acrylonitrile	ND	1.1	0.36	ND	0.49	0.17	
75-35-4	1,1-Dichloroethene	ND	1.1	0.36	ND	0.27	0.091	
75-09-2	Methylene Chloride	**0.59**	1.1	0.36	**0.17**	0.30	0.10	**J**
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	1.1	0.34	ND	0.34	0.11	
76-13-1	Trichlorotrifluoroethane	**0.51**	1.1	0.36	**0.066**	0.14	0.047	**J**
75-15-0	Carbon Disulfide	ND	11	0.32	ND	3.4	0.10	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.40	ND	0.27	0.10	
75-34-3	1,1-Dichloroethane	ND	1.1	0.34	ND	0.26	0.083	
1634-04-4	Methyl tert-Butyl Ether	ND	1.1	0.36	ND	0.29	0.10	
108-05-4	Vinyl Acetate	ND	11	1.4	ND	3.0	0.39	
78-93-3	2-Butanone (MEK)	ND	11	0.44	ND	3.6	0.15	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127F-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-011

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00866

Initial Pressure (psig): -6.01 Final Pressure (psig): 3.61

Canister Dilution Factor: 2.11

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	1.1	0.34	ND	0.27	0.085	
141-78-6	Ethyl Acetate	**2.4**	2.1	0.74	**0.67**	0.59	0.21	
110-54-3	n-Hexane	**0.77**	1.1	0.32	**0.22**	0.30	0.090	**J**
67-66-3	Chloroform	ND	1.1	0.36	ND	0.22	0.073	
109-99-9	Tetrahydrofuran (THF)	ND	1.1	0.42	ND	0.36	0.14	
107-06-2	1,2-Dichloroethane	ND	1.1	0.34	ND	0.26	0.083	
71-55-6	1,1,1-Trichloroethane	ND	1.1	0.36	ND	0.19	0.066	
71-43-2	Benzene	**0.60**	1.1	0.34	**0.19**	0.33	0.11	**J**
56-23-5	Carbon Tetrachloride	**0.49**	1.1	0.32	**0.078**	0.17	0.050	**J**
110-82-7	Cyclohexane	ND	2.1	0.61	ND	0.61	0.18	
78-87-5	1,2-Dichloropropane	ND	1.1	0.34	ND	0.23	0.073	
75-27-4	Bromodichloromethane	ND	1.1	0.32	ND	0.16	0.047	
79-01-6	Trichloroethene	ND	1.1	0.30	ND	0.20	0.055	
123-91-1	1,4-Dioxane	ND	1.1	0.34	ND	0.29	0.094	
80-62-6	Methyl Methacrylate	ND	2.1	0.65	ND	0.52	0.16	
142-82-5	n-Heptane	**0.38**	1.1	0.36	**0.094**	0.26	0.088	**J**
10061-01-5	cis-1,3-Dichloropropene	ND	1.1	0.30	ND	0.23	0.065	
108-10-1	4-Methyl-2-pentanone	ND	1.1	0.34	ND	0.26	0.082	
10061-02-6	trans-1,3-Dichloropropene	ND	1.1	0.34	ND	0.23	0.074	
79-00-5	1,1,2-Trichloroethane	ND	1.1	0.34	ND	0.19	0.062	
108-88-3	Toluene	**0.97**	1.1	0.36	**0.26**	0.28	0.095	**J**
591-78-6	2-Hexanone	ND	1.1	0.34	ND	0.26	0.082	
124-48-1	Dibromochloromethane	ND	1.1	0.34	ND	0.12	0.040	
106-93-4	1,2-Dibromoethane	ND	1.1	0.34	ND	0.14	0.044	
123-86-4	n-Butyl Acetate	**0.71**	1.1	0.34	**0.15**	0.22	0.071	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127F-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-011

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00866

Initial Pressure (psig): -6.01 Final Pressure (psig): 3.61

Canister Dilution Factor: 2.11

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	ND	1.1	0.38	ND	0.23	0.081	
127-18-4	Tetrachloroethene	ND	1.1	0.30	ND	0.16	0.044	
108-90-7	Chlorobenzene	ND	1.1	0.34	ND	0.23	0.073	
100-41-4	Ethylbenzene	ND	1.1	0.34	ND	0.24	0.078	
179601-23-1	m,p-Xylenes	ND	2.1	0.63	ND	0.49	0.15	
75-25-2	Bromoform	ND	1.1	0.32	ND	0.10	0.031	
100-42-5	Styrene	ND	1.1	0.32	ND	0.25	0.074	
95-47-6	o-Xylene	ND	1.1	0.32	ND	0.24	0.073	
111-84-2	n-Nonane	ND	1.1	0.32	ND	0.20	0.060	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.1	0.32	ND	0.15	0.046	
98-82-8	Cumene	ND	1.1	0.32	ND	0.21	0.064	
80-56-8	alpha-Pinene	ND	1.1	0.30	ND	0.19	0.053	
103-65-1	n-Propylbenzene	ND	1.1	0.34	ND	0.21	0.069	
622-96-8	4-Ethyltoluene	ND	1.1	0.34	ND	0.21	0.069	
108-67-8	1,3,5-Trimethylbenzene	ND	1.1	0.34	ND	0.21	0.069	
95-63-6	1,2,4-Trimethylbenzene	ND	1.1	0.32	ND	0.21	0.064	
100-44-7	Benzyl Chloride	ND	1.1	0.23	ND	0.20	0.045	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.32	ND	0.18	0.053	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.30	ND	0.18	0.049	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.32	ND	0.18	0.053	
5989-27-5	d-Limonene	ND	1.1	0.30	ND	0.19	0.053	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.1	0.21	ND	0.11	0.022	
120-82-1	1,2,4-Trichlorobenzene	ND	1.1	0.34	ND	0.14	0.045	
91-20-3	Naphthalene	ND	1.1	0.38	ND	0.20	0.072	
87-68-3	Hexachlorobutadiene	ND	1.1	0.30	ND	0.099	0.028	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **127F-SUMMA** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-011

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/27/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/7/15
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AS00866		

Initial Pressure (psig): -6.01 Final Pressure (psig): 3.61

Canister Dilution Factor: 2.11

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.14	Propane	**9.8**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127SQ-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-012

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00544

Initial Pressure (psig): -1.89 Final Pressure (psig): 3.46

Canister Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	**0.62**	0.71	0.20	**0.36**	0.41	0.12	**J**
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.3**	0.71	0.24	**0.47**	0.14	0.049	
74-87-3	Chloromethane	**0.45**	0.71	0.21	**0.22**	0.34	0.10	**J**
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.71	0.27	ND	0.10	0.039	
75-01-4	Vinyl Chloride	ND	0.71	0.24	ND	0.28	0.094	
106-99-0	1,3-Butadiene	ND	0.71	0.31	ND	0.32	0.14	
74-83-9	Bromomethane	ND	0.71	0.27	ND	0.18	0.070	
75-00-3	Chloroethane	ND	0.71	0.24	ND	0.27	0.092	
64-17-5	Ethanol	**9.1**	7.1	1.1	**4.8**	3.8	0.60	
75-05-8	Acetonitrile	**0.80**	0.71	0.26	**0.48**	0.42	0.15	
107-02-8	Acrolein	ND	2.8	0.24	ND	1.2	0.11	
67-64-1	Acetone	**6.7**	7.1	1.1	**2.8**	3.0	0.46	**J**
75-69-4	Trichlorofluoromethane	**1.3**	0.71	0.24	**0.23**	0.13	0.043	
67-63-0	2-Propanol (Isopropyl Alcohol)	**1.2**	7.1	0.60	**0.50**	2.9	0.24	**J**
107-13-1	Acrylonitrile	ND	0.71	0.24	ND	0.33	0.11	
75-35-4	1,1-Dichloroethene	ND	0.71	0.24	ND	0.18	0.061	
75-09-2	Methylene Chloride	**0.93**	0.71	0.24	**0.27**	0.20	0.070	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.71	0.23	ND	0.23	0.073	
76-13-1	Trichlorotrifluoroethane	**0.50**	0.71	0.24	**0.065**	0.093	0.032	**J**
75-15-0	Carbon Disulfide	ND	7.1	0.21	ND	2.3	0.068	
156-60-5	trans-1,2-Dichloroethene	ND	0.71	0.27	ND	0.18	0.068	
75-34-3	1,1-Dichloroethane	ND	0.71	0.23	ND	0.18	0.056	
1634-04-4	Methyl tert-Butyl Ether	ND	0.71	0.24	ND	0.20	0.067	
108-05-4	Vinyl Acetate	ND	7.1	0.92	ND	2.0	0.26	
78-93-3	2-Butanone (MEK)	**2.5**	7.1	0.30	**0.84**	2.4	0.10	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127SQ-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-012

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00544

Initial Pressure (psig): -1.89 Final Pressure (psig): 3.46

Canister Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.71	0.23	ND	0.18	0.057	
141-78-6	Ethyl Acetate	**11**	1.4	0.50	**2.9**	0.39	0.14	
110-54-3	n-Hexane	**0.90**	0.71	0.21	**0.26**	0.20	0.060	
67-66-3	Chloroform	ND	0.71	0.24	ND	0.15	0.049	
109-99-9	Tetrahydrofuran (THF)	**0.36**	0.71	0.28	**0.12**	0.24	0.096	**J**
107-06-2	1,2-Dichloroethane	ND	0.71	0.23	ND	0.18	0.056	
71-55-6	1,1,1-Trichloroethane	ND	0.71	0.24	ND	0.13	0.044	
71-43-2	Benzene	**0.55**	0.71	0.23	**0.17**	0.22	0.071	**J**
56-23-5	Carbon Tetrachloride	**0.50**	0.71	0.21	**0.080**	0.11	0.034	**J**
110-82-7	Cyclohexane	**0.75**	1.4	0.41	**0.22**	0.41	0.12	**J**
78-87-5	1,2-Dichloropropane	ND	0.71	0.23	ND	0.15	0.049	
75-27-4	Bromodichloromethane	ND	0.71	0.21	ND	0.11	0.032	
79-01-6	Trichloroethene	ND	0.71	0.20	ND	0.13	0.037	
123-91-1	1,4-Dioxane	ND	0.71	0.23	ND	0.20	0.063	
80-62-6	Methyl Methacrylate	ND	1.4	0.44	ND	0.35	0.11	
142-82-5	n-Heptane	**0.25**	0.71	0.24	**0.060**	0.17	0.059	**J**
10061-01-5	cis-1,3-Dichloropropene	ND	0.71	0.20	ND	0.16	0.044	
108-10-1	4-Methyl-2-pentanone	ND	0.71	0.23	ND	0.17	0.055	
10061-02-6	trans-1,3-Dichloropropene	ND	0.71	0.23	ND	0.16	0.050	
79-00-5	1,1,2-Trichloroethane	ND	0.71	0.23	ND	0.13	0.042	
108-88-3	Toluene	**5.6**	0.71	0.24	**1.5**	0.19	0.064	
591-78-6	2-Hexanone	ND	0.71	0.23	ND	0.17	0.055	
124-48-1	Dibromochloromethane	ND	0.71	0.23	ND	0.083	0.027	
106-93-4	1,2-Dibromoethane	ND	0.71	0.23	ND	0.092	0.030	
123-86-4	n-Butyl Acetate	ND	0.71	0.23	ND	0.15	0.048	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127SQ-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-012

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00544

Initial Pressure (psig): -1.89 Final Pressure (psig): 3.46

Canister Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.71	0.26	ND	0.15	0.055	
127-18-4	Tetrachloroethene	ND	0.71	0.20	ND	0.10	0.029	
108-90-7	Chlorobenzene	ND	0.71	0.23	ND	0.15	0.049	
100-41-4	Ethylbenzene	ND	0.71	0.23	ND	0.16	0.052	
179601-23-1	m,p-Xylenes	ND	1.4	0.43	ND	0.33	0.098	
75-25-2	Bromoform	ND	0.71	0.21	ND	0.069	0.021	
100-42-5	Styrene	ND	0.71	0.21	ND	0.17	0.050	
95-47-6	o-Xylene	ND	0.71	0.21	ND	0.16	0.049	
111-84-2	n-Nonane	ND	0.71	0.21	ND	0.14	0.041	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.71	0.21	ND	0.10	0.031	
98-82-8	Cumene	ND	0.71	0.21	ND	0.14	0.043	
80-56-8	alpha-Pinene	ND	0.71	0.20	ND	0.13	0.036	
103-65-1	n-Propylbenzene	ND	0.71	0.23	ND	0.14	0.046	
622-96-8	4-Ethyltoluene	ND	0.71	0.23	ND	0.14	0.046	
108-67-8	1,3,5-Trimethylbenzene	ND	0.71	0.23	ND	0.14	0.046	
95-63-6	1,2,4-Trimethylbenzene	ND	0.71	0.21	ND	0.14	0.043	
100-44-7	Benzyl Chloride	ND	0.71	0.16	ND	0.14	0.030	
541-73-1	1,3-Dichlorobenzene	ND	0.71	0.21	ND	0.12	0.035	
106-46-7	1,4-Dichlorobenzene	ND	0.71	0.20	ND	0.12	0.033	
95-50-1	1,2-Dichlorobenzene	ND	0.71	0.21	ND	0.12	0.035	
5989-27-5	d-Limonene	**0.20**	0.71	0.20	**0.036**	0.13	0.036	**J**
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.71	0.14	ND	0.073	0.015	
120-82-1	1,2,4-Trichlorobenzene	ND	0.71	0.23	ND	0.096	0.031	
91-20-3	Naphthalene	ND	0.71	0.26	ND	0.14	0.049	
87-68-3	Hexachlorobutadiene	ND	0.71	0.20	ND	0.067	0.019	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **127SQ-SUMMA** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-012

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/27/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/7/15
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AS00544		

Initial Pressure (psig): -1.89 Final Pressure (psig): 3.46

Canister Dilution Factor: 1.42

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.80	Isobutane	**3.7**	
7.88	n-Pentane	**4.6**	
21.24	n-Nonanal	**2.8**	
21.83	Unidentified Siloxane	**3.2**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127-SUMMA-B** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-013

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00796

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	ND	0.50	0.14	ND	0.29	0.081	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.50	0.17	ND	0.10	0.034	
74-87-3	Chloromethane	ND	0.50	0.15	ND	0.24	0.073	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.50	0.19	ND	0.072	0.027	
75-01-4	Vinyl Chloride	ND	0.50	0.17	ND	0.20	0.067	
106-99-0	1,3-Butadiene	ND	0.50	0.22	ND	0.23	0.099	
74-83-9	Bromomethane	ND	0.50	0.19	ND	0.13	0.049	
75-00-3	Chloroethane	ND	0.50	0.17	ND	0.19	0.064	
64-17-5	Ethanol	ND	5.0	0.80	ND	2.7	0.42	
75-05-8	Acetonitrile	ND	0.50	0.18	ND	0.30	0.11	
107-02-8	Acrolein	ND	2.0	0.17	ND	0.87	0.074	
67-64-1	Acetone	ND	5.0	0.77	ND	2.1	0.32	
75-69-4	Trichlorofluoromethane	ND	0.50	0.17	ND	0.089	0.030	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.49**	5.0	0.42	**0.20**	2.0	0.17	**J**
107-13-1	Acrylonitrile	ND	0.50	0.17	ND	0.23	0.078	
75-35-4	1,1-Dichloroethene	ND	0.50	0.17	ND	0.13	0.043	
75-09-2	Methylene Chloride	ND	0.50	0.17	ND	0.14	0.049	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.50	0.16	ND	0.16	0.051	
76-13-1	Trichlorotrifluoroethane	ND	0.50	0.17	ND	0.065	0.022	
75-15-0	Carbon Disulfide	ND	5.0	0.15	ND	1.6	0.048	
156-60-5	trans-1,2-Dichloroethene	ND	0.50	0.19	ND	0.13	0.048	
75-34-3	1,1-Dichloroethane	ND	0.50	0.16	ND	0.12	0.040	
1634-04-4	Methyl tert-Butyl Ether	ND	0.50	0.17	ND	0.14	0.047	
108-05-4	Vinyl Acetate	ND	5.0	0.65	ND	1.4	0.18	
78-93-3	2-Butanone (MEK)	ND	5.0	0.21	ND	1.7	0.071	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127-SUMMA-B** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-013

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00796

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.50	0.16	ND	0.13	0.040	
141-78-6	Ethyl Acetate	ND	1.0	0.35	ND	0.28	0.097	
110-54-3	n-Hexane	ND	0.50	0.15	ND	0.14	0.043	
67-66-3	Chloroform	ND	0.50	0.17	ND	0.10	0.035	
109-99-9	Tetrahydrofuran (THF)	ND	0.50	0.20	ND	0.17	0.068	
107-06-2	1,2-Dichloroethane	ND	0.50	0.16	ND	0.12	0.040	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.17	ND	0.092	0.031	
71-43-2	Benzene	**0.19**	0.50	0.16	**0.059**	0.16	0.050	**J**
56-23-5	Carbon Tetrachloride	ND	0.50	0.15	ND	0.080	0.024	
110-82-7	Cyclohexane	ND	1.0	0.29	ND	0.29	0.084	
78-87-5	1,2-Dichloropropane	ND	0.50	0.16	ND	0.11	0.035	
75-27-4	Bromodichloromethane	ND	0.50	0.15	ND	0.075	0.022	
79-01-6	Trichloroethene	ND	0.50	0.14	ND	0.093	0.026	
123-91-1	1,4-Dioxane	ND	0.50	0.16	ND	0.14	0.044	
80-62-6	Methyl Methacrylate	ND	1.0	0.31	ND	0.24	0.076	
142-82-5	n-Heptane	ND	0.50	0.17	ND	0.12	0.041	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.14	ND	0.11	0.031	
108-10-1	4-Methyl-2-pentanone	ND	0.50	0.16	ND	0.12	0.039	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.16	ND	0.11	0.035	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.16	ND	0.092	0.029	
108-88-3	Toluene	ND	0.50	0.17	ND	0.13	0.045	
591-78-6	2-Hexanone	ND	0.50	0.16	ND	0.12	0.039	
124-48-1	Dibromochloromethane	ND	0.50	0.16	ND	0.059	0.019	
106-93-4	1,2-Dibromoethane	ND	0.50	0.16	ND	0.065	0.021	
123-86-4	n-Butyl Acetate	ND	0.50	0.16	ND	0.11	0.034	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127-SUMMA-B** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-013

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00796

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.50	0.18	ND	0.11	0.039	
127-18-4	Tetrachloroethene	ND	0.50	0.14	ND	0.074	0.021	
108-90-7	Chlorobenzene	ND	0.50	0.16	ND	0.11	0.035	
100-41-4	Ethylbenzene	ND	0.50	0.16	ND	0.12	0.037	
179601-23-1	m,p-Xylenes	ND	1.0	0.30	ND	0.23	0.069	
75-25-2	Bromoform	ND	0.50	0.15	ND	0.048	0.015	
100-42-5	Styrene	ND	0.50	0.15	ND	0.12	0.035	
95-47-6	o-Xylene	ND	0.50	0.15	ND	0.12	0.035	
111-84-2	n-Nonane	ND	0.50	0.15	ND	0.095	0.029	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.15	ND	0.073	0.022	
98-82-8	Cumene	ND	0.50	0.15	ND	0.10	0.031	
80-56-8	alpha-Pinene	ND	0.50	0.14	ND	0.090	0.025	
103-65-1	n-Propylbenzene	ND	0.50	0.16	ND	0.10	0.033	
622-96-8	4-Ethyltoluene	ND	0.50	0.16	ND	0.10	0.033	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.16	ND	0.10	0.033	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.15	ND	0.10	0.031	
100-44-7	Benzyl Chloride	ND	0.50	0.11	ND	0.097	0.021	
541-73-1	1,3-Dichlorobenzene	ND	0.50	0.15	ND	0.083	0.025	
106-46-7	1,4-Dichlorobenzene	ND	0.50	0.14	ND	0.083	0.023	
95-50-1	1,2-Dichlorobenzene	ND	0.50	0.15	ND	0.083	0.025	
5989-27-5	d-Limonene	ND	0.50	0.14	ND	0.090	0.025	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.50	0.099	ND	0.052	0.010	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.16	ND	0.067	0.022	
91-20-3	Naphthalene	ND	0.50	0.18	ND	0.095	0.034	
87-68-3	Hexachlorobutadiene	ND	0.50	0.14	ND	0.047	0.013	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client:	**Stantec Consulting Services, Inc.**		
Client Sample ID:	**127-SUMMA-B**	ALS Project ID:	P1500365
Client Project ID:	**Bridgeton / 182608020**	ALS Sample ID:	P1500365-013

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/27/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/7/15
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AS00796		

Canister Dilution Factor: 1.00

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
17.30	Hexamethylcyclotrisiloxane	**2.2**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127DUP10-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-014

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00161

Initial Pressure (psig): -2.97 Final Pressure (psig): 3.49

Canister Dilution Factor: 1.55

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	**1.5**	0.78	0.22	**0.86**	0.45	0.13	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.2**	0.78	0.26	**0.44**	0.16	0.053	
74-87-3	Chloromethane	**0.48**	0.78	0.23	**0.23**	0.38	0.11	**J**
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.78	0.29	ND	0.11	0.042	
75-01-4	Vinyl Chloride	ND	0.78	0.26	ND	0.30	0.10	
106-99-0	1,3-Butadiene	ND	0.78	0.34	ND	0.35	0.15	
74-83-9	Bromomethane	ND	0.78	0.29	ND	0.20	0.076	
75-00-3	Chloroethane	ND	0.78	0.26	ND	0.29	0.10	
64-17-5	Ethanol	**2.1**	7.8	1.2	**1.1**	4.1	0.66	**J**
75-05-8	Acetonitrile	ND	0.78	0.28	ND	0.46	0.17	
107-02-8	Acrolein	ND	3.1	0.26	ND	1.4	0.11	
67-64-1	Acetone	**4.1**	7.8	1.2	**1.7**	3.3	0.50	**J**
75-69-4	Trichlorofluoromethane	**1.2**	0.78	0.26	**0.22**	0.14	0.047	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	7.8	0.65	ND	3.2	0.26	
107-13-1	Acrylonitrile	ND	0.78	0.26	ND	0.36	0.12	
75-35-4	1,1-Dichloroethene	ND	0.78	0.26	ND	0.20	0.066	
75-09-2	Methylene Chloride	**0.44**	0.78	0.26	**0.13**	0.22	0.076	**J**
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.78	0.25	ND	0.25	0.079	
76-13-1	Trichlorotrifluoroethane	**0.49**	0.78	0.26	**0.065**	0.10	0.034	**J**
75-15-0	Carbon Disulfide	ND	7.8	0.23	ND	2.5	0.075	
156-60-5	trans-1,2-Dichloroethene	ND	0.78	0.29	ND	0.20	0.074	
75-34-3	1,1-Dichloroethane	ND	0.78	0.25	ND	0.19	0.061	
1634-04-4	Methyl tert-Butyl Ether	ND	0.78	0.26	ND	0.22	0.073	
108-05-4	Vinyl Acetate	ND	7.8	1.0	ND	2.2	0.29	
78-93-3	2-Butanone (MEK)	**0.38**	7.8	0.33	**0.13**	2.6	0.11	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127DUP10-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-014

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00161

Initial Pressure (psig): -2.97 Final Pressure (psig): 3.49

Canister Dilution Factor: 1.55

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.78	0.25	ND	0.20	0.063	
141-78-6	Ethyl Acetate	**1.8**	1.6	0.54	**0.50**	0.43	0.15	
110-54-3	n-Hexane	**1.6**	0.78	0.23	**0.44**	0.22	0.066	
67-66-3	Chloroform	ND	0.78	0.26	ND	0.16	0.054	
109-99-9	Tetrahydrofuran (THF)	ND	0.78	0.31	ND	0.26	0.11	
107-06-2	1,2-Dichloroethane	ND	0.78	0.25	ND	0.19	0.061	
71-55-6	1,1,1-Trichloroethane	ND	0.78	0.26	ND	0.14	0.048	
71-43-2	Benzene	**2.3**	0.78	0.25	**0.72**	0.24	0.078	
56-23-5	Carbon Tetrachloride	**0.47**	0.78	0.23	**0.074**	0.12	0.037	**J**
110-82-7	Cyclohexane	**1.1**	1.6	0.45	**0.31**	0.45	0.13	**J**
78-87-5	1,2-Dichloropropane	ND	0.78	0.25	ND	0.17	0.054	
75-27-4	Bromodichloromethane	ND	0.78	0.23	ND	0.12	0.035	
79-01-6	Trichloroethene	ND	0.78	0.22	ND	0.14	0.040	
123-91-1	1,4-Dioxane	ND	0.78	0.25	ND	0.22	0.069	
80-62-6	Methyl Methacrylate	ND	1.6	0.48	ND	0.38	0.12	
142-82-5	n-Heptane	**1.3**	0.78	0.26	**0.32**	0.19	0.064	
10061-01-5	cis-1,3-Dichloropropene	ND	0.78	0.22	ND	0.17	0.048	
108-10-1	4-Methyl-2-pentanone	ND	0.78	0.25	ND	0.19	0.061	
10061-02-6	trans-1,3-Dichloropropene	ND	0.78	0.25	ND	0.17	0.055	
79-00-5	1,1,2-Trichloroethane	ND	0.78	0.25	ND	0.14	0.045	
108-88-3	Toluene	**3.3**	0.78	0.26	**0.87**	0.21	0.070	
591-78-6	2-Hexanone	ND	0.78	0.25	ND	0.19	0.061	
124-48-1	Dibromochloromethane	ND	0.78	0.25	ND	0.091	0.029	
106-93-4	1,2-Dibromoethane	ND	0.78	0.25	ND	0.10	0.032	
123-86-4	n-Butyl Acetate	ND	0.78	0.25	ND	0.16	0.052	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127DUP10-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-014

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00161

Initial Pressure (psig): -2.97 Final Pressure (psig): 3.49

Canister Dilution Factor: 1.55

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	**1.9**	0.78	0.28	**0.42**	0.17	0.060	
127-18-4	Tetrachloroethene	ND	0.78	0.22	ND	0.11	0.032	
108-90-7	Chlorobenzene	ND	0.78	0.25	ND	0.17	0.054	
100-41-4	Ethylbenzene	**0.40**	0.78	0.25	**0.093**	0.18	0.057	**J**
179601-23-1	m,p-Xylenes	**3.5**	1.6	0.47	**0.80**	0.36	0.11	
75-25-2	Bromoform	ND	0.78	0.23	ND	0.075	0.022	
100-42-5	Styrene	ND	0.78	0.23	ND	0.18	0.055	
95-47-6	o-Xylene	**0.66**	0.78	0.23	**0.15**	0.18	0.054	**J**
111-84-2	n-Nonane	**2.2**	0.78	0.23	**0.42**	0.15	0.044	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.78	0.23	ND	0.11	0.034	
98-82-8	Cumene	ND	0.78	0.23	ND	0.16	0.047	
80-56-8	alpha-Pinene	ND	0.78	0.22	ND	0.14	0.039	
103-65-1	n-Propylbenzene	ND	0.78	0.25	ND	0.16	0.050	
622-96-8	4-Ethyltoluene	ND	0.78	0.25	ND	0.16	0.050	
108-67-8	1,3,5-Trimethylbenzene	**0.53**	0.78	0.25	**0.11**	0.16	0.050	**J**
95-63-6	1,2,4-Trimethylbenzene	**0.63**	0.78	0.23	**0.13**	0.16	0.047	**J**
100-44-7	Benzyl Chloride	ND	0.78	0.17	ND	0.15	0.033	
541-73-1	1,3-Dichlorobenzene	ND	0.78	0.23	ND	0.13	0.039	
106-46-7	1,4-Dichlorobenzene	ND	0.78	0.22	ND	0.13	0.036	
95-50-1	1,2-Dichlorobenzene	ND	0.78	0.23	ND	0.13	0.039	
5989-27-5	d-Limonene	ND	0.78	0.22	ND	0.14	0.039	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.78	0.15	ND	0.080	0.016	
120-82-1	1,2,4-Trichlorobenzene	ND	0.78	0.25	ND	0.10	0.033	
91-20-3	Naphthalene	ND	0.78	0.28	ND	0.15	0.053	
87-68-3	Hexachlorobutadiene	ND	0.78	0.22	ND	0.073	0.020	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **127DUP10-SUMMA** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-014

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/27/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/7/15
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AS00161		

Initial Pressure (psig): -2.97 Final Pressure (psig): 3.49

Canister Dilution Factor: 1.55

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
15.01	Methylcyclohexane	**4.2**	
17.30	Hexamethylcyclotrisiloxane	**4.3**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128U1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-015

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00763

Initial Pressure (psig): 0.19 Final Pressure (psig): 3.41

Canister Dilution Factor: 1.22

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	ND	0.61	0.17	ND	0.35	0.099	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.2**	0.61	0.21	**0.44**	0.12	0.042	
74-87-3	Chloromethane	**0.49**	0.61	0.18	**0.24**	0.30	0.089	**J**
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.61	0.23	ND	0.087	0.033	
75-01-4	Vinyl Chloride	ND	0.61	0.21	ND	0.24	0.081	
106-99-0	1,3-Butadiene	ND	0.61	0.27	ND	0.28	0.12	
74-83-9	Bromomethane	ND	0.61	0.23	ND	0.16	0.060	
75-00-3	Chloroethane	ND	0.61	0.21	ND	0.23	0.079	
64-17-5	Ethanol	**1.9**	6.1	0.98	**1.0**	3.2	0.52	**J**
75-05-8	Acetonitrile	ND	0.61	0.22	ND	0.36	0.13	
107-02-8	Acrolein	ND	2.4	0.21	ND	1.1	0.090	
67-64-1	Acetone	**3.7**	6.1	0.94	**1.6**	2.6	0.40	**J**
75-69-4	Trichlorofluoromethane	**1.3**	0.61	0.21	**0.23**	0.11	0.037	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	6.1	0.51	ND	2.5	0.21	
107-13-1	Acrylonitrile	ND	0.61	0.21	ND	0.28	0.096	
75-35-4	1,1-Dichloroethene	ND	0.61	0.21	ND	0.15	0.052	
75-09-2	Methylene Chloride	**0.35**	0.61	0.21	**0.10**	0.18	0.060	**J**
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.61	0.20	ND	0.19	0.062	
76-13-1	Trichlorotrifluoroethane	**0.53**	0.61	0.21	**0.069**	0.080	0.027	**J**
75-15-0	Carbon Disulfide	ND	6.1	0.18	ND	2.0	0.059	
156-60-5	trans-1,2-Dichloroethene	ND	0.61	0.23	ND	0.15	0.058	
75-34-3	1,1-Dichloroethane	ND	0.61	0.20	ND	0.15	0.048	
1634-04-4	Methyl tert-Butyl Ether	ND	0.61	0.21	ND	0.17	0.058	
108-05-4	Vinyl Acetate	ND	6.1	0.79	ND	1.7	0.23	
78-93-3	2-Butanone (MEK)	**0.43**	6.1	0.26	**0.15**	2.1	0.087	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128U1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-015

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00763

Initial Pressure (psig): 0.19 Final Pressure (psig): 3.41

Canister Dilution Factor: 1.22

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.61	0.20	ND	0.15	0.049	
141-78-6	Ethyl Acetate	**1.5**	1.2	0.43	**0.42**	0.34	0.12	
110-54-3	n-Hexane	**3.5**	0.61	0.18	**1.0**	0.17	0.052	
67-66-3	Chloroform	ND	0.61	0.21	ND	0.12	0.042	
109-99-9	Tetrahydrofuran (THF)	ND	0.61	0.24	ND	0.21	0.083	
107-06-2	1,2-Dichloroethane	ND	0.61	0.20	ND	0.15	0.048	
71-55-6	1,1,1-Trichloroethane	ND	0.61	0.21	ND	0.11	0.038	
71-43-2	Benzene	**1.9**	0.61	0.20	**0.61**	0.19	0.061	
56-23-5	Carbon Tetrachloride	**0.48**	0.61	0.18	**0.077**	0.097	0.029	**J**
110-82-7	Cyclohexane	**3.4**	1.2	0.35	**0.98**	0.35	0.10	
78-87-5	1,2-Dichloropropane	ND	0.61	0.20	ND	0.13	0.042	
75-27-4	Bromodichloromethane	ND	0.61	0.18	ND	0.091	0.027	
79-01-6	Trichloroethene	ND	0.61	0.17	ND	0.11	0.032	
123-91-1	1,4-Dioxane	ND	0.61	0.20	ND	0.17	0.054	
80-62-6	Methyl Methacrylate	**1.9**	1.2	0.38	**0.46**	0.30	0.092	
142-82-5	n-Heptane	**4.2**	0.61	0.21	**1.0**	0.15	0.051	
10061-01-5	cis-1,3-Dichloropropene	ND	0.61	0.17	ND	0.13	0.038	
108-10-1	4-Methyl-2-pentanone	ND	0.61	0.20	ND	0.15	0.048	
10061-02-6	trans-1,3-Dichloropropene	ND	0.61	0.20	ND	0.13	0.043	
79-00-5	1,1,2-Trichloroethane	ND	0.61	0.20	ND	0.11	0.036	
108-88-3	Toluene	**6.1**	0.61	0.21	**1.6**	0.16	0.055	
591-78-6	2-Hexanone	ND	0.61	0.20	ND	0.15	0.048	
124-48-1	Dibromochloromethane	ND	0.61	0.20	ND	0.072	0.023	
106-93-4	1,2-Dibromoethane	ND	0.61	0.20	ND	0.079	0.025	
123-86-4	n-Butyl Acetate	ND	0.61	0.20	ND	0.13	0.041	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128U1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-015

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00763

Initial Pressure (psig): 0.19 Final Pressure (psig): 3.41

Canister Dilution Factor: 1.22

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	**3.9**	0.61	0.22	**0.83**	0.13	0.047	
127-18-4	Tetrachloroethene	ND	0.61	0.17	ND	0.090	0.025	
108-90-7	Chlorobenzene	ND	0.61	0.20	ND	0.13	0.042	
100-41-4	Ethylbenzene	**0.52**	0.61	0.20	**0.12**	0.14	0.045	**J**
179601-23-1	m,p-Xylenes	**5.2**	1.2	0.37	**1.2**	0.28	0.084	
75-25-2	Bromoform	ND	0.61	0.18	ND	0.059	0.018	
100-42-5	Styrene	**0.77**	0.61	0.18	**0.18**	0.14	0.043	
95-47-6	o-Xylene	**0.85**	0.61	0.18	**0.20**	0.14	0.042	
111-84-2	n-Nonane	**3.1**	0.61	0.18	**0.60**	0.12	0.035	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.61	0.18	ND	0.089	0.027	
98-82-8	Cumene	ND	0.61	0.18	ND	0.12	0.037	
80-56-8	alpha-Pinene	ND	0.61	0.17	ND	0.11	0.031	
103-65-1	n-Propylbenzene	ND	0.61	0.20	ND	0.12	0.040	
622-96-8	4-Ethyltoluene	ND	0.61	0.20	ND	0.12	0.040	
108-67-8	1,3,5-Trimethylbenzene	**0.73**	0.61	0.20	**0.15**	0.12	0.040	
95-63-6	1,2,4-Trimethylbenzene	**0.82**	0.61	0.18	**0.17**	0.12	0.037	
100-44-7	Benzyl Chloride	ND	0.61	0.13	ND	0.12	0.026	
541-73-1	1,3-Dichlorobenzene	ND	0.61	0.18	ND	0.10	0.030	
106-46-7	1,4-Dichlorobenzene	ND	0.61	0.17	ND	0.10	0.028	
95-50-1	1,2-Dichlorobenzene	ND	0.61	0.18	ND	0.10	0.030	
5989-27-5	d-Limonene	ND	0.61	0.17	ND	0.11	0.031	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.61	0.12	ND	0.063	0.013	
120-82-1	1,2,4-Trichlorobenzene	ND	0.61	0.20	ND	0.082	0.026	
91-20-3	Naphthalene	ND	0.61	0.22	ND	0.12	0.042	
87-68-3	Hexachlorobutadiene	ND	0.61	0.17	ND	0.057	0.016	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **128U1-SUMMA** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-015

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/28/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/7/15
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AS00763		

Initial Pressure (psig): 0.19 Final Pressure (psig): 3.41

Canister Dilution Factor: 1.22

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.15	Propane	**3.6**	
5.34	n-Butane	**3.8**	
7.88	n-Pentane	**3.1**	
10.26	2-Methylpentane	**3.4**	
12.19	Methylcyclopentane	**3.6**	
15.02	Methylcyclohexane	**12**	
16.46	Dimethylcyclohexane isomer	**3.3**	
17.30	Hexamethylcyclotrisiloxane	**3.9**	
20.27	n-Decane	**2.7**	
21.83	Unidentified Siloxane	**4.7**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128D1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-016

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00696

Initial Pressure (psig): -0.88 Final Pressure (psig): 3.55

Canister Dilution Factor: 1.32

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	**1.0**	0.66	0.18	**0.59**	0.38	0.11	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.3**	0.66	0.22	**0.47**	0.13	0.045	
74-87-3	Chloromethane	**0.56**	0.66	0.20	**0.27**	0.32	0.096	**J**
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.66	0.25	ND	0.094	0.036	
75-01-4	Vinyl Chloride	ND	0.66	0.22	ND	0.26	0.088	
106-99-0	1,3-Butadiene	ND	0.66	0.29	ND	0.30	0.13	
74-83-9	Bromomethane	ND	0.66	0.25	ND	0.17	0.065	
75-00-3	Chloroethane	ND	0.66	0.22	ND	0.25	0.085	
64-17-5	Ethanol	**7.8**	6.6	1.1	**4.1**	3.5	0.56	
75-05-8	Acetonitrile	ND	0.66	0.24	ND	0.39	0.14	
107-02-8	Acrolein	ND	2.6	0.22	ND	1.2	0.098	
67-64-1	Acetone	**6.6**	6.6	1.0	**2.8**	2.8	0.43	
75-69-4	Trichlorofluoromethane	**1.3**	0.66	0.22	**0.23**	0.12	0.040	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.73**	6.6	0.55	**0.30**	2.7	0.23	**J**
107-13-1	Acrylonitrile	ND	0.66	0.22	ND	0.30	0.10	
75-35-4	1,1-Dichloroethene	ND	0.66	0.22	ND	0.17	0.057	
75-09-2	Methylene Chloride	**0.63**	0.66	0.22	**0.18**	0.19	0.065	**J**
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.66	0.21	ND	0.21	0.068	
76-13-1	Trichlorotrifluoroethane	**0.50**	0.66	0.22	**0.065**	0.086	0.029	**J**
75-15-0	Carbon Disulfide	ND	6.6	0.20	ND	2.1	0.064	
156-60-5	trans-1,2-Dichloroethene	ND	0.66	0.25	ND	0.17	0.063	
75-34-3	1,1-Dichloroethane	ND	0.66	0.21	ND	0.16	0.052	
1634-04-4	Methyl tert-Butyl Ether	ND	0.66	0.22	ND	0.18	0.062	
108-05-4	Vinyl Acetate	ND	6.6	0.86	ND	1.9	0.24	
78-93-3	2-Butanone (MEK)	**0.84**	6.6	0.28	**0.29**	2.2	0.094	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128D1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-016

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00696

Initial Pressure (psig): -0.88 Final Pressure (psig): 3.55

Canister Dilution Factor: 1.32

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.66	0.21	ND	0.17	0.053	
141-78-6	Ethyl Acetate	**1.3**	1.3	0.46	**0.35**	0.37	0.13	**J**
110-54-3	n-Hexane	**1.1**	0.66	0.20	**0.30**	0.19	0.056	
67-66-3	Chloroform	ND	0.66	0.22	ND	0.14	0.046	
109-99-9	Tetrahydrofuran (THF)	ND	0.66	0.26	ND	0.22	0.090	
107-06-2	1,2-Dichloroethane	ND	0.66	0.21	ND	0.16	0.052	
71-55-6	1,1,1-Trichloroethane	ND	0.66	0.22	ND	0.12	0.041	
71-43-2	Benzene	**0.98**	0.66	0.21	**0.31**	0.21	0.066	
56-23-5	Carbon Tetrachloride	**0.51**	0.66	0.20	**0.080**	0.10	0.031	**J**
110-82-7	Cyclohexane	ND	1.3	0.38	ND	0.38	0.11	
78-87-5	1,2-Dichloropropane	ND	0.66	0.21	ND	0.14	0.046	
75-27-4	Bromodichloromethane	ND	0.66	0.20	ND	0.099	0.030	
79-01-6	Trichloroethene	ND	0.66	0.18	ND	0.12	0.034	
123-91-1	1,4-Dioxane	ND	0.66	0.21	ND	0.18	0.059	
80-62-6	Methyl Methacrylate	ND	1.3	0.41	ND	0.32	0.10	
142-82-5	n-Heptane	**0.85**	0.66	0.22	**0.21**	0.16	0.055	
10061-01-5	cis-1,3-Dichloropropene	ND	0.66	0.18	ND	0.15	0.041	
108-10-1	4-Methyl-2-pentanone	ND	0.66	0.21	ND	0.16	0.052	
10061-02-6	trans-1,3-Dichloropropene	ND	0.66	0.21	ND	0.15	0.047	
79-00-5	1,1,2-Trichloroethane	ND	0.66	0.21	ND	0.12	0.039	
108-88-3	Toluene	**1.8**	0.66	0.22	**0.48**	0.18	0.060	
591-78-6	2-Hexanone	ND	0.66	0.21	ND	0.16	0.052	
124-48-1	Dibromochloromethane	ND	0.66	0.21	ND	0.078	0.025	
106-93-4	1,2-Dibromoethane	ND	0.66	0.21	ND	0.086	0.027	
123-86-4	n-Butyl Acetate	ND	0.66	0.21	ND	0.14	0.044	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128D1-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-016

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00696

Initial Pressure (psig): -0.88 Final Pressure (psig): 3.55

Canister Dilution Factor: 1.32

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	**0.29**	0.66	0.24	**0.063**	0.14	0.051	**J**
127-18-4	Tetrachloroethene	ND	0.66	0.18	ND	0.097	0.027	
108-90-7	Chlorobenzene	ND	0.66	0.21	ND	0.14	0.046	
100-41-4	Ethylbenzene	**0.37**	0.66	0.21	**0.085**	0.15	0.049	**J**
179601-23-1	m,p-Xylenes	**1.2**	1.3	0.40	**0.29**	0.30	0.091	**J**
75-25-2	Bromoform	ND	0.66	0.20	ND	0.064	0.019	
100-42-5	Styrene	ND	0.66	0.20	ND	0.16	0.047	
95-47-6	o-Xylene	**0.33**	0.66	0.20	**0.076**	0.15	0.046	**J**
111-84-2	n-Nonane	**0.33**	0.66	0.20	**0.063**	0.13	0.038	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.66	0.20	ND	0.096	0.029	
98-82-8	Cumene	ND	0.66	0.20	ND	0.13	0.040	
80-56-8	alpha-Pinene	ND	0.66	0.18	ND	0.12	0.033	
103-65-1	n-Propylbenzene	ND	0.66	0.21	ND	0.13	0.043	
622-96-8	4-Ethyltoluene	ND	0.66	0.21	ND	0.13	0.043	
108-67-8	1,3,5-Trimethylbenzene	ND	0.66	0.21	ND	0.13	0.043	
95-63-6	1,2,4-Trimethylbenzene	ND	0.66	0.20	ND	0.13	0.040	
100-44-7	Benzyl Chloride	ND	0.66	0.15	ND	0.13	0.028	
541-73-1	1,3-Dichlorobenzene	ND	0.66	0.20	ND	0.11	0.033	
106-46-7	1,4-Dichlorobenzene	ND	0.66	0.18	ND	0.11	0.031	
95-50-1	1,2-Dichlorobenzene	ND	0.66	0.20	ND	0.11	0.033	
5989-27-5	d-Limonene	ND	0.66	0.18	ND	0.12	0.033	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.66	0.13	ND	0.068	0.014	
120-82-1	1,2,4-Trichlorobenzene	ND	0.66	0.21	ND	0.089	0.028	
91-20-3	Naphthalene	ND	0.66	0.24	ND	0.13	0.045	
87-68-3	Hexachlorobutadiene	ND	0.66	0.18	ND	0.062	0.017	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **128D1-SUMMA** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-016

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/28/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/7/15
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AS00696		

Initial Pressure (psig): -0.88 Final Pressure (psig): 3.55

Canister Dilution Factor: 1.32

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.80	Isobutane	**2.9**	
5.34	n-Butane	**4.0**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128N-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-017

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00598

Initial Pressure (psig): 0.55 Final Pressure (psig): 3.44

Canister Dilution Factor: 1.19

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	**1.3**	0.60	0.17	**0.77**	0.35	0.097	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.3**	0.60	0.20	**0.46**	0.12	0.041	
74-87-3	Chloromethane	**0.37**	0.60	0.18	**0.18**	0.29	0.086	**J**
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.60	0.23	ND	0.085	0.032	
75-01-4	Vinyl Chloride	ND	0.60	0.20	ND	0.23	0.079	
106-99-0	1,3-Butadiene	ND	0.60	0.26	ND	0.27	0.12	
74-83-9	Bromomethane	ND	0.60	0.23	ND	0.15	0.058	
75-00-3	Chloroethane	ND	0.60	0.20	ND	0.23	0.077	
64-17-5	Ethanol	**20**	6.0	0.95	**10**	3.2	0.51	
75-05-8	Acetonitrile	**0.95**	0.60	0.21	**0.57**	0.35	0.13	
107-02-8	Acrolein	**0.30**	2.4	0.20	**0.13**	1.0	0.088	**J**
67-64-1	Acetone	**8.7**	6.0	0.92	**3.7**	2.5	0.39	
75-69-4	Trichlorofluoromethane	**1.2**	0.60	0.20	**0.21**	0.11	0.036	
67-63-0	2-Propanol (Isopropyl Alcohol)	**2.1**	6.0	0.50	**0.86**	2.4	0.20	**J**
107-13-1	Acrylonitrile	ND	0.60	0.20	ND	0.27	0.093	
75-35-4	1,1-Dichloroethene	ND	0.60	0.20	ND	0.15	0.051	
75-09-2	Methylene Chloride	**0.63**	0.60	0.20	**0.18**	0.17	0.058	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.60	0.19	ND	0.19	0.061	
76-13-1	Trichlorotrifluoroethane	**0.47**	0.60	0.20	**0.062**	0.078	0.026	**J**
75-15-0	Carbon Disulfide	ND	6.0	0.18	ND	1.9	0.057	
156-60-5	trans-1,2-Dichloroethene	ND	0.60	0.23	ND	0.15	0.057	
75-34-3	1,1-Dichloroethane	ND	0.60	0.19	ND	0.15	0.047	
1634-04-4	Methyl tert-Butyl Ether	ND	0.60	0.20	ND	0.17	0.056	
108-05-4	Vinyl Acetate	ND	6.0	0.77	ND	1.7	0.22	
78-93-3	2-Butanone (MEK)	**1.2**	6.0	0.25	**0.42**	2.0	0.085	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128N-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-017

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00598

Initial Pressure (psig): 0.55 Final Pressure (psig): 3.44

Canister Dilution Factor: 1.19

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.60	0.19	ND	0.15	0.048	
141-78-6	Ethyl Acetate	**74**	1.2	0.42	**21**	0.33	0.12	
110-54-3	n-Hexane	**2.5**	0.60	0.18	**0.70**	0.17	0.051	
67-66-3	Chloroform	ND	0.60	0.20	ND	0.12	0.041	
109-99-9	Tetrahydrofuran (THF)	ND	0.60	0.24	ND	0.20	0.081	
107-06-2	1,2-Dichloroethane	ND	0.60	0.19	ND	0.15	0.047	
71-55-6	1,1,1-Trichloroethane	ND	0.60	0.20	ND	0.11	0.037	
71-43-2	Benzene	**1.8**	0.60	0.19	**0.57**	0.19	0.060	
56-23-5	Carbon Tetrachloride	**0.51**	0.60	0.18	**0.081**	0.095	0.028	**J**
110-82-7	Cyclohexane	**0.70**	1.2	0.35	**0.20**	0.35	0.10	**J**
78-87-5	1,2-Dichloropropane	ND	0.60	0.19	ND	0.13	0.041	
75-27-4	Bromodichloromethane	ND	0.60	0.18	ND	0.089	0.027	
79-01-6	Trichloroethene	ND	0.60	0.17	ND	0.11	0.031	
123-91-1	1,4-Dioxane	ND	0.60	0.19	ND	0.17	0.053	
80-62-6	Methyl Methacrylate	ND	1.2	0.37	ND	0.29	0.090	
142-82-5	n-Heptane	**0.64**	0.60	0.20	**0.16**	0.15	0.049	
10061-01-5	cis-1,3-Dichloropropene	ND	0.60	0.17	ND	0.13	0.037	
108-10-1	4-Methyl-2-pentanone	ND	0.60	0.19	ND	0.15	0.046	
10061-02-6	trans-1,3-Dichloropropene	ND	0.60	0.19	ND	0.13	0.042	
79-00-5	1,1,2-Trichloroethane	ND	0.60	0.19	ND	0.11	0.035	
108-88-3	Toluene	**5.9**	0.60	0.20	**1.6**	0.16	0.054	
591-78-6	2-Hexanone	ND	0.60	0.19	ND	0.15	0.046	
124-48-1	Dibromochloromethane	ND	0.60	0.19	ND	0.070	0.022	
106-93-4	1,2-Dibromoethane	ND	0.60	0.19	ND	0.077	0.025	
123-86-4	n-Butyl Acetate	**0.32**	0.60	0.19	**0.068**	0.13	0.040	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128N-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-017

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00598

Initial Pressure (psig): 0.55 Final Pressure (psig): 3.44

Canister Dilution Factor: 1.19

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	**0.28**	0.60	0.21	**0.059**	0.13	0.046	**J**
127-18-4	Tetrachloroethene	**0.30**	0.60	0.17	**0.045**	0.088	0.025	**J**
108-90-7	Chlorobenzene	ND	0.60	0.19	ND	0.13	0.041	
100-41-4	Ethylbenzene	**0.20**	0.60	0.19	**0.046**	0.14	0.044	**J**
179601-23-1	m,p-Xylenes	**0.75**	1.2	0.36	**0.17**	0.27	0.082	**J**
75-25-2	Bromoform	ND	0.60	0.18	ND	0.058	0.017	
100-42-5	Styrene	ND	0.60	0.18	ND	0.14	0.042	
95-47-6	o-Xylene	**0.23**	0.60	0.18	**0.054**	0.14	0.041	**J**
111-84-2	n-Nonane	**0.27**	0.60	0.18	**0.052**	0.11	0.034	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.60	0.18	ND	0.087	0.026	
98-82-8	Cumene	ND	0.60	0.18	ND	0.12	0.036	
80-56-8	alpha-Pinene	**0.42**	0.60	0.17	**0.075**	0.11	0.030	**J**
103-65-1	n-Propylbenzene	ND	0.60	0.19	ND	0.12	0.039	
622-96-8	4-Ethyltoluene	ND	0.60	0.19	ND	0.12	0.039	
108-67-8	1,3,5-Trimethylbenzene	ND	0.60	0.19	ND	0.12	0.039	
95-63-6	1,2,4-Trimethylbenzene	**0.18**	0.60	0.18	**0.037**	0.12	0.036	**J**
100-44-7	Benzyl Chloride	ND	0.60	0.13	ND	0.11	0.025	
541-73-1	1,3-Dichlorobenzene	ND	0.60	0.18	ND	0.099	0.030	
106-46-7	1,4-Dichlorobenzene	ND	0.60	0.17	ND	0.099	0.028	
95-50-1	1,2-Dichlorobenzene	ND	0.60	0.18	ND	0.099	0.030	
5989-27-5	d-Limonene	**1.4**	0.60	0.17	**0.26**	0.11	0.030	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.60	0.12	ND	0.062	0.012	
120-82-1	1,2,4-Trichlorobenzene	ND	0.60	0.19	ND	0.080	0.026	
91-20-3	Naphthalene	ND	0.60	0.21	ND	0.11	0.041	
87-68-3	Hexachlorobutadiene	ND	0.60	0.17	ND	0.056	0.016	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **128N-SUMMA** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-017

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/28/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/9/15
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AS00598		

Initial Pressure (psig): 0.55 Final Pressure (psig): 3.44

Canister Dilution Factor: 1.19

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.00	1,1-Difluoroethane	**21**	
4.09	Chlorodifluoromethane	**8.5**	
4.15	Propane	**4.6**	
4.79	Isobutane	**4.1**	
5.34	n-Butane	**3.5**	
7.88	n-Pentane	**4.4**	
21.24	n-Nonanal	**2.6**	
21.67	2-Ethylhexylacetate	**4.6**	
21.83	Unidentified Siloxane	**3.4**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQ-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-018

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00798

Initial Pressure (psig): -0.32 Final Pressure (psig): 3.52

Canister Dilution Factor: 1.27

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	ND	0.64	0.18	ND	0.37	0.10	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.3**	0.64	0.22	**0.47**	0.13	0.044	
74-87-3	Chloromethane	**0.50**	0.64	0.19	**0.24**	0.31	0.092	**J**
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.64	0.24	ND	0.091	0.035	
75-01-4	Vinyl Chloride	ND	0.64	0.22	ND	0.25	0.084	
106-99-0	1,3-Butadiene	ND	0.64	0.28	ND	0.29	0.13	
74-83-9	Bromomethane	ND	0.64	0.24	ND	0.16	0.062	
75-00-3	Chloroethane	ND	0.64	0.22	ND	0.24	0.082	
64-17-5	Ethanol	**3.5**	6.4	1.0	**1.9**	3.4	0.54	**J**
75-05-8	Acetonitrile	ND	0.64	0.23	ND	0.38	0.14	
107-02-8	Acrolein	ND	2.5	0.22	ND	1.1	0.094	
67-64-1	Acetone	**4.1**	6.4	0.98	**1.7**	2.7	0.41	**J**
75-69-4	Trichlorofluoromethane	**1.3**	0.64	0.22	**0.24**	0.11	0.038	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	6.4	0.53	ND	2.6	0.22	
107-13-1	Acrylonitrile	ND	0.64	0.22	ND	0.29	0.10	
75-35-4	1,1-Dichloroethene	ND	0.64	0.22	ND	0.16	0.054	
75-09-2	Methylene Chloride	**0.38**	0.64	0.22	**0.11**	0.18	0.062	**J**
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.64	0.20	ND	0.20	0.065	
76-13-1	Trichlorotrifluoroethane	**0.53**	0.64	0.22	**0.069**	0.083	0.028	**J**
75-15-0	Carbon Disulfide	ND	6.4	0.19	ND	2.0	0.061	
156-60-5	trans-1,2-Dichloroethene	ND	0.64	0.24	ND	0.16	0.061	
75-34-3	1,1-Dichloroethane	ND	0.64	0.20	ND	0.16	0.050	
1634-04-4	Methyl tert-Butyl Ether	ND	0.64	0.22	ND	0.18	0.060	
108-05-4	Vinyl Acetate	ND	6.4	0.83	ND	1.8	0.23	
78-93-3	2-Butanone (MEK)	**0.42**	6.4	0.27	**0.14**	2.2	0.090	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQ-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-018

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00798

Initial Pressure (psig): -0.32 Final Pressure (psig): 3.52

Canister Dilution Factor: 1.27

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.64	0.20	ND	0.16	0.051	
141-78-6	Ethyl Acetate	**1.2**	1.3	0.44	**0.34**	0.35	0.12	**J**
110-54-3	n-Hexane	**0.94**	0.64	0.19	**0.27**	0.18	0.054	
67-66-3	Chloroform	ND	0.64	0.22	ND	0.13	0.044	
109-99-9	Tetrahydrofuran (THF)	ND	0.64	0.25	ND	0.22	0.086	
107-06-2	1,2-Dichloroethane	ND	0.64	0.20	ND	0.16	0.050	
71-55-6	1,1,1-Trichloroethane	ND	0.64	0.22	ND	0.12	0.040	
71-43-2	Benzene	**0.80**	0.64	0.20	**0.25**	0.20	0.064	
56-23-5	Carbon Tetrachloride	**0.53**	0.64	0.19	**0.084**	0.10	0.030	**J**
110-82-7	Cyclohexane	**0.40**	1.3	0.37	**0.12**	0.37	0.11	**J**
78-87-5	1,2-Dichloropropane	ND	0.64	0.20	ND	0.14	0.044	
75-27-4	Bromodichloromethane	ND	0.64	0.19	ND	0.095	0.028	
79-01-6	Trichloroethene	ND	0.64	0.18	ND	0.12	0.033	
123-91-1	1,4-Dioxane	ND	0.64	0.20	ND	0.18	0.056	
80-62-6	Methyl Methacrylate	ND	1.3	0.39	ND	0.31	0.096	
142-82-5	n-Heptane	**0.48**	0.64	0.22	**0.12**	0.16	0.053	**J**
10061-01-5	cis-1,3-Dichloropropene	ND	0.64	0.18	ND	0.14	0.039	
108-10-1	4-Methyl-2-pentanone	ND	0.64	0.20	ND	0.16	0.050	
10061-02-6	trans-1,3-Dichloropropene	ND	0.64	0.20	ND	0.14	0.045	
79-00-5	1,1,2-Trichloroethane	ND	0.64	0.20	ND	0.12	0.037	
108-88-3	Toluene	**1.3**	0.64	0.22	**0.35**	0.17	0.057	
591-78-6	2-Hexanone	ND	0.64	0.20	ND	0.16	0.050	
124-48-1	Dibromochloromethane	ND	0.64	0.20	ND	0.075	0.024	
106-93-4	1,2-Dibromoethane	ND	0.64	0.20	ND	0.083	0.026	
123-86-4	n-Butyl Acetate	ND	0.64	0.20	ND	0.13	0.043	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQ-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-018

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00798

Initial Pressure (psig): -0.32 Final Pressure (psig): 3.52

Canister Dilution Factor: 1.27

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	**0.43**	0.64	0.23	**0.092**	0.14	0.049	**J**
127-18-4	Tetrachloroethene	ND	0.64	0.18	ND	0.094	0.026	
108-90-7	Chlorobenzene	ND	0.64	0.20	ND	0.14	0.044	
100-41-4	Ethylbenzene	ND	0.64	0.20	ND	0.15	0.047	
179601-23-1	m,p-Xylenes	**1.1**	1.3	0.38	**0.25**	0.29	0.088	**J**
75-25-2	Bromoform	ND	0.64	0.19	ND	0.061	0.018	
100-42-5	Styrene	ND	0.64	0.19	ND	0.15	0.045	
95-47-6	o-Xylene	**0.27**	0.64	0.19	**0.061**	0.15	0.044	**J**
111-84-2	n-Nonane	**0.62**	0.64	0.19	**0.12**	0.12	0.036	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.64	0.19	ND	0.093	0.028	
98-82-8	Cumene	ND	0.64	0.19	ND	0.13	0.039	
80-56-8	alpha-Pinene	ND	0.64	0.18	ND	0.11	0.032	
103-65-1	n-Propylbenzene	ND	0.64	0.20	ND	0.13	0.041	
622-96-8	4-Ethyltoluene	ND	0.64	0.20	ND	0.13	0.041	
108-67-8	1,3,5-Trimethylbenzene	ND	0.64	0.20	ND	0.13	0.041	
95-63-6	1,2,4-Trimethylbenzene	**0.30**	0.64	0.19	**0.061**	0.13	0.039	**J**
100-44-7	Benzyl Chloride	ND	0.64	0.14	ND	0.12	0.027	
541-73-1	1,3-Dichlorobenzene	ND	0.64	0.19	ND	0.11	0.032	
106-46-7	1,4-Dichlorobenzene	ND	0.64	0.18	ND	0.11	0.030	
95-50-1	1,2-Dichlorobenzene	ND	0.64	0.19	ND	0.11	0.032	
5989-27-5	d-Limonene	ND	0.64	0.18	ND	0.11	0.032	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.64	0.13	ND	0.066	0.013	
120-82-1	1,2,4-Trichlorobenzene	ND	0.64	0.20	ND	0.086	0.027	
91-20-3	Naphthalene	ND	0.64	0.23	ND	0.12	0.044	
87-68-3	Hexachlorobutadiene	ND	0.64	0.18	ND	0.060	0.017	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client:	**Stantec Consulting Services, Inc.**		
Client Sample ID:	**128NQ-SUMMA**	ALS Project ID:	P1500365
Client Project ID:	**Bridgeton / 182608020**	ALS Sample ID:	P1500365-018

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/28/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/9/15
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AS00798		

Initial Pressure (psig): -0.32 Final Pressure (psig): 3.52

Canister Dilution Factor: 1.27

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.14	Propane	**4.1**	
5.33	n-Butane	**2.9**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128DUP11-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-019

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00728

Initial Pressure (psig): -1.06 Final Pressure (psig): 3.47

Canister Dilution Factor: 1.33

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	ND	0.67	0.19	ND	0.39	0.11	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.1**	0.67	0.23	**0.43**	0.13	0.046	
74-87-3	Chloromethane	**0.49**	0.67	0.20	**0.24**	0.32	0.097	**J**
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.67	0.25	ND	0.095	0.036	
75-01-4	Vinyl Chloride	ND	0.67	0.23	ND	0.26	0.088	
106-99-0	1,3-Butadiene	ND	0.67	0.29	ND	0.30	0.13	
74-83-9	Bromomethane	ND	0.67	0.25	ND	0.17	0.065	
75-00-3	Chloroethane	ND	0.67	0.23	ND	0.25	0.086	
64-17-5	Ethanol	**1.9**	6.7	1.1	**0.98**	3.5	0.56	**J**
75-05-8	Acetonitrile	ND	0.67	0.24	ND	0.40	0.14	
107-02-8	Acrolein	ND	2.7	0.23	ND	1.2	0.099	
67-64-1	Acetone	**3.5**	6.7	1.0	**1.5**	2.8	0.43	**J**
75-69-4	Trichlorofluoromethane	**1.3**	0.67	0.23	**0.23**	0.12	0.040	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	6.7	0.56	ND	2.7	0.23	
107-13-1	Acrylonitrile	ND	0.67	0.23	ND	0.31	0.10	
75-35-4	1,1-Dichloroethene	ND	0.67	0.23	ND	0.17	0.057	
75-09-2	Methylene Chloride	**0.38**	0.67	0.23	**0.11**	0.19	0.065	**J**
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.67	0.21	ND	0.21	0.068	
76-13-1	Trichlorotrifluoroethane	**0.51**	0.67	0.23	**0.067**	0.087	0.030	**J**
75-15-0	Carbon Disulfide	ND	6.7	0.20	ND	2.1	0.064	
156-60-5	trans-1,2-Dichloroethene	ND	0.67	0.25	ND	0.17	0.064	
75-34-3	1,1-Dichloroethane	ND	0.67	0.21	ND	0.16	0.053	
1634-04-4	Methyl tert-Butyl Ether	ND	0.67	0.23	ND	0.18	0.063	
108-05-4	Vinyl Acetate	ND	6.7	0.86	ND	1.9	0.25	
78-93-3	2-Butanone (MEK)	**0.41**	6.7	0.28	**0.14**	2.3	0.095	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128DUP11-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-019

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00728

Initial Pressure (psig): -1.06 Final Pressure (psig): 3.47

Canister Dilution Factor: 1.33

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.67	0.21	ND	0.17	0.054	
141-78-6	Ethyl Acetate	**1.3**	1.3	0.47	**0.35**	0.37	0.13	**J**
110-54-3	n-Hexane	**0.70**	0.67	0.20	**0.20**	0.19	0.057	
67-66-3	Chloroform	ND	0.67	0.23	ND	0.14	0.046	
109-99-9	Tetrahydrofuran (THF)	ND	0.67	0.27	ND	0.23	0.090	
107-06-2	1,2-Dichloroethane	ND	0.67	0.21	ND	0.16	0.053	
71-55-6	1,1,1-Trichloroethane	ND	0.67	0.23	ND	0.12	0.041	
71-43-2	Benzene	**0.65**	0.67	0.21	**0.20**	0.21	0.067	**J**
56-23-5	Carbon Tetrachloride	**0.51**	0.67	0.20	**0.081**	0.11	0.032	**J**
110-82-7	Cyclohexane	ND	1.3	0.39	ND	0.39	0.11	
78-87-5	1,2-Dichloropropane	ND	0.67	0.21	ND	0.14	0.046	
75-27-4	Bromodichloromethane	ND	0.67	0.20	ND	0.099	0.030	
79-01-6	Trichloroethene	ND	0.67	0.19	ND	0.12	0.035	
123-91-1	1,4-Dioxane	ND	0.67	0.21	ND	0.18	0.059	
80-62-6	Methyl Methacrylate	ND	1.3	0.41	ND	0.32	0.10	
142-82-5	n-Heptane	**0.27**	0.67	0.23	**0.065**	0.16	0.055	**J**
10061-01-5	cis-1,3-Dichloropropene	ND	0.67	0.19	ND	0.15	0.041	
108-10-1	4-Methyl-2-pentanone	ND	0.67	0.21	ND	0.16	0.052	
10061-02-6	trans-1,3-Dichloropropene	ND	0.67	0.21	ND	0.15	0.047	
79-00-5	1,1,2-Trichloroethane	ND	0.67	0.21	ND	0.12	0.039	
108-88-3	Toluene	**0.95**	0.67	0.23	**0.25**	0.18	0.060	
591-78-6	2-Hexanone	ND	0.67	0.21	ND	0.16	0.052	
124-48-1	Dibromochloromethane	ND	0.67	0.21	ND	0.078	0.025	
106-93-4	1,2-Dibromoethane	ND	0.67	0.21	ND	0.087	0.028	
123-86-4	n-Butyl Acetate	ND	0.67	0.21	ND	0.14	0.045	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128DUP11-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-019

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00728

Initial Pressure (psig): -1.06 Final Pressure (psig): 3.47

Canister Dilution Factor: 1.33

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.67	0.24	ND	0.14	0.051	
127-18-4	Tetrachloroethene	ND	0.67	0.19	ND	0.098	0.027	
108-90-7	Chlorobenzene	ND	0.67	0.21	ND	0.14	0.046	
100-41-4	Ethylbenzene	ND	0.67	0.21	ND	0.15	0.049	
179601-23-1	m,p-Xylenes	ND	1.3	0.40	ND	0.31	0.092	
75-25-2	Bromoform	ND	0.67	0.20	ND	0.064	0.019	
100-42-5	Styrene	ND	0.67	0.20	ND	0.16	0.047	
95-47-6	o-Xylene	ND	0.67	0.20	ND	0.15	0.046	
111-84-2	n-Nonane	ND	0.67	0.20	ND	0.13	0.038	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.67	0.20	ND	0.097	0.029	
98-82-8	Cumene	ND	0.67	0.20	ND	0.14	0.041	
80-56-8	alpha-Pinene	ND	0.67	0.19	ND	0.12	0.033	
103-65-1	n-Propylbenzene	ND	0.67	0.21	ND	0.14	0.043	
622-96-8	4-Ethyltoluene	ND	0.67	0.21	ND	0.14	0.043	
108-67-8	1,3,5-Trimethylbenzene	ND	0.67	0.21	ND	0.14	0.043	
95-63-6	1,2,4-Trimethylbenzene	ND	0.67	0.20	ND	0.14	0.041	
100-44-7	Benzyl Chloride	ND	0.67	0.15	ND	0.13	0.028	
541-73-1	1,3-Dichlorobenzene	ND	0.67	0.20	ND	0.11	0.033	
106-46-7	1,4-Dichlorobenzene	ND	0.67	0.19	ND	0.11	0.031	
95-50-1	1,2-Dichlorobenzene	ND	0.67	0.20	ND	0.11	0.033	
5989-27-5	d-Limonene	ND	0.67	0.19	ND	0.12	0.033	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.67	0.13	ND	0.069	0.014	
120-82-1	1,2,4-Trichlorobenzene	ND	0.67	0.21	ND	0.090	0.029	
91-20-3	Naphthalene	ND	0.67	0.24	ND	0.13	0.046	
87-68-3	Hexachlorobutadiene	ND	0.67	0.19	ND	0.062	0.017	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **128DUP11-SUMMA** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-019

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	1/28/15
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	1/30/15
Analyst:	Lusine Hakobyan	Date Analyzed:	2/9/15
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AS00728		

Initial Pressure (psig): -1.06 Final Pressure (psig): 3.47

Canister Dilution Factor: 1.33

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.15	Propane	**3.4**	
5.34	n-Butane	**3.0**	

T = Analyte is a tentatively identified compound, result is estimated.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150206-MB

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	ND	0.50	0.14	ND	0.29	0.081	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.50	0.17	ND	0.10	0.034	
74-87-3	Chloromethane	ND	0.50	0.15	ND	0.24	0.073	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.50	0.19	ND	0.072	0.027	
75-01-4	Vinyl Chloride	ND	0.50	0.17	ND	0.20	0.067	
106-99-0	1,3-Butadiene	ND	0.50	0.22	ND	0.23	0.099	
74-83-9	Bromomethane	ND	0.50	0.19	ND	0.13	0.049	
75-00-3	Chloroethane	ND	0.50	0.17	ND	0.19	0.064	
64-17-5	Ethanol	ND	5.0	0.80	ND	2.7	0.42	
75-05-8	Acetonitrile	ND	0.50	0.18	ND	0.30	0.11	
107-02-8	Acrolein	ND	2.0	0.17	ND	0.87	0.074	
67-64-1	Acetone	**0.84**	5.0	0.77	**0.35**	2.1	0.32	**J**
75-69-4	Trichlorofluoromethane	ND	0.50	0.17	ND	0.089	0.030	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	5.0	0.42	ND	2.0	0.17	
107-13-1	Acrylonitrile	ND	0.50	0.17	ND	0.23	0.078	
75-35-4	1,1-Dichloroethene	ND	0.50	0.17	ND	0.13	0.043	
75-09-2	Methylene Chloride	ND	0.50	0.17	ND	0.14	0.049	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.50	0.16	ND	0.16	0.051	
76-13-1	Trichlorotrifluoroethane	ND	0.50	0.17	ND	0.065	0.022	
75-15-0	Carbon Disulfide	ND	5.0	0.15	ND	1.6	0.048	
156-60-5	trans-1,2-Dichloroethene	ND	0.50	0.19	ND	0.13	0.048	
75-34-3	1,1-Dichloroethane	ND	0.50	0.16	ND	0.12	0.040	
1634-04-4	Methyl tert-Butyl Ether	ND	0.50	0.17	ND	0.14	0.047	
108-05-4	Vinyl Acetate	ND	5.0	0.65	ND	1.4	0.18	
78-93-3	2-Butanone (MEK)	ND	5.0	0.21	ND	1.7	0.071	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **Method Blank** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150206-MB

Test Code: EPA TO-15 Modified Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA

Analyst: Lusine Hakobyan Date Analyzed: 2/6/15

Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.50	0.16	ND	0.13	0.040	
141-78-6	Ethyl Acetate	ND	1.0	0.35	ND	0.28	0.097	
110-54-3	n-Hexane	ND	0.50	0.15	ND	0.14	0.043	
67-66-3	Chloroform	ND	0.50	0.17	ND	0.10	0.035	
109-99-9	Tetrahydrofuran (THF)	ND	0.50	0.20	ND	0.17	0.068	
107-06-2	1,2-Dichloroethane	ND	0.50	0.16	ND	0.12	0.040	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.17	ND	0.092	0.031	
71-43-2	Benzene	ND	0.50	0.16	ND	0.16	0.050	
56-23-5	Carbon Tetrachloride	ND	0.50	0.15	ND	0.080	0.024	
110-82-7	Cyclohexane	ND	1.0	0.29	ND	0.29	0.084	
78-87-5	1,2-Dichloropropane	ND	0.50	0.16	ND	0.11	0.035	
75-27-4	Bromodichloromethane	ND	0.50	0.15	ND	0.075	0.022	
79-01-6	Trichloroethene	ND	0.50	0.14	ND	0.093	0.026	
123-91-1	1,4-Dioxane	ND	0.50	0.16	ND	0.14	0.044	
80-62-6	Methyl Methacrylate	ND	1.0	0.31	ND	0.24	0.076	
142-82-5	n-Heptane	ND	0.50	0.17	ND	0.12	0.041	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.14	ND	0.11	0.031	
108-10-1	4-Methyl-2-pentanone	ND	0.50	0.16	ND	0.12	0.039	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.16	ND	0.11	0.035	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.16	ND	0.092	0.029	
108-88-3	Toluene	ND	0.50	0.17	ND	0.13	0.045	
591-78-6	2-Hexanone	ND	0.50	0.16	ND	0.12	0.039	
124-48-1	Dibromochloromethane	ND	0.50	0.16	ND	0.059	0.019	
106-93-4	1,2-Dibromoethane	ND	0.50	0.16	ND	0.065	0.021	
123-86-4	n-Butyl Acetate	ND	0.50	0.16	ND	0.11	0.034	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **Method Blank** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150206-MB

Test Code: EPA TO-15 Modified Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA

Analyst: Lusine Hakobyan Date Analyzed: 2/6/15

Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.50	0.18	ND	0.11	0.039	
127-18-4	Tetrachloroethene	ND	0.50	0.14	ND	0.074	0.021	
108-90-7	Chlorobenzene	ND	0.50	0.16	ND	0.11	0.035	
100-41-4	Ethylbenzene	ND	0.50	0.16	ND	0.12	0.037	
179601-23-1	m,p-Xylenes	ND	1.0	0.30	ND	0.23	0.069	
75-25-2	Bromoform	ND	0.50	0.15	ND	0.048	0.015	
100-42-5	Styrene	ND	0.50	0.15	ND	0.12	0.035	
95-47-6	o-Xylene	ND	0.50	0.15	ND	0.12	0.035	
111-84-2	n-Nonane	ND	0.50	0.15	ND	0.095	0.029	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.15	ND	0.073	0.022	
98-82-8	Cumene	ND	0.50	0.15	ND	0.10	0.031	
80-56-8	alpha-Pinene	ND	0.50	0.14	ND	0.090	0.025	
103-65-1	n-Propylbenzene	ND	0.50	0.16	ND	0.10	0.033	
622-96-8	4-Ethyltoluene	ND	0.50	0.16	ND	0.10	0.033	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.16	ND	0.10	0.033	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.15	ND	0.10	0.031	
100-44-7	Benzyl Chloride	ND	0.50	0.11	ND	0.097	0.021	
541-73-1	1,3-Dichlorobenzene	ND	0.50	0.15	ND	0.083	0.025	
106-46-7	1,4-Dichlorobenzene	ND	0.50	0.14	ND	0.083	0.023	
95-50-1	1,2-Dichlorobenzene	ND	0.50	0.15	ND	0.083	0.025	
5989-27-5	d-Limonene	ND	0.50	0.14	ND	0.090	0.025	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.50	0.099	ND	0.052	0.010	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.16	ND	0.067	0.022	
91-20-3	Naphthalene	ND	0.50	0.18	ND	0.095	0.034	
87-68-3	Hexachlorobutadiene	ND	0.50	0.14	ND	0.047	0.013	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client:	**Stantec Consulting Services, Inc.**		
Client Sample ID:	**Method Blank**	ALS Project ID:	P1500365
Client Project ID:	**Bridgeton / 182608020**	ALS Sample ID:	P150206-MB

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	NA
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	NA
Analyst:	Lusine Hakobyan	Date Analyzed:	2/6/15
Sample Type:	1.0 L Silonite Summa Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:			

Canister Dilution Factor: 1.00

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
	No Compounds Detected		

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **Method Blank** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150206-MB

Test Code: EPA TO-15 Modified Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA

Analyst: Lusine Hakobyan Date Analyzed: 2/6/15

Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	ND	0.50	0.14	ND	0.29	0.081	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.50	0.17	ND	0.10	0.034	
74-87-3	Chloromethane	ND	0.50	0.15	ND	0.24	0.073	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.50	0.19	ND	0.072	0.027	
75-01-4	Vinyl Chloride	ND	0.50	0.17	ND	0.20	0.067	
106-99-0	1,3-Butadiene	ND	0.50	0.22	ND	0.23	0.099	
74-83-9	Bromomethane	ND	0.50	0.19	ND	0.13	0.049	
75-00-3	Chloroethane	ND	0.50	0.17	ND	0.19	0.064	
64-17-5	Ethanol	ND	5.0	0.80	ND	2.7	0.42	
75-05-8	Acetonitrile	ND	0.50	0.18	ND	0.30	0.11	
107-02-8	Acrolein	ND	2.0	0.17	ND	0.87	0.074	
67-64-1	Acetone	ND	5.0	0.77	ND	2.1	0.32	
75-69-4	Trichlorofluoromethane	ND	0.50	0.17	ND	0.089	0.030	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	5.0	0.42	ND	2.0	0.17	
107-13-1	Acrylonitrile	ND	0.50	0.17	ND	0.23	0.078	
75-35-4	1,1-Dichloroethene	ND	0.50	0.17	ND	0.13	0.043	
75-09-2	Methylene Chloride	ND	0.50	0.17	ND	0.14	0.049	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.50	0.16	ND	0.16	0.051	
76-13-1	Trichlorotrifluoroethane	ND	0.50	0.17	ND	0.065	0.022	
75-15-0	Carbon Disulfide	ND	5.0	0.15	ND	1.6	0.048	
156-60-5	trans-1,2-Dichloroethene	ND	0.50	0.19	ND	0.13	0.048	
75-34-3	1,1-Dichloroethane	ND	0.50	0.16	ND	0.12	0.040	
1634-04-4	Methyl tert-Butyl Ether	ND	0.50	0.17	ND	0.14	0.047	
108-05-4	Vinyl Acetate	ND	5.0	0.65	ND	1.4	0.18	
78-93-3	2-Butanone (MEK)	ND	5.0	0.21	ND	1.7	0.071	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **Method Blank** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150206-MB

Test Code: EPA TO-15 Modified Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA

Analyst: Lusine Hakobyan Date Analyzed: 2/6/15

Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.50	0.16	ND	0.13	0.040	
141-78-6	Ethyl Acetate	ND	1.0	0.35	ND	0.28	0.097	
110-54-3	n-Hexane	ND	0.50	0.15	ND	0.14	0.043	
67-66-3	Chloroform	ND	0.50	0.17	ND	0.10	0.035	
109-99-9	Tetrahydrofuran (THF)	ND	0.50	0.20	ND	0.17	0.068	
107-06-2	1,2-Dichloroethane	ND	0.50	0.16	ND	0.12	0.040	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.17	ND	0.092	0.031	
71-43-2	Benzene	ND	0.50	0.16	ND	0.16	0.050	
56-23-5	Carbon Tetrachloride	ND	0.50	0.15	ND	0.080	0.024	
110-82-7	Cyclohexane	ND	1.0	0.29	ND	0.29	0.084	
78-87-5	1,2-Dichloropropane	ND	0.50	0.16	ND	0.11	0.035	
75-27-4	Bromodichloromethane	ND	0.50	0.15	ND	0.075	0.022	
79-01-6	Trichloroethene	ND	0.50	0.14	ND	0.093	0.026	
123-91-1	1,4-Dioxane	ND	0.50	0.16	ND	0.14	0.044	
80-62-6	Methyl Methacrylate	ND	1.0	0.31	ND	0.24	0.076	
142-82-5	n-Heptane	ND	0.50	0.17	ND	0.12	0.041	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.14	ND	0.11	0.031	
108-10-1	4-Methyl-2-pentanone	ND	0.50	0.16	ND	0.12	0.039	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.16	ND	0.11	0.035	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.16	ND	0.092	0.029	
108-88-3	Toluene	ND	0.50	0.17	ND	0.13	0.045	
591-78-6	2-Hexanone	ND	0.50	0.16	ND	0.12	0.039	
124-48-1	Dibromochloromethane	ND	0.50	0.16	ND	0.059	0.019	
106-93-4	1,2-Dibromoethane	ND	0.50	0.16	ND	0.065	0.021	
123-86-4	n-Butyl Acetate	ND	0.50	0.16	ND	0.11	0.034	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **Method Blank** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150206-MB

Test Code: EPA TO-15 Modified Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA

Analyst: Lusine Hakobyan Date Analyzed: 2/6/15

Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.50	0.18	ND	0.11	0.039	
127-18-4	Tetrachloroethene	ND	0.50	0.14	ND	0.074	0.021	
108-90-7	Chlorobenzene	ND	0.50	0.16	ND	0.11	0.035	
100-41-4	Ethylbenzene	ND	0.50	0.16	ND	0.12	0.037	
179601-23-1	m,p-Xylenes	ND	1.0	0.30	ND	0.23	0.069	
75-25-2	Bromoform	ND	0.50	0.15	ND	0.048	0.015	
100-42-5	Styrene	ND	0.50	0.15	ND	0.12	0.035	
95-47-6	o-Xylene	ND	0.50	0.15	ND	0.12	0.035	
111-84-2	n-Nonane	ND	0.50	0.15	ND	0.095	0.029	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.15	ND	0.073	0.022	
98-82-8	Cumene	ND	0.50	0.15	ND	0.10	0.031	
80-56-8	alpha-Pinene	ND	0.50	0.14	ND	0.090	0.025	
103-65-1	n-Propylbenzene	ND	0.50	0.16	ND	0.10	0.033	
622-96-8	4-Ethyltoluene	ND	0.50	0.16	ND	0.10	0.033	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.16	ND	0.10	0.033	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.15	ND	0.10	0.031	
100-44-7	Benzyl Chloride	ND	0.50	0.11	ND	0.097	0.021	
541-73-1	1,3-Dichlorobenzene	ND	0.50	0.15	ND	0.083	0.025	
106-46-7	1,4-Dichlorobenzene	ND	0.50	0.14	ND	0.083	0.023	
95-50-1	1,2-Dichlorobenzene	ND	0.50	0.15	ND	0.083	0.025	
5989-27-5	d-Limonene	ND	0.50	0.14	ND	0.090	0.025	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.50	0.099	ND	0.052	0.010	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.16	ND	0.067	0.022	
91-20-3	Naphthalene	ND	0.50	0.18	ND	0.095	0.034	
87-68-3	Hexachlorobutadiene	ND	0.50	0.14	ND	0.047	0.013	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client:	**Stantec Consulting Services, Inc.**		
Client Sample ID:	**Method Blank**	ALS Project ID:	P1500365
Client Project ID:	**Bridgeton / 182608020**	ALS Sample ID:	P150206-MB

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	NA
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	NA
Analyst:	Lusine Hakobyan	Date Analyzed:	2/6/15
Sample Type:	1.0 L Silonite Summa Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:			

Canister Dilution Factor: 1.00

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
	No Compounds Detected		

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **Method Blank** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150209-MB

Test Code: EPA TO-15 Modified Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA

Analyst: Lusine Hakobyan Date Analyzed: 2/9/15

Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
115-07-1	Propene	ND	0.50	0.14	ND	0.29	0.081	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.50	0.17	ND	0.10	0.034	
74-87-3	Chloromethane	ND	0.50	0.15	ND	0.24	0.073	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.50	0.19	ND	0.072	0.027	
75-01-4	Vinyl Chloride	ND	0.50	0.17	ND	0.20	0.067	
106-99-0	1,3-Butadiene	ND	0.50	0.22	ND	0.23	0.099	
74-83-9	Bromomethane	ND	0.50	0.19	ND	0.13	0.049	
75-00-3	Chloroethane	ND	0.50	0.17	ND	0.19	0.064	
64-17-5	Ethanol	ND	5.0	0.80	ND	2.7	0.42	
75-05-8	Acetonitrile	ND	0.50	0.18	ND	0.30	0.11	
107-02-8	Acrolein	ND	2.0	0.17	ND	0.87	0.074	
67-64-1	Acetone	ND	5.0	0.77	ND	2.1	0.32	
75-69-4	Trichlorofluoromethane	ND	0.50	0.17	ND	0.089	0.030	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	5.0	0.42	ND	2.0	0.17	
107-13-1	Acrylonitrile	ND	0.50	0.17	ND	0.23	0.078	
75-35-4	1,1-Dichloroethene	ND	0.50	0.17	ND	0.13	0.043	
75-09-2	Methylene Chloride	ND	0.50	0.17	ND	0.14	0.049	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.50	0.16	ND	0.16	0.051	
76-13-1	Trichlorotrifluoroethane	ND	0.50	0.17	ND	0.065	0.022	
75-15-0	Carbon Disulfide	ND	5.0	0.15	ND	1.6	0.048	
156-60-5	trans-1,2-Dichloroethene	ND	0.50	0.19	ND	0.13	0.048	
75-34-3	1,1-Dichloroethane	ND	0.50	0.16	ND	0.12	0.040	
1634-04-4	Methyl tert-Butyl Ether	ND	0.50	0.17	ND	0.14	0.047	
108-05-4	Vinyl Acetate	ND	5.0	0.65	ND	1.4	0.18	
78-93-3	2-Butanone (MEK)	ND	5.0	0.21	ND	1.7	0.071	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **Method Blank** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150209-MB

Test Code: EPA TO-15 Modified Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA

Analyst: Lusine Hakobyan Date Analyzed: 2/9/15

Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.50	0.16	ND	0.13	0.040	
141-78-6	Ethyl Acetate	ND	1.0	0.35	ND	0.28	0.097	
110-54-3	n-Hexane	ND	0.50	0.15	ND	0.14	0.043	
67-66-3	Chloroform	ND	0.50	0.17	ND	0.10	0.035	
109-99-9	Tetrahydrofuran (THF)	ND	0.50	0.20	ND	0.17	0.068	
107-06-2	1,2-Dichloroethane	ND	0.50	0.16	ND	0.12	0.040	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.17	ND	0.092	0.031	
71-43-2	Benzene	ND	0.50	0.16	ND	0.16	0.050	
56-23-5	Carbon Tetrachloride	ND	0.50	0.15	ND	0.080	0.024	
110-82-7	Cyclohexane	ND	1.0	0.29	ND	0.29	0.084	
78-87-5	1,2-Dichloropropane	ND	0.50	0.16	ND	0.11	0.035	
75-27-4	Bromodichloromethane	ND	0.50	0.15	ND	0.075	0.022	
79-01-6	Trichloroethene	ND	0.50	0.14	ND	0.093	0.026	
123-91-1	1,4-Dioxane	ND	0.50	0.16	ND	0.14	0.044	
80-62-6	Methyl Methacrylate	ND	1.0	0.31	ND	0.24	0.076	
142-82-5	n-Heptane	ND	0.50	0.17	ND	0.12	0.041	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.14	ND	0.11	0.031	
108-10-1	4-Methyl-2-pentanone	ND	0.50	0.16	ND	0.12	0.039	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.16	ND	0.11	0.035	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.16	ND	0.092	0.029	
108-88-3	Toluene	ND	0.50	0.17	ND	0.13	0.045	
591-78-6	2-Hexanone	ND	0.50	0.16	ND	0.12	0.039	
124-48-1	Dibromochloromethane	ND	0.50	0.16	ND	0.059	0.019	
106-93-4	1,2-Dibromoethane	ND	0.50	0.16	ND	0.065	0.021	
123-86-4	n-Butyl Acetate	ND	0.50	0.16	ND	0.11	0.034	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **Method Blank** ALS Project ID: P1500365

Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150209-MB

Test Code: EPA TO-15 Modified Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA

Analyst: Lusine Hakobyan Date Analyzed: 2/9/15

Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.50	0.18	ND	0.11	0.039	
127-18-4	Tetrachloroethene	ND	0.50	0.14	ND	0.074	0.021	
108-90-7	Chlorobenzene	ND	0.50	0.16	ND	0.11	0.035	
100-41-4	Ethylbenzene	ND	0.50	0.16	ND	0.12	0.037	
179601-23-1	m,p-Xylenes	ND	1.0	0.30	ND	0.23	0.069	
75-25-2	Bromoform	ND	0.50	0.15	ND	0.048	0.015	
100-42-5	Styrene	ND	0.50	0.15	ND	0.12	0.035	
95-47-6	o-Xylene	ND	0.50	0.15	ND	0.12	0.035	
111-84-2	n-Nonane	ND	0.50	0.15	ND	0.095	0.029	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.15	ND	0.073	0.022	
98-82-8	Cumene	ND	0.50	0.15	ND	0.10	0.031	
80-56-8	alpha-Pinene	ND	0.50	0.14	ND	0.090	0.025	
103-65-1	n-Propylbenzene	ND	0.50	0.16	ND	0.10	0.033	
622-96-8	4-Ethyltoluene	ND	0.50	0.16	ND	0.10	0.033	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.16	ND	0.10	0.033	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.15	ND	0.10	0.031	
100-44-7	Benzyl Chloride	ND	0.50	0.11	ND	0.097	0.021	
541-73-1	1,3-Dichlorobenzene	ND	0.50	0.15	ND	0.083	0.025	
106-46-7	1,4-Dichlorobenzene	ND	0.50	0.14	ND	0.083	0.023	
95-50-1	1,2-Dichlorobenzene	ND	0.50	0.15	ND	0.083	0.025	
5989-27-5	d-Limonene	ND	0.50	0.14	ND	0.090	0.025	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.50	0.099	ND	0.052	0.010	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.16	ND	0.067	0.022	
91-20-3	Naphthalene	ND	0.50	0.18	ND	0.095	0.034	
87-68-3	Hexachlorobutadiene	ND	0.50	0.14	ND	0.047	0.013	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client:	**Stantec Consulting Services, Inc.**		
Client Sample ID:	**Method Blank**	ALS Project ID:	P1500365
Client Project ID:	**Bridgeton / 182608020**	ALS Sample ID:	P150209-MB

Tentatively Identified Compounds

Test Code:	EPA TO-15 Modified	Date Collected:	NA
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16	Date Received:	NA
Analyst:	Lusine Hakobyan	Date Analyzed:	2/9/15
Sample Type:	1.0 L Silonite Summa Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:			

Canister Dilution Factor: 1.00

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
	No Compounds Detected		

ALS ENVIRONMENTAL

SURROGATE SPIKE RECOVERY RESULTS

Client: **Stantec Consulting Services, Inc.**
Client Project ID: **Bridgeton / 182608020** ALS Project ID: P1500365

Test Code: EPA TO-15 Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date(s) Collected: 1/27 - 1/29/15
Analyst: Lusine Hakobyan Date(s) Received: 1/30/15
Sample Type: 1.0 L Silonite Summa Canister(s) Date(s) Analyzed: 2/6 - 2/9/15
Test Notes:

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4 Percent Recovered	Toluene-d8 Percent Recovered	Bromofluorobenzene Percent Recovered	Acceptance Limits	Data Qualifier
Method Blank	P150206-MB	**103**	**102**	**101**	70-130	
Method Blank	P150206-MB	**104**	**100**	**103**	70-130	
Method Blank	P150209-MB	**104**	**94**	**104**	70-130	
Lab Control Sample	P150206-LCS	**99**	**100**	**104**	70-130	
Lab Control Sample	P150206-LCS	**101**	**102**	**105**	70-130	
Lab Control Sample	P150209-LCS	**103**	**97**	**103**	70-130	
128Ns-GRAB	P1500365-001	**104**	**94**	**103**	70-130	
128NQs-GRAB	P1500365-002	**104**	**91**	**99**	70-130	
128SQs-GRAB	P1500365-003	**101**	**95**	**108**	70-130	
128Fs-GRAB	P1500365-004	**99**	**98**	**108**	70-130	
128GRAB	P1500365-005	**103**	**100**	**104**	70-130	
129GRAB2D	P1500365-006	**101**	**99**	**107**	70-130	
129GRAB3U	P1500365-007	**103**	**97**	**103**	70-130	
127U1-SUMMA	P1500365-008	**103**	**100**	**105**	70-130	
127D1-SUMMA	P1500365-009	**105**	**101**	**102**	70-130	
127D2-SUMMA	P1500365-010	**104**	**102**	**103**	70-130	
127D2-SUMMA	P1500365-010DUP	**105**	**102**	**103**	70-130	
127F-SUMMA	P1500365-011	**103**	**100**	**102**	70-130	
127SQ-SUMMA	P1500365-012	**101**	**99**	**106**	70-130	
127-SUMMA-B	P1500365-013	**103**	**102**	**102**	70-130	
127DUP10-SUMMA	P1500365-014	**105**	**100**	**101**	70-130	
128U1-SUMMA	P1500365-015	**105**	**101**	**102**	70-130	
128D1-SUMMA	P1500365-016	**103**	**96**	**100**	70-130	
128N-SUMMA	P1500365-017	**99**	**102**	**111**	70-130	
128NQ-SUMMA	P1500365-018	**101**	**96**	**105**	70-130	
128NQ-SUMMA	P1500365-018DUP	**103**	**94**	**104**	70-130	
128DUP11-SUMMA	P1500365-019	**100**	**101**	**105**	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150206-LCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	**Result µg/m³**	**% Recovery**	ALS Acceptance Limits	**Data Qualifier**
115-07-1	Propene	200	**182**	**91**	50-128	
75-71-8	Dichlorodifluoromethane (CFC 12)	204	**190**	**93**	66-117	
74-87-3	Chloromethane	198	**192**	**97**	51-133	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	206	**199**	**97**	65-117	
75-01-4	Vinyl Chloride	202	**202**	**100**	61-127	
106-99-0	1,3-Butadiene	214	**225**	**105**	65-132	
74-83-9	Bromomethane	202	**198**	**98**	62-114	
75-00-3	Chloroethane	202	**194**	**96**	64-122	
64-17-5	Ethanol	1,020	**928**	**91**	57-131	
75-05-8	Acetonitrile	204	**196**	**96**	52-135	
107-02-8	Acrolein	214	**217**	**101**	64-124	
67-64-1	Acetone	1,080	**973**	**90**	60-113	
75-69-4	Trichlorofluoromethane	198	**209**	**106**	64-112	
67-63-0	2-Propanol (Isopropyl Alcohol)	420	**376**	**90**	62-129	
107-13-1	Acrylonitrile	208	**205**	**99**	69-133	
75-35-4	1,1-Dichloroethene	214	**205**	**96**	70-114	
75-09-2	Methylene Chloride	216	**201**	**93**	63-103	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	218	**227**	**104**	57-135	
76-13-1	Trichlorotrifluoroethane	216	**207**	**96**	69-116	
75-15-0	Carbon Disulfide	196	**201**	**103**	66-118	
156-60-5	trans-1,2-Dichloroethene	212	**213**	**100**	69-123	
75-34-3	1,1-Dichloroethane	208	**202**	**97**	65-118	
1634-04-4	Methyl tert-Butyl Ether	212	**206**	**97**	57-125	
108-05-4	Vinyl Acetate	1,020	**1050**	**103**	69-131	
78-93-3	2-Butanone (MEK)	216	**197**	**91**	63-121	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150206-LCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	**Result µg/m³**	**% Recovery**	ALS Acceptance Limits	**Data Qualifier**
156-59-2	cis-1,2-Dichloroethene	214	**211**	**99**	69-119	
141-78-6	Ethyl Acetate	428	**395**	**92**	65-129	
110-54-3	n-Hexane	210	**184**	**88**	55-116	
67-66-3	Chloroform	216	**206**	**95**	68-111	
109-99-9	Tetrahydrofuran (THF)	206	**184**	**89**	69-120	
107-06-2	1,2-Dichloroethane	210	**203**	**97**	67-117	
71-55-6	1,1,1-Trichloroethane	208	**202**	**97**	74-116	
71-43-2	Benzene	220	**199**	**90**	61-109	
56-23-5	Carbon Tetrachloride	214	**225**	**105**	76-120	
110-82-7	Cyclohexane	422	**405**	**96**	72-115	
78-87-5	1,2-Dichloropropane	212	**203**	**96**	67-119	
75-27-4	Bromodichloromethane	216	**215**	**100**	78-124	
79-01-6	Trichloroethene	208	**210**	**101**	69-115	
123-91-1	1,4-Dioxane	218	**189**	**87**	69-127	
80-62-6	Methyl Methacrylate	420	**429**	**102**	76-128	
142-82-5	n-Heptane	214	**205**	**96**	66-118	
10061-01-5	cis-1,3-Dichloropropene	226	**236**	**104**	77-124	
108-10-1	4-Methyl-2-pentanone	218	**209**	**96**	66-134	
10061-02-6	trans-1,3-Dichloropropene	216	**236**	**109**	80-130	
79-00-5	1,1,2-Trichloroethane	212	**205**	**97**	75-119	
108-88-3	Toluene	212	**188**	**89**	68-114	
591-78-6	2-Hexanone	222	**207**	**93**	60-136	
124-48-1	Dibromochloromethane	220	**224**	**102**	75-132	
106-93-4	1,2-Dibromoethane	216	**218**	**101**	72-122	
123-86-4	n-Butyl Acetate	224	**209**	**93**	60-137	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150206-LCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	Result µg/m³	% Recovery	ALS Acceptance Limits	Data Qualifier
111-65-9	n-Octane	208	**204**	**98**	66-120	
127-18-4	Tetrachloroethene	198	**189**	**95**	67-120	
108-90-7	Chlorobenzene	216	**203**	**94**	69-114	
100-41-4	Ethylbenzene	212	**208**	**98**	71-117	
179601-23-1	m,p-Xylenes	420	**396**	**94**	71-118	
75-25-2	Bromoform	216	**250**	**116**	76-149	
100-42-5	Styrene	218	**216**	**99**	71-128	
95-47-6	o-Xylene	206	**197**	**96**	72-118	
111-84-2	n-Nonane	204	**197**	**97**	63-123	
79-34-5	1,1,2,2-Tetrachloroethane	202	**197**	**98**	73-124	
98-82-8	Cumene	204	**193**	**95**	71-118	
80-56-8	alpha-Pinene	208	**209**	**100**	71-123	
103-65-1	n-Propylbenzene	202	**193**	**96**	71-120	
622-96-8	4-Ethyltoluene	212	**203**	**96**	71-121	
108-67-8	1,3,5-Trimethylbenzene	212	**194**	**92**	72-121	
95-63-6	1,2,4-Trimethylbenzene	210	**196**	**93**	71-122	
100-44-7	Benzyl Chloride	218	**240**	**110**	79-143	
541-73-1	1,3-Dichlorobenzene	218	**202**	**93**	67-121	
106-46-7	1,4-Dichlorobenzene	212	**185**	**87**	68-121	
95-50-1	1,2-Dichlorobenzene	214	**199**	**93**	68-121	
5989-27-5	d-Limonene	210	**213**	**101**	69-137	
96-12-8	1,2-Dibromo-3-chloropropane	206	**226**	**110**	73-145	
120-82-1	1,2,4-Trichlorobenzene	210	**216**	**103**	60-135	
91-20-3	Naphthalene	196	**212**	**108**	63-142	
87-68-3	Hexachlorobutadiene	214	**209**	**98**	65-127	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150206-LCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	Result µg/m³	% Recovery	ALS Acceptance Limits	Data Qualifier
115-07-1	Propene	200	**192**	**96**	50-128	
75-71-8	Dichlorodifluoromethane (CFC 12)	204	**197**	**97**	66-117	
74-87-3	Chloromethane	198	**184**	**93**	51-133	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	206	**211**	**102**	65-117	
75-01-4	Vinyl Chloride	202	**206**	**102**	61-127	
106-99-0	1,3-Butadiene	214	**244**	**114**	65-132	
74-83-9	Bromomethane	202	**216**	**107**	62-114	
75-00-3	Chloroethane	202	**196**	**97**	64-122	
64-17-5	Ethanol	1,020	**951**	**93**	57-131	
75-05-8	Acetonitrile	204	**202**	**99**	52-135	
107-02-8	Acrolein	214	**226**	**106**	64-124	
67-64-1	Acetone	1,080	**1020**	**94**	60-113	
75-69-4	Trichlorofluoromethane	198	**212**	**107**	64-112	
67-63-0	2-Propanol (Isopropyl Alcohol)	420	**386**	**92**	62-129	
107-13-1	Acrylonitrile	208	**210**	**101**	69-133	
75-35-4	1,1-Dichloroethene	214	**208**	**97**	70-114	
75-09-2	Methylene Chloride	216	**208**	**96**	63-103	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	218	**235**	**108**	57-135	
76-13-1	Trichlorotrifluoroethane	216	**204**	**94**	69-116	
75-15-0	Carbon Disulfide	196	**204**	**104**	66-118	
156-60-5	trans-1,2-Dichloroethene	212	**222**	**105**	69-123	
75-34-3	1,1-Dichloroethane	208	**210**	**101**	65-118	
1634-04-4	Methyl tert-Butyl Ether	212	**207**	**98**	57-125	
108-05-4	Vinyl Acetate	1,020	**1070**	**105**	69-131	
78-93-3	2-Butanone (MEK)	216	**199**	**92**	63-121	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150206-LCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	**Result µg/m³**	**% Recovery**	ALS Acceptance Limits	**Data Qualifier**
156-59-2	cis-1,2-Dichloroethene	214	**216**	**101**	69-119	
141-78-6	Ethyl Acetate	428	**402**	**94**	65-129	
110-54-3	n-Hexane	210	**194**	**92**	55-116	
67-66-3	Chloroform	216	**210**	**97**	68-111	
109-99-9	Tetrahydrofuran (THF)	206	**188**	**91**	69-120	
107-06-2	1,2-Dichloroethane	210	**206**	**98**	67-117	
71-55-6	1,1,1-Trichloroethane	208	**200**	**96**	74-116	
71-43-2	Benzene	220	**197**	**90**	61-109	
56-23-5	Carbon Tetrachloride	214	**225**	**105**	76-120	
110-82-7	Cyclohexane	422	**407**	**96**	72-115	
78-87-5	1,2-Dichloropropane	212	**201**	**95**	67-119	
75-27-4	Bromodichloromethane	216	**215**	**100**	78-124	
79-01-6	Trichloroethene	208	**204**	**98**	69-115	
123-91-1	1,4-Dioxane	218	**187**	**86**	69-127	
80-62-6	Methyl Methacrylate	420	**426**	**101**	76-128	
142-82-5	n-Heptane	214	**204**	**95**	66-118	
10061-01-5	cis-1,3-Dichloropropene	226	**236**	**104**	77-124	
108-10-1	4-Methyl-2-pentanone	218	**207**	**95**	66-134	
10061-02-6	trans-1,3-Dichloropropene	216	**234**	**108**	80-130	
79-00-5	1,1,2-Trichloroethane	212	**202**	**95**	75-119	
108-88-3	Toluene	212	**189**	**89**	68-114	
591-78-6	2-Hexanone	222	**210**	**95**	60-136	
124-48-1	Dibromochloromethane	220	**224**	**102**	75-132	
106-93-4	1,2-Dibromoethane	216	**219**	**101**	72-122	
123-86-4	n-Butyl Acetate	224	**213**	**95**	60-137	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150206-LCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Lusine Hakobyan Date Analyzed: 2/6/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	**Result µg/m³**	**% Recovery**	ALS Acceptance Limits	**Data Qualifier**
111-65-9	n-Octane	208	**205**	**99**	66-120	
127-18-4	Tetrachloroethene	198	**190**	**96**	67-120	
108-90-7	Chlorobenzene	216	**203**	**94**	69-114	
100-41-4	Ethylbenzene	212	**209**	**99**	71-117	
179601-23-1	m,p-Xylenes	420	**410**	**98**	71-118	
75-25-2	Bromoform	216	**248**	**115**	76-149	
100-42-5	Styrene	218	**217**	**100**	71-128	
95-47-6	o-Xylene	206	**198**	**96**	72-118	
111-84-2	n-Nonane	204	**199**	**98**	63-123	
79-34-5	1,1,2,2-Tetrachloroethane	202	**200**	**99**	73-124	
98-82-8	Cumene	204	**192**	**94**	71-118	
80-56-8	alpha-Pinene	208	**210**	**101**	71-123	
103-65-1	n-Propylbenzene	202	**193**	**96**	71-120	
622-96-8	4-Ethyltoluene	212	**203**	**96**	71-121	
108-67-8	1,3,5-Trimethylbenzene	212	**198**	**93**	72-121	
95-63-6	1,2,4-Trimethylbenzene	210	**201**	**96**	71-122	
100-44-7	Benzyl Chloride	218	**242**	**111**	79-143	
541-73-1	1,3-Dichlorobenzene	218	**207**	**95**	67-121	
106-46-7	1,4-Dichlorobenzene	212	**190**	**90**	68-121	
95-50-1	1,2-Dichlorobenzene	214	**202**	**94**	68-121	
5989-27-5	d-Limonene	210	**217**	**103**	69-137	
96-12-8	1,2-Dibromo-3-chloropropane	206	**227**	**110**	73-145	
120-82-1	1,2,4-Trichlorobenzene	210	**218**	**104**	60-135	
91-20-3	Naphthalene	196	**215**	**110**	63-142	
87-68-3	Hexachlorobutadiene	214	**212**	**99**	65-127	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150209-LCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	**Result µg/m³**	**% Recovery**	ALS Acceptance Limits	**Data Qualifier**
115-07-1	Propene	200	**178**	**89**	50-128	
75-71-8	Dichlorodifluoromethane (CFC 12)	204	**195**	**96**	66-117	
74-87-3	Chloromethane	198	**184**	**93**	51-133	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	206	**217**	**105**	65-117	
75-01-4	Vinyl Chloride	202	**207**	**102**	61-127	
106-99-0	1,3-Butadiene	214	**241**	**113**	65-132	
74-83-9	Bromomethane	202	**208**	**103**	62-114	
75-00-3	Chloroethane	202	**190**	**94**	64-122	
64-17-5	Ethanol	1,020	**953**	**93**	57-131	
75-05-8	Acetonitrile	204	**198**	**97**	52-135	
107-02-8	Acrolein	214	**219**	**102**	64-124	
67-64-1	Acetone	1,080	**978**	**91**	60-113	
75-69-4	Trichlorofluoromethane	198	**205**	**104**	64-112	
67-63-0	2-Propanol (Isopropyl Alcohol)	420	**399**	**95**	62-129	
107-13-1	Acrylonitrile	208	**206**	**99**	69-133	
75-35-4	1,1-Dichloroethene	214	**215**	**100**	70-114	
75-09-2	Methylene Chloride	216	**200**	**93**	63-103	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	218	**232**	**106**	57-135	
76-13-1	Trichlorotrifluoroethane	216	**207**	**96**	69-116	
75-15-0	Carbon Disulfide	196	**211**	**108**	66-118	
156-60-5	trans-1,2-Dichloroethene	212	**214**	**101**	69-123	
75-34-3	1,1-Dichloroethane	208	**203**	**98**	65-118	
1634-04-4	Methyl tert-Butyl Ether	212	**203**	**96**	57-125	
108-05-4	Vinyl Acetate	1,020	**1070**	**105**	69-131	
78-93-3	2-Butanone (MEK)	216	**203**	**94**	63-121	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150209-LCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	**Result µg/m³**	**% Recovery**	ALS Acceptance Limits	**Data Qualifier**
156-59-2	cis-1,2-Dichloroethene	214	**212**	**99**	69-119	
141-78-6	Ethyl Acetate	428	**411**	**96**	65-129	
110-54-3	n-Hexane	210	**201**	**96**	55-116	
67-66-3	Chloroform	216	**210**	**97**	68-111	
109-99-9	Tetrahydrofuran (THF)	206	**187**	**91**	69-120	
107-06-2	1,2-Dichloroethane	210	**210**	**100**	67-117	
71-55-6	1,1,1-Trichloroethane	208	**193**	**93**	74-116	
71-43-2	Benzene	220	**192**	**87**	61-109	
56-23-5	Carbon Tetrachloride	214	**216**	**101**	76-120	
110-82-7	Cyclohexane	422	**384**	**91**	72-115	
78-87-5	1,2-Dichloropropane	212	**201**	**95**	67-119	
75-27-4	Bromodichloromethane	216	**207**	**96**	78-124	
79-01-6	Trichloroethene	208	**206**	**99**	69-115	
123-91-1	1,4-Dioxane	218	**189**	**87**	69-127	
80-62-6	Methyl Methacrylate	420	**422**	**100**	76-128	
142-82-5	n-Heptane	214	**201**	**94**	66-118	
10061-01-5	cis-1,3-Dichloropropene	226	**229**	**101**	77-124	
108-10-1	4-Methyl-2-pentanone	218	**206**	**94**	66-134	
10061-02-6	trans-1,3-Dichloropropene	216	**237**	**110**	80-130	
79-00-5	1,1,2-Trichloroethane	212	**205**	**97**	75-119	
108-88-3	Toluene	212	**180**	**85**	68-114	
591-78-6	2-Hexanone	222	**203**	**91**	60-136	
124-48-1	Dibromochloromethane	220	**220**	**100**	75-132	
106-93-4	1,2-Dibromoethane	216	**215**	**100**	72-122	
123-86-4	n-Butyl Acetate	224	**205**	**92**	60-137	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P150209-LCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	**Result µg/m³**	**% Recovery**	ALS Acceptance Limits	**Data Qualifier**
111-65-9	n-Octane	208	**197**	**95**	66-120	
127-18-4	Tetrachloroethene	198	**183**	**92**	67-120	
108-90-7	Chlorobenzene	216	**198**	**92**	69-114	
100-41-4	Ethylbenzene	212	**203**	**96**	71-117	
179601-23-1	m,p-Xylenes	420	**398**	**95**	71-118	
75-25-2	Bromoform	216	**232**	**107**	76-149	
100-42-5	Styrene	218	**208**	**95**	71-128	
95-47-6	o-Xylene	206	**192**	**93**	72-118	
111-84-2	n-Nonane	204	**193**	**95**	63-123	
79-34-5	1,1,2,2-Tetrachloroethane	202	**188**	**93**	73-124	
98-82-8	Cumene	204	**181**	**89**	71-118	
80-56-8	alpha-Pinene	208	**203**	**98**	71-123	
103-65-1	n-Propylbenzene	202	**178**	**88**	71-120	
622-96-8	4-Ethyltoluene	212	**192**	**91**	71-121	
108-67-8	1,3,5-Trimethylbenzene	212	**186**	**88**	72-121	
95-63-6	1,2,4-Trimethylbenzene	210	**188**	**90**	71-122	
100-44-7	Benzyl Chloride	218	**229**	**105**	79-143	
541-73-1	1,3-Dichlorobenzene	218	**194**	**89**	67-121	
106-46-7	1,4-Dichlorobenzene	212	**178**	**84**	68-121	
95-50-1	1,2-Dichlorobenzene	214	**191**	**89**	68-121	
5989-27-5	d-Limonene	210	**202**	**96**	69-137	
96-12-8	1,2-Dibromo-3-chloropropane	206	**215**	**104**	73-145	
120-82-1	1,2,4-Trichlorobenzene	210	**211**	**100**	60-135	
91-20-3	Naphthalene	196	**207**	**106**	63-142	
87-68-3	Hexachlorobutadiene	214	**203**	**95**	65-127	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D2-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-010DUP

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00224

Initial Pressure (psig): -1.67 Final Pressure (psig): 3.29

Canister Dilution Factor: 1.38

Compound	Sample Result µg/m³	Sample Result ppbV	**Duplicate Sample Result µg/m³**	**Duplicate Sample Result** ppbV	Average µg/m³	**% RPD**	RPD Limit	**Data Qualifier**
Propene	ND	ND	ND	ND	-	-	25	
Dichlorodifluoromethane (CFC 12)	2.31	0.467	2.22	0.448	2.265	**4**	25	
Chloromethane	0.504	0.244	0.359	0.174	0.4315	**34**	25	**J, R1**
1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	ND	ND	ND	-	-	25	
Vinyl Chloride	ND	ND	ND	ND	-	-	25	
1,3-Butadiene	ND	ND	ND	ND	-	-	25	
Bromomethane	ND	ND	ND	ND	-	-	25	
Chloroethane	ND	ND	ND	ND	-	-	25	
Ethanol	1.65	0.876	1.48	0.785	1.565	**11**	25	**J**
Acetonitrile	ND	ND	ND	ND	-	-	25	
Acrolein	ND	ND	ND	ND	-	-	25	
Acetone	3.85	1.62	3.69	1.55	3.77	**4**	25	**J**
Trichlorofluoromethane	1.35	0.240	1.30	0.231	1.325	**4**	25	
2-Propanol (Isopropyl Alcohol)	ND	ND	ND	ND	-	-	25	
Acrylonitrile	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethene	ND	ND	ND	ND	-	-	25	
Methylene Chloride	0.414	0.119	0.421	0.121	0.4175	**2**	25	**J**
3-Chloro-1-propene (Allyl Chloride)	ND	ND	ND	ND	-	-	25	
Trichlorotrifluoroethane	0.549	0.0717	0.506	0.0661	0.5275	**8**	25	**J**
Carbon Disulfide	ND	ND	ND	ND	-	-	25	
trans-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethane	ND	ND	ND	ND	-	-	25	
Methyl tert-Butyl Ether	ND	ND	ND	ND	-	-	25	
Vinyl Acetate	ND	ND	ND	ND	-	-	25	
2-Butanone (MEK)	0.428	0.145	0.396	0.134	0.412	**8**	25	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
R1 = Duplicate precision not within the specified limits; however, the results are below the MRL and considered estimated.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D2-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-010DUP

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00224

Initial Pressure (psig): -1.67 Final Pressure (psig): 3.29

Canister Dilution Factor: 1.38

Compound	Sample Result µg/m³	Sample Result ppbV	**Duplicate Sample Result µg/m³**	**Duplicate Sample Result ppbV**	Average µg/m³	**% RPD**	RPD Limit	**Data Qualifier**
cis-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
Ethyl Acetate	2.32	0.644	2.20	0.612	2.26	**5**	25	
n-Hexane	0.464	0.132	0.444	0.126	0.454	**4**	25	**J**
Chloroform	ND	ND	ND	ND	-	-	25	
Tetrahydrofuran (THF)	ND	ND	ND	ND	-	-	25	
1,2-Dichloroethane	ND	ND	ND	ND	-	-	25	
1,1,1-Trichloroethane	ND	ND	ND	ND	-	-	25	
Benzene	0.522	0.163	0.493	0.154	0.5075	**6**	25	**J**
Carbon Tetrachloride	0.490	0.0779	0.446	0.0709	0.468	**9**	25	**J**
Cyclohexane	ND	ND	ND	ND	-	-	25	
1,2-Dichloropropane	ND	ND	ND	ND	-	-	25	
Bromodichloromethane	ND	ND	ND	ND	-	-	25	
Trichloroethene	ND	ND	ND	ND	-	-	25	
1,4-Dioxane	ND	ND	ND	ND	-	-	25	
Methyl Methacrylate	ND	ND	ND	ND	-	-	25	
n-Heptane	ND	ND	ND	ND	-	-	25	
cis-1,3-Dichloropropene	ND	ND	ND	ND	-	-	25	
4-Methyl-2-pentanone	ND	ND	ND	ND	-	-	25	
trans-1,3-Dichloropropene	ND	ND	ND	ND	-	-	25	
1,1,2-Trichloroethane	ND	ND	ND	ND	-	-	25	
Toluene	0.446	0.118	0.431	0.114	0.4385	**3**	25	**J**
2-Hexanone	ND	ND	ND	ND	-	-	25	
Dibromochloromethane	ND	ND	ND	ND	-	-	25	
1,2-Dibromoethane	ND	ND	ND	ND	-	-	25	
n-Butyl Acetate	ND	ND	ND	ND	-	-	25	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **127D2-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-010DUP

Test Code: EPA TO-15 Modified Date Collected: 1/27/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/7/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00224

Initial Pressure (psig): -1.67 Final Pressure (psig): 3.29

Canister Dilution Factor: 1.38

Compound	Sample Result µg/m³	Sample Result ppbV	Duplicate Sample Result µg/m³	Duplicate Sample Result ppbV	Average µg/m³	% RPD	RPD Limit	Data Qualifier
n-Octane	ND	ND	ND	ND	-	-	25	
Tetrachloroethene	ND	ND	ND	ND	-	-	25	
Chlorobenzene	ND	ND	ND	ND	-	-	25	
Ethylbenzene	ND	ND	ND	ND	-	-	25	
m,p-Xylenes	ND	ND	ND	ND	-	-	25	
Bromoform	ND	ND	ND	ND	-	-	25	
Styrene	ND	ND	ND	ND	-	-	25	
o-Xylene	ND	ND	ND	ND	-	-	25	
n-Nonane	ND	ND	ND	ND	-	-	25	
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	-	-	25	
Cumene	ND	ND	ND	ND	-	-	25	
alpha-Pinene	ND	ND	ND	ND	-	-	25	
n-Propylbenzene	ND	ND	ND	ND	-	-	25	
4-Ethyltoluene	ND	ND	ND	ND	-	-	25	
1,3,5-Trimethylbenzene	ND	ND	ND	ND	-	-	25	
1,2,4-Trimethylbenzene	ND	ND	ND	ND	-	-	25	
Benzyl Chloride	ND	ND	ND	ND	-	-	25	
1,3-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
1,4-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
1,2-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
d-Limonene	ND	ND	ND	ND	-	-	25	
1,2-Dibromo-3-chloropropane	ND	ND	ND	ND	-	-	25	
1,2,4-Trichlorobenzene	ND	ND	ND	ND	-	-	25	
Naphthalene	ND	ND	ND	ND	-	-	25	
Hexachlorobutadiene	ND	ND	ND	ND	-	-	25	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQ-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-018DUP

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00798

Initial Pressure (psig): -0.32 Final Pressure (psig): 3.52

Canister Dilution Factor: 1.27

Compound	Sample Result µg/m³	Sample Result ppbV	Duplicate Sample Result µg/m³	Duplicate Sample Result ppbV	Average µg/m³	% RPD	RPD Limit	Data Qualifier
Propene	ND	ND	ND	ND	-	-	25	
Dichlorodifluoromethane (CFC 12)	2.30	0.466	2.38	0.482	2.34	**3**	25	
Chloromethane	0.503	0.244	0.399	0.193	0.451	**23**	25	**J**
1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	ND	ND	ND	-	-	25	
Vinyl Chloride	ND	ND	ND	ND	-	-	25	
1,3-Butadiene	ND	ND	ND	ND	-	-	25	
Bromomethane	ND	ND	ND	ND	-	-	25	
Chloroethane	ND	ND	ND	ND	-	-	25	
Ethanol	3.51	1.86	3.47	1.84	3.49	**1**	25	**J**
Acetonitrile	ND	ND	ND	ND	-	-	25	
Acrolein	ND	ND	ND	ND	-	-	25	
Acetone	4.07	1.71	4.05	1.71	4.06	**0.5**	25	**J**
Trichlorofluoromethane	1.35	0.240	1.32	0.235	1.335	**2**	25	
2-Propanol (Isopropyl Alcohol)	ND	ND	ND	ND	-	-	25	
Acrylonitrile	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethene	ND	ND	ND	ND	-	-	25	
Methylene Chloride	0.377	0.109	0.389	0.112	0.383	**3**	25	**J**
3-Chloro-1-propene (Allyl Chloride)	ND	ND	ND	ND	-	-	25	
Trichlorotrifluoroethane	0.526	0.0686	0.540	0.0705	0.533	**3**	25	**J**
Carbon Disulfide	ND	ND	ND	ND	-	-	25	
trans-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethane	ND	ND	ND	ND	-	-	25	
Methyl tert-Butyl Ether	ND	ND	ND	ND	-	-	25	
Vinyl Acetate	ND	ND	ND	ND	-	-	25	
2-Butanone (MEK)	0.418	0.142	0.442	0.150	0.43	**6**	25	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQ-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-018DUP

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00798

Initial Pressure (psig): -0.32 Final Pressure (psig): 3.52

Canister Dilution Factor: 1.27

Compound	Sample Result µg/m³	Sample Result ppbV	Duplicate Sample Result µg/m³	Duplicate Sample Result ppbV	Average µg/m³	% RPD	RPD Limit	Data Qualifier
cis-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
Ethyl Acetate	1.23	0.341	1.13	0.313	1.18	**8**	25	**J**
n-Hexane	0.940	0.267	0.895	0.254	0.9175	**5**	25	
Chloroform	ND	ND	ND	ND	-	-	25	
Tetrahydrofuran (THF)	ND	ND	ND	ND	-	-	25	
1,2-Dichloroethane	ND	ND	ND	ND	-	-	25	
1,1,1-Trichloroethane	ND	ND	ND	ND	-	-	25	
Benzene	0.796	0.249	0.782	0.245	0.789	**2**	25	
Carbon Tetrachloride	0.527	0.0838	0.478	0.0759	0.5025	**10**	25	**J**
Cyclohexane	0.401	0.117	ND	ND	-	-	25	
1,2-Dichloropropane	ND	ND	ND	ND	-	-	25	
Bromodichloromethane	ND	ND	ND	ND	-	-	25	
Trichloroethene	ND	ND	ND	ND	-	-	25	
1,4-Dioxane	ND	ND	ND	ND	-	-	25	
Methyl Methacrylate	ND	ND	ND	ND	-	-	25	
n-Heptane	0.484	0.118	0.481	0.117	0.4825	**0.6**	25	**J**
cis-1,3-Dichloropropene	ND	ND	ND	ND	-	-	25	
4-Methyl-2-pentanone	ND	ND	ND	ND	-	-	25	
trans-1,3-Dichloropropene	ND	ND	ND	ND	-	-	25	
1,1,2-Trichloroethane	ND	ND	ND	ND	-	-	25	
Toluene	1.30	0.346	1.27	0.337	1.285	**2**	25	
2-Hexanone	ND	ND	0.232	0.0568	-	-	25	**J**
Dibromochloromethane	ND	ND	ND	ND	-	-	25	
1,2-Dibromoethane	ND	ND	ND	ND	-	-	25	
n-Butyl Acetate	ND	ND	ND	ND	-	-	25	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **128NQ-SUMMA** ALS Project ID: P1500365
Client Project ID: **Bridgeton / 182608020** ALS Sample ID: P1500365-018DUP

Test Code: EPA TO-15 Modified Date Collected: 1/28/15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 1/30/15
Analyst: Lusine Hakobyan Date Analyzed: 2/9/15
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00798

Initial Pressure (psig): -0.32 Final Pressure (psig): 3.52

Canister Dilution Factor: 1.27

Compound	Sample Result		Duplicate Sample Result		Average	% RPD	RPD	Data
	µg/m³	ppbV	µg/m³	ppbV	µg/m³		Limit	Qualifier
n-Octane	0.432	0.0925	0.451	0.0965	0.4415	**4**	25	**J**
Tetrachloroethene	ND	ND	ND	ND	-	-	25	
Chlorobenzene	ND	ND	ND	ND	-	-	25	
Ethylbenzene	ND	ND	ND	ND	-	-	25	
m,p-Xylenes	1.09	0.250	1.07	0.246	1.08	**2**	25	**J**
Bromoform	ND	ND	ND	ND	-	-	25	
Styrene	ND	ND	ND	ND	-	-	25	
o-Xylene	0.267	0.0614	0.265	0.0611	0.266	**0.8**	25	**J**
n-Nonane	0.621	0.118	0.627	0.120	0.624	**1**	25	**J**
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	-	-	25	
Cumene	ND	ND	ND	ND	-	-	25	
alpha-Pinene	ND	ND	ND	ND	-	-	25	
n-Propylbenzene	ND	ND	ND	ND	-	-	25	
4-Ethyltoluene	ND	ND	ND	ND	-	-	25	
1,3,5-Trimethylbenzene	ND	ND	ND	ND	-	-	25	
1,2,4-Trimethylbenzene	0.300	0.0610	0.298	0.0607	0.299	**0.7**	25	**J**
Benzyl Chloride	ND	ND	ND	ND	-	-	25	
1,3-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
1,4-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
1,2-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
d-Limonene	ND	ND	ND	ND	-	-	25	
1,2-Dibromo-3-chloropropane	ND	ND	ND	ND	-	-	25	
1,2,4-Trichlorobenzene	ND	ND	ND	ND	-	-	25	
Naphthalene	ND	ND	ND	ND	-	-	25	
Hexachlorobutadiene	ND	ND	ND	ND	-	-	25	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Response Factor Report GCMS-16

Method Path : I:\MS16\METHODS\
Method File : R16112414.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Tue Nov 25 09:22:10 2014
Response Via : Initial Calibration

Calibration Files
0.08=11241413.D 0.10=11241414.D 0.20=11241431.D 0.40=11241432.D 1.0 =11241417.D 5.0 =11241418.D
25 =11241419.D 50 =11241420.D 100 =11241421.D

		Compound	0.08	0.10	0.20	0.40	1.0	5.0	25	50	100	Avg	%RSD
1)	IR	Bromochloromethane...	----------ISTD----------										
2)	T	Propene	1.083	1.060	1.616	1.184	1.137	1.048	1.037	1.027	0.884	1.120	18.20
3)	T	Dichlorodifluo...	2.222	2.343	2.812	2.654	2.634	2.365	2.530	2.408	2.174	2.460	8.63
4)	T	Chloromethane	1.579	1.546	1.999	1.714	1.834	1.576	1.719	1.621	1.359	1.661	11.07
5)	T	1,2-Dichloro-1...	1.287	1.399	1.826	1.523	1.586	1.481	1.479	1.518	1.383	1.498	10.15
6)	T	Vinyl Chloride	1.428	1.443	1.939	1.751	1.815	1.689	1.783	1.785	1.586	1.691	10.23
7)	T	1,3-Butadiene	0.743	0.747	1.198	1.028	1.116	1.055	1.140	1.173	1.070	1.030	16.58
8)	T	Bromomethane	1.067	1.088	1.424	1.315	1.415	1.206	1.379	1.282	1.169	1.260	10.74
9)	T	Chloroethane	0.787	0.822	1.015	0.933	1.034	0.886	1.012	0.956	0.832	0.920	10.05
10)	T	Ethanol				0.866	0.855	0.765	0.777	0.744	0.650	0.776	10.22
11)	T	Acetonitrile				2.053	2.065	1.861	1.962	1.915	1.766	1.937	5.93
12)	T	Acrolein	0.836	0.597	0.806	0.575	0.655	0.659	0.702	0.690	0.623	0.682	12.98
13)	T	Acetone				0.946	0.940	0.846	0.828	0.795	0.674	0.838	12.07
14)	T	Trichlorofluor...	1.642	1.696	2.121	1.870	1.962	1.697	1.770	1.788	1.616	1.796	9.14
15)	T	2-Propanol (Is...	2.969	2.783	2.954	2.586	2.675	2.557	2.657	2.534	2.113	2.648	9.70
16)	T	Acrylonitrile	1.337	0.982	1.922	1.476	1.565	1.482	1.605	1.551	1.427	1.483	16.76
17)	T	1,1-Dichloroet...	1.044	1.115	1.348	1.250	1.363	1.265	1.334	1.293	1.182	1.244	8.82
18)	T	2-Methyl-2-Pro...	3.249	3.098	2.895	2.638	2.724	2.562	2.788	2.551	1.947	2.717	13.74
19)	T	Methylene Chlo...				1.448	1.429	1.257	1.284	1.262	1.123	1.300	9.32
20)	T	3-Chloro-1-pro...	0.895	0.951	1.309	1.146	1.273	1.235	1.393	1.382	1.244	1.203	14.65
21)	T	Trichlorotrifl...	1.097	1.053	1.509	1.139	1.268	1.063	1.145	1.035	1.016	1.147	13.58
22)	T	Carbon Disulfide			5.352	4.558	4.814	4.416	4.691	4.590	4.120	4.649	8.19
23)	T	trans-1,2-Dich...	1.226	1.339	1.634	1.485	1.607	1.534	1.594	1.592	1.459	1.497	9.16
24)	T	1,1-Dichloroet...	1.726	1.764	2.205	1.941	2.081	1.883	1.942	1.948	1.822	1.923	7.83
25)	T	Methyl tert-Bu...	2.883	2.732	3.541	3.122	3.451	3.106	3.277	3.231	2.897	3.138	8.56
26)	T	Vinyl Acetate	0.250	0.234	0.306	0.287	0.315	0.297	0.305	0.294	0.269	0.284	9.65
27)	T	2-Butanone (MEK)			1.042	0.753	0.778	0.758	0.793	0.785	0.725	0.805	13.30
28)	T	cis-1,2-Dichlo...	1.189	1.314	1.614	1.446	1.547	1.387	1.493	1.456	1.359	1.423	8.96
29)	T	Diisopropyl Ether	1.045	1.032	1.250	1.137	1.270	1.109	1.142	1.089	0.969	1.116	8.81
30)	T	Ethyl Acetate	0.492	0.307	0.525	0.414	0.418	0.396	0.407	0.385	0.333	0.408	16.74
31)	T	n-Hexane	1.800	1.743	1.971	1.696	1.665	1.507	1.382	1.363	1.274	1.600	14.49
32)	T	Chloroform	1.798	1.778	2.107	2.012	2.077	1.886	1.950	1.899	1.759	1.919	6.69
33)	S	1,2-Dichloroet...	1.111	1.071	1.066	1.108	1.075	1.060	1.066	1.088	1.084	1.081	1.70
34)	T	Tetrahydrofura...	0.837	0.836	1.092	0.767	0.833	0.752	0.786	0.771	0.716	0.821	13.39
35)	T	Ethyl tert-But...	1.132	1.162	1.556	1.347	1.497	1.375	1.430	1.377	1.266	1.349	10.54
36)	T	1,2-Dichloroet...	1.079	0.992	1.310	1.201	1.288	1.135	1.185	1.179	1.115	1.165	8.52
37)	IR	1,4-Difluorobenzen...	----------ISTD----------										
38)	T	1,1,1-Trichlor...	0.320	0.322	0.410	0.359	0.406	0.369	0.382	0.361	0.341	0.363	9.00

11/25/14

Method Path : I:\MS16\METHODS\
Method File : R16112414.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)

39)	T	Isopropyl Acetate	0.145	0.139	0.171	0.150	0.158	0.145	0.151	0.138	0.122	0.147	9.36
40)	T	1-Butanol		0.275	0.329	0.209	0.234	0.247	0.240	0.223	0.192	0.244	17.39
41)	T	Benzene	1.038	1.034	1.223	1.076	1.112	0.987	0.971	0.892	0.794	1.014	12.26
42)	T	Carbon Tetrach...	0.246	0.261	0.351	0.305	0.337	0.308	0.321	0.306	0.288	0.303	11.09
43)	T	Cyclohexane	0.360	0.373	0.448	0.391	0.427	0.418	0.399	0.375	0.331	0.391	9.25
44)	T	tert-Amyl Meth...	0.624	0.631	0.786	0.745	0.738	0.702	0.735	0.695	0.633	0.699	8.35
45)	T	1,2-Dichloropr...	0.209	0.227	0.276	0.246	0.263	0.241	0.251	0.238	0.221	0.241	8.62
46)	T	Bromodichlorom...	0.291	0.275	0.349	0.330	0.350	0.323	0.354	0.337	0.307	0.324	8.52
47)	T	Trichloroethene	0.268	0.277	0.355	0.324	0.359	0.318	0.323	0.310	0.295	0.314	9.94
48)	T	1,4-Dioxane	0.276	0.256	0.268	0.232	0.243	0.236	0.239	0.225	0.198	0.241	9.69
49)	T	2,2,4-Trimethy...	0.952	0.931	1.137	1.035	1.162	1.034	1.004	0.931	0.825	1.001	10.58
50)	T	Methyl Methacr...	0.093	0.087	0.127	0.108	0.119	0.115	0.120	0.114	0.102	0.109	12.20
51)	T	n-Heptane	0.205	0.228	0.254	0.239	0.264	0.229	0.224	0.206	0.198	0.227	9.75
52)	T	cis-1,3-Dichlo...	0.286	0.296	0.403	0.390	0.400	0.383	0.420	0.405	0.367	0.372	13.04
53)	T	4-Methyl-2-pen...	0.215	0.220	0.237	0.206	0.228	0.221	0.241	0.216	0.193	0.220	6.75
54)	T	trans-1,3-Dich...	0.224	0.224	0.340	0.306	0.339	0.345	0.375	0.361	0.324	0.315	17.57
55)	T	1,1,2-Trichlor...	0.227	0.236	0.313	0.287	0.297	0.276	0.290	0.271	0.242	0.271	11.00
56)	IR	Chlorobenzene-d5 (...	----------	----------	----------	ISTD	----------	----------	----------	----------	----------	----------	
57)	S	Toluene-d8 (SS2)	2.490	2.417	2.520	2.506	2.455	2.404	2.422	2.442	2.427	2.454	1.70
58)	T	Toluene	3.186	3.065	4.568	3.269	3.335	2.883	2.996	2.842	2.577	3.191	17.76
59)	T	2-Hexanone				1.244	1.417	1.399	1.351	1.300	1.168	1.313	7.26
60)	T	Dibromochlorom...	0.771	0.755	0.953	0.848	0.946	0.905	0.983	0.932	0.861	0.884	9.13
61)	T	1,2-Dibromoethane	0.690	0.720	0.978	0.855	0.938	0.891	0.931	0.897	0.824	0.858	11.45
62)	T	n-Butyl Acetate		1.412	2.038	1.307	1.475	1.479	1.467	1.407	1.264	1.481	16.11
63)	T	n-Octane	0.463	0.485	0.606	0.557	0.587	0.531	0.545	0.514	0.472	0.529	9.49
64)	T	Tetrachloroethene	1.107	1.043	1.273	1.163	1.229	1.090	1.127	1.088	1.002	1.125	7.66
65)	T	Chlorobenzene	2.116	2.128	2.553	2.166	2.306	2.094	2.175	2.055	1.872	2.163	8.60
66)	T	Ethylbenzene	3.047	2.893	3.841	3.306	3.523	3.339	3.452	3.244	2.890	3.282	9.42
67)	T	m- & p-Xylenes	2.378	2.271	3.172	2.670	2.798	2.673	2.676	2.519	2.215	2.597	11.34
68)	T	Bromoform	0.712	0.655	0.823	0.776	0.894	0.851	0.927	0.911	0.834	0.820	11.19
69)	T	Styrene	1.925	1.972	2.446	2.012	2.423	2.276	2.288	2.178	1.933	2.162	9.60
70)	T	o-Xylene	2.474	2.410	3.132	2.728	3.010	2.784	2.721	2.568	2.261	2.676	10.50
71)	T	n-Nonane	1.065	1.069	1.302	1.178	1.335	1.196	1.170	1.077	0.909	1.145	11.45
72)	T	1,1,2,2-Tetrac...	1.333	1.218	1.557	1.397	1.623	1.468	1.488	1.369	1.201	1.406	10.19
73)	S	Bromofluoroben...	1.181	1.177	1.178	1.171	1.259	1.233	1.182	1.200	1.194	1.197	2.49
74)	T	Cumene	3.707	3.470	4.157	3.613	4.133	3.722	3.734	3.541	3.027	3.678	9.28
75)	T	alpha-Pinene	1.484	1.382	1.856	1.647	1.839	1.796	1.801	1.713	1.502	1.669	10.47
76)	T	n-Propylbenzene	4.391	4.114	5.083	4.333	4.850	4.438	4.423	4.121	3.561	4.368	10.01
77)	T	3-Ethyltoluene	3.911	3.548	4.089	3.491	3.960	3.624	3.545	3.476	2.869	3.613	9.94
78)	T	4-Ethyltoluene	3.294	3.066	4.176	3.569	3.989	3.497	3.598	3.084	2.815	3.454	12.80
79)	T	1,3,5-Trimethy...	3.061	2.817	3.383	2.964	3.367	2.932	2.978	2.733	2.373	2.957	10.51
80)	T	alpha-Methylst...	1.457	1.439	1.805	1.519	1.842	1.718	1.746	1.605	1.387	1.613	10.58
81)	T	2-Ethyltoluene	3.439	3.343	3.897	3.468	4.023	3.487	3.500	3.192	2.732	3.453	10.86
82)	T	1,2,4-Trimethy...	3.015	2.807	3.423	2.931	3.343	2.938	2.941	2.636	2.195	2.914	12.50
83)	T	n-Decane	1.432	1.252	1.772	1.414	1.630	1.416	1.390	1.245	1.032	1.398	15.46
84)	T	Benzyl Chloride	1.895	1.675	2.686	2.097	2.456	2.481	2.554	2.388	2.051	2.254	15.02
85)	T	1,3-Dichlorobe...	2.066	1.915	2.656	1.995	2.269	1.985	2.006	1.833	1.563	2.032	14.81
86)	T	1,4-Dichlorobe...	2.465	2.187	2.946	2.134	2.375	2.136	2.127	1.970	1.705	2.227	15.58

ak 11/25/14

Method Path : I:\MS16\METHODS\
Method File : R16112414.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)

87)	T	sec-Butylbenzene	4.036	3.955	4.472	4.012	4.589	4.023	3.987	3.584	3.011	3.963	11.68
88)	T	4-Isopropyltol...	4.341	4.063	4.396	3.791	4.375	3.860	3.642	3.219	2.608	3.811	15.62
89)	T	1,2,3-Trimethy...	3.444	3.296	3.700	3.069	3.534	3.142	3.052	2.739	2.273	3.139	13.84
90)	T	1,2-Dichlorobe...	2.054	1.958	2.502	1.932	2.226	1.985	1.921	1.751	1.444	1.975	14.81
91)	T	d-Limonene	0.824	0.837	1.055	0.974	1.138	1.073	1.026	0.909	0.728	0.951	14.25
92)	T	1,2-Dibromo-3-...	0.611	0.535	0.822	0.625	0.763	0.742	0.781	0.748	0.671	0.700	13.51
93)	T	n-Undecane	1.767	1.495	1.648	1.388	1.658	1.534	1.486	1.350	1.103	1.492	13.24
94)	T	1,2,4-Trichlor...				1.487	1.612	1.567	1.598	1.532	1.379	1.529	5.65
95)	T	Naphthalene				4.504	4.905	4.672	4.511	4.131	3.380	4.351	12.38
96)	T	n-Dodecane		1.675	1.633	1.240	1.453	1.388	1.300	1.160	0.902	1.344	18.85
97)	T	Hexachlorobuta...	1.017	0.994	1.084	0.911	1.068	0.957	0.976	0.940	0.850	0.978	7.59
98)	T	Cyclohexanone				0.879	0.948	0.905	0.890	0.851	0.770	0.874	6.88
99)	T	tert-Butylbenzene	3.016	2.915	3.360	2.956	3.433	2.956	2.927	2.596	2.158	2.924	12.99
100)	T	n-Butylbenzene	3.565	3.320	3.594	2.990	3.431	3.150	3.016	2.800	2.320	3.132	13.02

(#) = Out of Range

VM 11/25/14

Evaluate Continuing Calibration Report

Data File: I:\MS16\DATA\2015 02\06\02061502.D
Acq On : 6 Feb 2015 4:06 Operator: LH
Sample : CCV R16020615 25ng
Misc : S29-01071501/S29-01081503 (2/6)
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Feb 06 08:53:11 2015 LH 2/9/15
Quant Method : I:\MS16\METHODS\R16112414.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Nov 25 09:22:10 2014
Response via : Initial Calibration
DataAcq Meth:TO15.M

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	118	0.01
2	T	Propene	1.120	0.911	18.7	104	-0.04
3	T	Dichlorodifluoromethane (CF	2.460	2.082	15.4	97	-0.04
4	T	Chloromethane	1.661	1.338	19.4	92	-0.04
5	T	1,2-Dichloro-1,1,2,2-tetraf	1.498	1.321	11.8	105	-0.03
6	T	Vinyl Chloride	1.691	1.595	5.7	106	-0.04
7	T	1,3-Butadiene	1.030	1.029	0.1	107	-0.03
8	T	Bromomethane	1.260	1.135	9.9	97	-0.03
9	T	Chloroethane	0.920	0.789	14.2	92	-0.03
10	T	Ethanol	0.776	0.615	20.7	94	0.03
11	T	Acetonitrile	1.937	1.593	17.8	96	0.00
12	T	Acrolein	0.682	0.514	24.6	86	-0.02
13	T	Acetone	0.838	0.682	18.6	97	-0.02
14	T	Trichlorofluoromethane	1.796	1.533	14.6	102	-0.02
15	T	2-Propanol (Isopropanol)	2.648	2.104	20.5	94	0.00
16	T	Acrylonitrile	1.483	1.311	11.6	96	0.00
17	T	1,1-Dichloroethene	1.244	1.067	14.2	94	-0.02
18	T	2-Methyl-2-Propanol (tert-B	2.717	1.934	28.8	82	-0.01
19	T	Methylene Chloride	1.300	1.071	17.6	99	0.00
20	T	3-Chloro-1-propene (Allyl C	1.203	1.137	5.5	96	0.00
21	T	Trichlorotrifluoroethane	1.147	0.970	15.4	100	0.00
22	T	Carbon Disulfide	4.649	3.804	18.2	96	-0.02
23	T	trans-1,2-Dichloroethene	1.497	1.364	8.9	101	0.00
24	T	1,1-Dichloroethane	1.923	1.712	11.0	104	0.01
25	T	Methyl tert-Butyl Ether	3.138	2.616	16.6	94	-0.02
26	T	Vinyl Acetate	0.284	0.234	17.6	91	0.00
27	T	2-Butanone (MEK)	0.805	0.665	17.4	99	-0.02
28	T	cis-1,2-Dichloroethene	1.423	1.277	10.3	101	0.00
29	T	Diisopropyl Ether	1.116	0.986	11.6	102	0.00
30	T	Ethyl Acetate	0.408	0.348	14.7	101	-0.01
31	T	n-Hexane	1.600	1.327	17.1	113	0.00
32	T	Chloroform	1.919	1.651	14.0	100	0.01
33	S	1,2-Dichloroethane-d4(SS1)	1.081	1.091	-0.9	121	0.01
34	T	Tetrahydrofuran (THF)	0.821	0.665	19.0	100	-0.03
35	T	Ethyl tert-Butyl Ether	1.349	1.201	11.0	99	0.00
36	T	1,2-Dichloroethane	1.165	1.033	11.3	103	0.00
37	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	121	0.00
38	T	1,1,1-Trichloroethane	0.363	0.317	12.7	101	0.00
39	T	Isopropyl Acetate	0.147	0.120	18.4	97	-0.01
40	T	1-Butanol	0.244	0.169	30.7#	86	-0.02
41	T	Benzene	1.014	0.821	19.0	103	0.00
42	T	Carbon Tetrachloride	0.303	0.267	11.9	101	0.00
43	T	Cyclohexane	0.391	0.334	14.6	102	0.00
44	T	tert-Amyl Methyl Ether	0.699	0.590	15.6	97	0.00
45	T	1,2-Dichloropropane	0.241	0.207	14.1	100	0.00
46	T	Bromodichloromethane	0.324	0.278	14.2	95	0.00
47	T	Trichloroethene	0.314	0.275	12.4	103	0.00
48	T	1,4-Dioxane	0.241	0.190	21.2	97	-0.02
49	T	2,2,4-Trimethylpentane (Iso	1.001	0.840	16.1	102	0.00
50	T	Methyl Methacrylate	0.109	0.096	11.9	97	0.00
51	T	n-Heptane	0.227	0.195	14.1	106	0.00
52	T	cis-1,3-Dichloropropene	0.372	0.333	10.5	96	0.00
53	T	4-Methyl-2-pentanone	0.220	0.184	16.4	92	-0.01
54	T	trans-1,3-Dichloropropene	0.315	0.302	4.1	98	0.00

Evaluate Continuing Calibration Report

Data File: I:\MS16\DATA\2015 02\06\02061502.D
Acq On : 6 Feb 2015 4:06 Operator: LH
Sample : CCV R16020615 25ng
Misc : S29-01071501/S29-01081503 (2/6)
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Feb 06 08:53:11 2015
Quant Method : I:\MS16\METHODS\R16112414.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Nov 25 09:22:10 2014
Response via : Initial Calibration
DataAcq Meth:TO15.M

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
55	T	1,1,2-Trichloroethane	0.271	0.232	14.4	97	0.00
56	IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	116	0.00
57	S	Toluene-d8 (SS2)	2.454	2.420	1.4	116	0.00
58	T	Toluene	3.191	2.481	22.3	96	0.00
59	T	2-Hexanone	1.313	1.065	18.9	92	-0.01
60	T	Dibromochloromethane	0.884	0.812	8.1	96	0.00
61	T	1,2-Dibromoethane	0.858	0.781	9.0	98	0.00
62	T	n-Butyl Acetate	1.481	1.119	24.4	89	0.00
63	T	n-Octane	0.529	0.459	13.2	98	0.00
64	T	Tetrachloroethene	1.125	0.949	15.6	98	0.00
65	T	Chlorobenzene	2.163	1.802	16.7	96	0.00
66	T	Ethylbenzene	3.282	2.857	12.9	96	0.00
67	T	m- & p-Xylenes	2.597	2.231	14.1	97	0.00
68	T	Bromoform	0.820	0.782	4.6	98	0.00
69	T	Styrene	2.162	1.905	11.9	97	0.00
70	T	o-Xylene	2.676	2.299	14.1	98	0.00
71	T	n-Nonane	1.145	0.982	14.2	98	0.00
72	T	1,1,2,2-Tetrachloroethane	1.406	1.217	13.4	95	0.00
73	S	Bromofluorobenzene (SS3)	1.197	1.252	-4.6	123	0.00
74	T	Cumene	3.678	3.144	14.5	98	0.00
75	T	alpha-Pinene	1.669	1.494	10.5	96	0.00
76	T	n-Propylbenzene	4.368	3.734	14.5	98	0.00
77	T	3-Ethyltoluene	3.613	2.991	17.2	98	0.00
78	T	4-Ethyltoluene	3.454	2.988	13.5	97	0.00
79	T	1,3,5-Trimethylbenzene	2.957	2.467	16.6	96	0.00
80	T	alpha-Methylstyrene	1.613	1.403	13.0	93	0.00
81	T	2-Ethyltoluene	3.453	2.903	15.9	96	0.00
82	T	1,2,4-Trimethylbenzene	2.914	2.435	16.4	96	0.00
83	T	n-Decane	1.398	1.146	18.0	96	0.00
84	T	Benzyl Chloride	2.254	1.932	14.3	88	0.00
85	T	1,3-Dichlorobenzene	2.032	1.670	17.8	97	0.00
86	T	1,4-Dichlorobenzene	2.227	1.772	20.4	97	0.00
87	T	sec-Butylbenzene	3.963	3.288	17.0	96	0.00
88	T	4-Isopropyltoluene (p-Cymen	3.811	3.103	18.6	99	0.00
89	T	1,2,3-Trimethylbenzene	3.139	2.580	17.8	98	0.00
90	T	1,2-Dichlorobenzene	1.975	1.656	16.2	100	0.00
91	T	d-Limonene	0.951	0.846	11.0	96	0.00
92	T	1,2-Dibromo-3-Chloropropane	0.700	0.639	8.7	95	0.00
93	T	n-Undecane	1.492	1.217	18.4	95	0.00
94	T	1,2,4-Trichlorobenzene	1.529	1.274	16.7	93	0.00
95	T	Naphthalene	4.351	3.473	20.2	90	0.00
96	T	n-Dodecane	1.344	0.940	30.1#	84	0.00
97	T	Hexachlorobutadiene	0.978	0.798	18.4	95	0.00
98	T	Cyclohexanone	0.874	0.651	25.5	85	-0.01
99	T	tert-Butylbenzene	2.924	2.433	16.8	97	0.00
100	T	n-Butylbenzene	3.132	2.560	18.3	99	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data File: I:\MS16\DATA\2015 02\06\02061527.D
Acq On : 6 Feb 2015 21:54 Operator: LH
Sample : CCV2 R16020615 25ng
Misc : S29-01071501/S29-01081503 (2/6)
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Feb 09 08:58:08 2015
Quant Method : I:\MS16\METHODS\R16112414.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Nov 25 09:22:10 2014
Response via : Initial Calibration
DataAcq Meth:TO15.M

LH 2/9/15

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	114	0.01
2	T	Propene	1.120	0.910	18.8	100	-0.04
3	T	Dichlorodifluoromethane (CF	2.460	2.088	15.1	94	-0.04
4	T	Chloromethane	1.661	1.382	16.8	92	-0.04
5	T	1,2-Dichloro-1,1,2,2-tetraf	1.498	1.346	10.1	104	-0.03
6	T	Vinyl Chloride	1.691	1.554	8.1	99	-0.04
7	T	1,3-Butadiene	1.030	1.046	-1.6	105	-0.03
8	T	Bromomethane	1.260	1.207	4.2	100	-0.03
9	T	Chloroethane	0.920	0.819	11.0	92	-0.03
10	T	Ethanol	0.776	0.623	19.7	91	0.04
11	T	Acetonitrile	1.937	1.602	17.3	93	0.00
12	T	Acrolein	0.682	0.517	24.2	84	-0.02
13	T	Acetone	0.838	0.687	18.0	95	-0.01
14	T	Trichlorofluoromethane	1.796	1.478	17.7	95	-0.02
15	T	2-Propanol (Isopropanol)	2.648	2.131	19.5	91	0.01
16	T	Acrylonitrile	1.483	1.302	12.2	93	0.00
17	T	1,1-Dichloroethene	1.244	1.051	15.5	90	-0.02
18	T	2-Methyl-2-Propanol (tert-B	2.717	1.933	28.9	79	0.00
19	T	Methylene Chloride	1.300	1.080	16.9	96	0.00
20	T	3-Chloro-1-propene (Allyl C	1.203	1.161	3.5	95	0.00
21	T	Trichlorotrifluoroethane	1.147	0.921	19.7	92	0.00
22	T	Carbon Disulfide	4.649	3.752	19.3	91	-0.02
23	T	trans-1,2-Dichloroethene	1.497	1.366	8.8	98	0.00
24	T	1,1-Dichloroethane	1.923	1.689	12.2	99	0.02
25	T	Methyl tert-Butyl Ether	3.138	2.666	15.0	93	-0.02
26	T	Vinyl Acetate	0.284	0.228	19.7	85	0.00
27	T	2-Butanone (MEK)	0.805	0.660	18.0	95	-0.02
28	T	cis-1,2-Dichloroethene	1.423	1.262	11.3	96	0.01
29	T	Diisopropyl Ether	1.116	0.983	11.9	98	0.00
30	T	Ethyl Acetate	0.408	0.345	15.4	97	-0.01
31	T	n-Hexane	1.600	1.315	17.8	108	0.00
32	T	Chloroform	1.919	1.629	15.1	95	0.02
33	S	1,2-Dichloroethane-d4(SS1)	1.081	1.081	0.0	116	0.02
34	T	Tetrahydrofuran (THF)	0.821	0.658	19.9	96	-0.03
35	T	Ethyl tert-Butyl Ether	1.349	1.200	11.0	96	0.00
36	T	1,2-Dichloroethane	1.165	1.011	13.2	97	0.00
37	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	115	0.01
38	T	1,1,1-Trichloroethane	0.363	0.321	11.6	97	0.00
39	T	Isopropyl Acetate	0.147	0.123	16.3	94	-0.01
40	T	1-Butanol	0.244	0.175	28.3	84	-0.01
41	T	Benzene	1.014	0.821	19.0	98	0.00
42	T	Carbon Tetrachloride	0.303	0.269	11.2	97	0.00
43	T	Cyclohexane	0.391	0.339	13.3	98	0.00
44	T	tert-Amyl Methyl Ether	0.699	0.596	14.7	94	0.00
45	T	1,2-Dichloropropane	0.241	0.208	13.7	96	0.00
46	T	Bromodichloromethane	0.324	0.290	10.5	95	0.00
47	T	Trichloroethene	0.314	0.275	12.4	98	0.00
48	T	1,4-Dioxane	0.241	0.194	19.5	94	-0.02
49	T	2,2,4-Trimethylpentane (Iso	1.001	0.842	15.9	97	0.00
50	T	Methyl Methacrylate	0.109	0.099	9.2	95	0.00
51	T	n-Heptane	0.227	0.194	14.5	100	0.00
52	T	cis-1,3-Dichloropropene	0.372	0.342	8.1	94	0.00
53	T	4-Methyl-2-pentanone	0.220	0.190	13.6	91	-0.01
54	T	trans-1,3-Dichloropropene	0.315	0.307	2.5	95	0.00

Evaluate Continuing Calibration Report

Data File: I:\MS16\DATA\2015 02\06\02061527.D
Acq On : 6 Feb 2015 21:54 Operator: LH
Sample : CCV2 R16020615 25ng
Misc : S29-01071501/S29-01081503 (2/6)
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Feb 09 08:58:08 2015
Quant Method : I:\MS16\METHODS\R16112414.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Nov 25 09:22:10 2014
Response via : Initial Calibration
DataAcq Meth:TO15.M

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
55	T	1,1,2-Trichloroethane	0.271	0.239	11.8	95	0.00
56	IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	117	0.00
57	S	Toluene-d8 (SS2)	2.454	2.370	3.4	114	0.00
58	T	Toluene	3.191	2.435	23.7	95	0.00
59	T	2-Hexanone	1.313	1.061	19.2	92	-0.01
60	T	Dibromochloromethane	0.884	0.797	9.8	95	0.00
61	T	1,2-Dibromoethane	0.858	0.761	11.3	95	0.00
62	T	n-Butyl Acetate	1.481	1.108	25.2	88	0.00
63	T	n-Octane	0.529	0.444	16.1	95	0.00
64	T	Tetrachloroethene	1.125	0.928	17.5	96	0.00
65	T	Chlorobenzene	2.163	1.768	18.3	95	0.00
66	T	Ethylbenzene	3.282	2.805	14.5	95	0.00
67	T	m- & p-Xylenes	2.597	2.192	15.6	96	0.00
68	T	Bromoform	0.820	0.759	7.4	95	0.00
69	T	Styrene	2.162	1.855	14.2	95	0.00
70	T	o-Xylene	2.676	2.244	16.1	96	0.00
71	T	n-Nonane	1.145	0.966	15.6	96	0.00
72	T	1,1,2,2-Tetrachloroethane	1.406	1.178	16.2	92	0.00
73	S	Bromofluorobenzene (SS3)	1.197	1.239	-3.5	122	0.00
74	T	Cumene	3.678	3.048	17.1	95	0.00
75	T	alpha-Pinene	1.669	1.459	12.6	94	0.00
76	T	n-Propylbenzene	4.368	3.609	17.4	95	0.00
77	T	3-Ethyltoluene	3.613	2.902	19.7	95	0.00
78	T	4-Ethyltoluene	3.454	2.877	16.7	93	0.00
79	T	1,3,5-Trimethylbenzene	2.957	2.391	19.1	94	0.00
80	T	alpha-Methylstyrene	1.613	1.356	15.9	91	0.00
81	T	2-Ethyltoluene	3.453	2.813	18.5	94	0.00
82	T	1,2,4-Trimethylbenzene	2.914	2.340	19.7	93	0.00
83	T	n-Decane	1.398	1.101	21.2	92	0.00
84	T	Benzyl Chloride	2.254	1.840	18.4	84	0.00
85	T	1,3-Dichlorobenzene	2.032	1.614	20.6	94	0.00
86	T	1,4-Dichlorobenzene	2.227	1.705	23.4	93	0.00
87	T	sec-Butylbenzene	3.963	3.167	20.1	93	0.00
88	T	4-Isopropyltoluene (p-Cymen	3.811	2.939	22.9	94	0.00
89	T	1,2,3-Trimethylbenzene	3.139	2.446	22.1	93	0.00
90	T	1,2-Dichlorobenzene	1.975	1.554	21.3	94	0.00
91	T	d-Limonene	0.951	0.799	16.0	91	0.00
92	T	1,2-Dibromo-3-Chloropropane	0.700	0.617	11.9	92	0.00
93	T	n-Undecane	1.492	1.176	21.2	92	0.00
94	T	1,2,4-Trichlorobenzene	1.529	1.252	18.1	91	0.00
95	T	Naphthalene	4.351	3.425	21.3	89	0.00
96	T	n-Dodecane	1.344	0.926	31.1#	83	0.00
97	T	Hexachlorobutadiene	0.978	0.780	20.2	93	0.00
98	T	Cyclohexanone	0.874	0.626	28.4	82	-0.01
99	T	tert-Butylbenzene	2.924	2.345	19.8	93	0.00
100	T	n-Butylbenzene	3.132	2.451	21.7	95	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data File: I:\MS16\DATA\2015 02\09\02091502.D
Acq On : 9 Feb 2015 9:47 Operator: LH
Sample : CCV R16020915 25ng
Misc : S29-01071501/S29-01201503 (2/18)
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Feb 09 10:12:51 2015
Quant Method : I:\MS16\METHODS\R16112414.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Nov 25 09:22:10 2014
Response via : Initial Calibration
DataAcq Meth:TO15.M

LH 2/10/15

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	106	0.02
2	T	Propene	1.120	0.985	12.1	100	-0.04
3	T	Dichlorodifluoromethane (CF	2.460	2.239	9.0	94	-0.03
4	T	Chloromethane	1.661	1.476	11.1	91	-0.03
5	T	1,2-Dichloro-1,1,2,2-tetraf	1.498	1.440	3.9	103	-0.02
6	T	Vinyl Chloride	1.691	1.577	6.7	93	-0.03
7	T	1,3-Butadiene	1.030	1.086	-5.4	101	-0.03
8	T	Bromomethane	1.260	1.261	-0.1	97	-0.02
9	T	Chloroethane	0.920	0.839	8.8	88	-0.03
10	T	Ethanol	0.776	0.670	13.7	91	0.04
11	T	Acetonitrile	1.937	1.700	12.2	92	0.00
12	T	Acrolein	0.682	0.597	12.5	90	-0.01
13	T	Acetone	0.838	0.730	12.9	93	0.00
14	T	Trichlorofluoromethane	1.796	1.569	12.6	94	-0.01
15	T	2-Propanol (Isopropanol)	2.648	2.278	14.0	91	0.01
16	T	Acrylonitrile	1.483	1.378	7.1	91	0.00
17	T	1,1-Dichloroethene	1.244	1.149	7.6	91	-0.01
18	T	2-Methyl-2-Propanol (tert-B	2.717	2.245	17.4	85	0.00
19	T	Methylene Chloride	1.300	1.141	12.2	94	0.01
20	T	3-Chloro-1-propene (Allyl C	1.203	1.230	-2.2	93	0.00
21	T	Trichlorotrifluoroethane	1.147	1.017	11.3	94	0.00
22	T	Carbon Disulfide	4.649	4.068	12.5	92	-0.02
23	T	trans-1,2-Dichloroethene	1.497	1.454	2.9	96	0.00
24	T	1,1-Dichloroethane	1.923	1.764	8.3	96	0.02
25	T	Methyl tert-Butyl Ether	3.138	2.858	8.9	92	-0.02
26	T	Vinyl Acetate	0.284	0.271	4.6	94	0.00
27	T	2-Butanone (MEK)	0.805	0.684	15.0	91	-0.02
28	T	cis-1,2-Dichloroethene	1.423	1.326	6.8	94	0.01
29	T	Diisopropyl Ether	1.116	1.014	9.1	94	0.00
30	T	Ethyl Acetate	0.408	0.359	12.0	93	-0.01
31	T	n-Hexane	1.600	1.377	13.9	105	0.00
32	T	Chloroform	1.919	1.709	10.9	93	0.02
33	S	1,2-Dichloroethane-d4(SS1)	1.081	1.079	0.2	107	0.02
34	T	Tetrahydrofuran (THF)	0.821	0.692	15.7	93	-0.02
35	T	Ethyl tert-Butyl Ether	1.349	1.241	8.0	92	0.00
36	T	1,2-Dichloroethane	1.165	1.055	9.4	94	0.00
37	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	108	0.01
38	T	1,1,1-Trichloroethane	0.363	0.332	8.5	94	0.00
39	T	Isopropyl Acetate	0.147	0.127	13.6	91	0.00
40	T	1-Butanol	0.244	0.204	16.4	92	-0.01
41	T	Benzene	1.014	0.851	16.1	95	0.00
42	T	Carbon Tetrachloride	0.303	0.280	7.6	94	0.00
43	T	Cyclohexane	0.391	0.359	8.2	97	0.00
44	T	tert-Amyl Methyl Ether	0.699	0.610	12.7	90	0.00
45	T	1,2-Dichloropropane	0.241	0.215	10.8	92	0.00
46	T	Bromodichloromethane	0.324	0.299	7.7	91	0.00
47	T	Trichloroethene	0.314	0.284	9.6	95	0.00
48	T	1,4-Dioxane	0.241	0.205	14.9	93	-0.02
49	T	2,2,4-Trimethylpentane (Iso	1.001	0.868	13.3	93	0.00
50	T	Methyl Methacrylate	0.109	0.103	5.5	92	0.00
51	T	n-Heptane	0.227	0.201	11.5	97	0.00
52	T	cis-1,3-Dichloropropene	0.372	0.358	3.8	92	0.00
53	T	4-Methyl-2-pentanone	0.220	0.205	6.8	92	-0.01
54	T	trans-1,3-Dichloropropene	0.315	0.328	-4.1	94	0.00

Evaluate Continuing Calibration Report

Data File: I:\MS16\DATA\2015 02\09\02091502.D
Acq On : 9 Feb 2015 9:47 Operator: LH
Sample : CCV R16020915 25ng
Misc : S29-01071501/S29-01201503 (2/18)
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Feb 09 10:12:51 2015
Quant Method : I:\MS16\METHODS\R16112414.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Nov 25 09:22:10 2014
Response via : Initial Calibration
DataAcq Meth:TO15.M

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
55	T	1,1,2-Trichloroethane	0.271	0.253	6.6	94	0.00
56	IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	110	0.00
57	S	Toluene-d8 (SS2)	2.454	2.351	4.2	107	0.00
58	T	Toluene	3.191	2.485	22.1	91	0.00
59	T	2-Hexanone	1.313	1.168	11.0	95	-0.01
60	T	Dibromochloromethane	0.884	0.845	4.4	95	0.00
61	T	1,2-Dibromoethane	0.858	0.801	6.6	95	0.00
62	T	n-Butyl Acetate	1.481	1.236	16.5	93	0.00
63	T	n-Octane	0.529	0.453	14.4	92	0.00
64	T	Tetrachloroethene	1.125	0.956	15.0	94	0.00
65	T	Chlorobenzene	2.163	1.884	12.9	96	0.00
66	T	Ethylbenzene	3.282	2.960	9.8	95	0.00
67	T	m- & p-Xylenes	2.597	2.260	13.0	93	0.00
68	T	Bromoform	0.820	0.799	2.6	95	0.00
69	T	Styrene	2.162	1.953	9.7	94	0.00
70	T	o-Xylene	2.676	2.355	12.0	95	0.00
71	T	n-Nonane	1.145	1.017	11.2	96	0.00
72	T	1,1,2,2-Tetrachloroethane	1.406	1.218	13.4	90	0.00
73	S	Bromofluorobenzene (SS3)	1.197	1.241	-3.7	116	0.00
74	T	Cumene	3.678	3.171	13.8	94	0.00
75	T	alpha-Pinene	1.669	1.540	7.7	94	0.00
76	T	n-Propylbenzene	4.368	3.756	14.0	94	0.00
77	T	3-Ethyltoluene	3.613	2.990	17.2	93	0.00
78	T	4-Ethyltoluene	3.454	2.964	14.2	91	0.00
79	T	1,3,5-Trimethylbenzene	2.957	2.457	16.9	91	0.00
80	T	alpha-Methylstyrene	1.613	1.401	13.1	89	0.00
81	T	2-Ethyltoluene	3.453	2.889	16.3	91	0.00
82	T	1,2,4-Trimethylbenzene	2.914	2.427	16.7	91	0.00
83	T	n-Decane	1.398	1.154	17.5	92	0.00
84	T	Benzyl Chloride	2.254	2.109	6.4	91	0.00
85	T	1,3-Dichlorobenzene	2.032	1.686	17.0	93	0.00
86	T	1,4-Dichlorobenzene	2.227	1.793	19.5	93	0.00
87	T	sec-Butylbenzene	3.963	3.326	16.1	92	0.00
88	T	4-Isopropyltoluene (p-Cymen	3.811	3.081	19.2	93	0.00
89	T	1,2,3-Trimethylbenzene	3.139	2.565	18.3	93	0.00
90	T	1,2-Dichlorobenzene	1.975	1.635	17.2	94	0.00
91	T	d-Limonene	0.951	0.836	12.1	90	0.00
92	T	1,2-Dibromo-3-Chloropropane	0.700	0.659	5.9	93	0.00
93	T	n-Undecane	1.492	1.242	16.8	92	0.00
94	T	1,2,4-Trichlorobenzene	1.529	1.388	9.2	96	0.00
95	T	Naphthalene	4.351	3.933	9.6	96	0.00
96	T	n-Dodecane	1.344	1.099	18.2	93	0.00
97	T	Hexachlorobutadiene	0.978	0.834	14.7	94	0.00
98	T	Cyclohexanone	0.874	0.723	17.3	90	-0.01
99	T	tert-Butylbenzene	2.924	2.426	17.0	91	0.00
100	T	n-Butylbenzene	3.132	2.535	19.1	93	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

APPENDIX C – DATA VALIDATION OF LABORATORY ANALYTICAL RESULTS

Stantec Analytical Validation Checklist — Report No. 030215-EC-02

Project Name: Bridgeton, MO	Project Number: 182608020
Stantec Validator: Elizabeth A. Crowley	Laboratory: ALS –Semi-Valley, CA
Date Validated: 02/26/15	Laboratory Project Number: P1500355
Sample Start-End Date: 01/28-01/29/15	Laboratory Report Date: 02/12/15
Parameters Validated: Poly Aromatic Hydrocarbons by EPA TO-13A	
Samples Validated: 7 air field samples	

VALIDATION CRITERIA CHECK

Validation Flags Applicable to this Review:

U The analyte was analyzed for, but not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

B The analyte was detected in the method, field, and/or trip blank.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

	Yes	No
1. Were all the analyses requested for the samples submitted with each COC completed by the lab?	X	
Comments:		
2. Did the laboratory identify any non-conformances related to the analytical result?	Yes	No X
Comments:		
3. Were sample Chain-of-Custody forms complete?	Yes X	No
Comments:		
4. Were samples received in good condition and at the appropriate temperature?	Yes X	No
Comments:		
5. Were sample holding times met?	Yes X	No
Comments:		
6. Were correct concentration units reported?	Yes X	No
Comments:		
7. Were detections found in laboratory blank samples?	Yes	No X
Comments:		
8. Were detections found in field blank, equipment rinse	Yes	No

blank, and/or trip blank samples?			X
Comments:			
9. Were instrument calibrations within method criteria?		Yes X	No
Comments:			
10. Were surrogate recoveries within control limits?		Yes X	No
Comments:			
11. Were laboratory control (LC/LD) sample recoveries within control limits?		Yes	No X
Comments: Batch P150204 - %Rs below limits for Acenaphthylene. Associated sample results flagged “UJ”. Reason Code – LCS			
12. Were site specific matrix spike (MS/MD) recoveries within control limits?	NA	Yes	No
Comment: No matrix sample data required. No qualifying action required.			
13. Were RPDs within control limits?		Yes X	No
Comments:			
14. Were dilutions required on any samples?		Yes X	No
Comments: Samples analyzed at multiple dilutions. No qualifying action required.			
15. Were Tentatively Identified Compounds (TIC) present?		Yes	No X
Comments:			
16. Were organic system performance criteria met?	NA	Yes	No
Comments: No data provided.			
17. Were GC/MS internal standards within method criteria?	NA	Yes	No
Comments: No data provided.			
18. Were inorganic system performance criteria met?	NA	Yes	No
Comments: No inorganic analysis requested.			
19. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results. Duplicate Sample Nos.		Yes	No X
Comments:			

20. Were at least 10 percent of the hard copy results compared to the Electronic Data Deliverable Results?	Yes	No	Initials
	X		EAC
Comments:			

21. Other:	Yes	No
		X
Comments:		

PRECISION, ACCURACY, METHOD COMPLIANCE AND COMPLETENESS ASSESSMENT

Precision:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Sensitivity:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Accuracy:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Representativeness:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Method Compliance:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Completeness:	Acceptable X	Unacceptable	Initials EAC
Comments:			

Stantec Analytical Validation Checklist — Report No. 030315-EC-01

Project Name: Bridgeton, MO	Project Number: 182608020
Stantec Validator: Elizabeth A. Crowley	Laboratory: ALS –Semi-Valley, CA
Date Validated: 02/26/15	Laboratory Project Number: P1500356
Sample Start-End Date: 01/28-01/29/15	Laboratory Report Date: 02/10/15
Parameters Validated: Dioxins and Furans by EPA TO-9A	
Samples Validated: 7 air field samples	

VALIDATION CRITERIA CHECK

Validation Flags Applicable to this Review:

U The analyte was analyzed for, but not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

B The analyte was detected in the method, field, and/or trip blank.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

	Yes	No
1. Were all the analyses requested for the samples submitted with each COC completed by the lab?	X	
Comments:		
2. Did the laboratory identify any non-conformances related to the analytical result?		X
Comments:		
3. Were sample Chain-of-Custody forms complete?	X	
Comments:		
4. Were samples received in good condition and at the appropriate temperature?	X	
Comments:		
5. Were sample holding times met?	X	
Comments:		
6. Were correct concentration units reported?	X	
Comments:		
7. Were detections found in laboratory blank samples?		X
Comments:		
8. Were detections found in field blank, equipment rinse		

blank, and/or trip blank samples?	X	
Comments: 129BLANK-DF – OCDD = 31.8 pg. Associated sample results below the blank concentration are validated to non-detect and flagged “UJB”. Sample results greater than the blank concentration are flagged “NJB”. The detection limit is changed to the blank concentration. Sample results greater than 10 times the blank concentration required no qualifying. Reason Code – EB		
9. Were instrument calibrations within method criteria?	Yes X	No
Comments:		
10. Were surrogate recoveries within control limits?	Yes X	No
Comments: Sample 129sSQ-DF reported 1 surrogate %R above limits. The associated sample result is non-detect. No qualifying action required.		
11. Were laboratory control (LC/LD) sample recoveries within control limits?	Yes X	No
Comments:		
12. Were site specific matrix spike (MS/MD) recoveries within control limits? NA	Yes	No
Comment: No matrix sample data required. No qualifying action required.		
13. Were RPDs within control limits?	Yes X	No
Comments:		
14. Were dilutions required on any samples?	Yes	No X
Comments:		
15. Were Tentatively Identified Compounds (TIC) present?	Yes X	No X
Comments: Sample results below the reporting limit do not possess the degree of qualitative or quantitative confidence required. The value may be a false positive and is an estimated value and is flagged “NJ”. Reason Code – SQL		
16. Were organic ion abundance ratio performance criteria met?	Yes	No X
Comments: Ion abundance ratios were out of limits for: 129BLANK-DF for OCDD; 128UI-DF for HpCDD and OCDD; 128D1-DF for HpCDD and OCDD and 128F-DF for OCDD. Associated sample results flagged “J”. Reason Code – IAR		
17. Were GC/MS internal standards within method criteria?	Yes	No

			X
Comments:			
18. Were inorganic system performance criteria met?		Yes	No
	NA		
Comments: No inorganic analysis requested.			
19. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results. Duplicate Sample Nos.		Yes	No X
Comments:			
20. Were at least 10 percent of the hard copy results compared to the Electronic Data Deliverable Results?	Yes X	No	Initials EAC
Comments:			
21. Other:		Yes	No X
Comments:			

PRECISION, ACCURACY, METHOD COMPLIANCE AND COMPLETENESS ASSESSMENT

Precision:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Sensitivity:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Accuracy:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Representativeness:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Method Compliance:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Completeness:	Acceptable X	Unacceptable	Initials EAC
Comments:			

Stantec Analytical Validation Checklist — Report No. 030315-EC-02

Project Name: Bridgeton, MO	Project Number: 182608020
Stantec Validator: Elizabeth A. Crowley	Laboratory: ALS –Semi-Valley, CA
Date Validated: 02/28/15	Laboratory Project Number: P1500365
Sample Start-End Date: 01/27-01/29/15	Laboratory Report Date: 02/16/15

Parameters Validated: Volatile Organic Compounds by EPA TO-15 modified, Atmosphere Gases by EPA Method 3C modified and Sulfur Compounds by ASTM D5504

Samples Validated: 7 air grab field samples and 12 summa air field samples

VALIDATION CRITERIA CHECK

Validation Flags Applicable to this Review:

U The analyte was analyzed for, but not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

B The analyte was detected in the method, field, and/or trip blank.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

	Yes	No
1. Were all the analyses requested for the samples submitted with each COC completed by the lab?	X	
Comments:		
2. Did the laboratory identify any non-conformances related to the analytical result?		X
Comments:		
3. Were sample Chain-of-Custody forms complete?	X	
Comments:		
4. Were samples received in good condition and at the appropriate temperature?	X	
Comments:		
5. Were sample holding times met?	X	
Comments:		
6. Were correct concentration units reported?	X	
Comments:		
7. Were detections found in laboratory blank samples?	X	

Comments: TO-15 batch P150206 – Acetone = 0.84 µg/m³ and 0.35 ppbV. Associated sample results below the blank concentration are validated to non-detect and flagged "UJB". Results greater than the blank concentration and less than 10 times the blank concentration are flagged "JB". The detection limit is changes to the blank concentration. Results greater than 10 times the blank concentration require no qualifying action. Reason Code - MB		
8. Were detections found in field blank, equipment rinse blank, and/or trip blank samples?	Yes X	No
Comments: 127-SUMMA-B – 2-Propanol = 0.49 µg/m³ or 0.20 ppbV and Benzene – 0.19 µg/m³ or 0.059 ppbV. Associated results below the blank concentration are validated to non-detect and flagged "UJB". Sample results greater than the blank concentration but less than 10 times the blank concentration are flagged "JB". The detection limit is changed to the blank concentration. Results greater than 10 times the blank concentration require no qualifying. Reason Code - TB		
9. Were instrument calibrations within method criteria?	Yes	No X
Comments: Continuing calibration dated 02/06/15 - %D below limits for 4-Methyl-2-Pentanone. Associated sample results flagged "UJ" and are biased low. Reason Code – CCAL		
10. Were surrogate recoveries within control limits?	Yes X	No
Comments:		
11. Were laboratory control (LC/LD) sample recoveries within control limits?	Yes X	No
Comments:		
12. Were site specific matrix spike (MS/MD) recoveries within control limits? NA	Yes	No
Comment: No matrix sample data required. No qualifying action required.		
13. Were RPDs within control limits?	Yes	No X
Comments: TO-15 batch P150209 – Laboratory duplicate RPD above limits for Chloromethane. Duplicate sample site specific. Associated result flagged "J" for 127D2-SUMMA only. Laboratory duplicate 2 RPDs within limits for all analytes. No additional qualifying action required. Reason Code – LDUP		
14. Were dilutions required on any samples?	Yes X	No
Comments: Samples analyzed at multiple dilutions. No qualifying action required.		
15. Were Tentatively Identified Compounds (TIC) present?	Yes X	No

Comments: Sample results below the reporting limit do not possess the degree of qualitative or quantitative confidence required. The value may be a false positive and is an estimated value and is flagged "J" by the laboratory.			
16. Were organic system performance criteria met?	NA	Yes	No
Comments: No data provided.			
17. Were GC/MS internal standards within method criteria?	NA	Yes	No
Comments: No data provided.			
18. Were inorganic system performance criteria met?		Yes X	No
Comments:			
19. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results. Duplicate Sample Nos. 127D1-SUMMA DUP10-SUMMA (Pair 1) 128UI-SUMMA DUP11-SUMMA (Pair 2)		Yes X	No
Comments: Pair 1 – RPDs within limits for EPA 3C and ASTM D15504 within limits. TO-15 analyte RPDs within limits except Acrylonitrile, n-Hexane, n-Heptane, Toluene, n-Octane, x,p-Xylene and n-Nonane. Pair 2 - RPDs within limits for EPA 3C and ASTM D15504 within limits. TO-15 analyte RPDs within limits except n-Hexane, Benzene, Cyclohexane, Methyl Methacrylate, n-Heptane, Toluene, n-Octane, x,p-Xylene, o-Xylene and n-Nonane. Associated results flagged "J" if positive or "UJ" if non-detect for duplicate samples only. Reason Code - FDUP			
20. Were at least 10 percent of the hard copy results compared to the Electronic Data Deliverable Results?	Yes X	No	Initials EAC
Comments:			
21. Other:		Yes	No X
Comments:			

PRECISION, ACCURACY, METHOD COMPLIANCE AND COMPLETENESS ASSESSMENT

Precision:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Sensitivity:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Accuracy:	Acceptable X	Unacceptable	Initials EAC

Comments:			
Representativeness:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Method Compliance:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Completeness:	Acceptable X	Unacceptable	Initials EAC
Comments:			

Stantec Analytical Validation Checklist — Report No. 030315-EC-03

Project Name: Bridgeton, MO	Project Number: 182608020
Stantec Validator: Elizabeth A. Crowley	Laboratory: ALS –Semi-Valley, CA
Date Validated: 03/01/15	Laboratory Project Number: P1500371
Sample Start-End Date: 01/27-01/28/15	Laboratory Report Date: 02/17/15

Parameters Validated: Aldehydes by TO-11A, Ammonia by OSHA ID-164, Carbolic Acids by GCMS And Amines by GC/NPD

Samples Validated: 62 air field samples and 4 Trip Blanks

VALIDATION CRITERIA CHECK

Validation Flags Applicable to this Review:

U The analyte was analyzed for, but not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

B The analyte was detected in the method, field, and/or trip blank.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

	Yes	No
1. Were all the analyses requested for the samples submitted with each COC completed by the lab?	X	
Comments:		
2. Did the laboratory identify any non-conformances related to the analytical result?	Yes	No X
Comments:		
3. Were sample Chain-of-Custody forms complete?	Yes X	No
Comments:		
4. Were samples received in good condition and at the appropriate temperature?	Yes X	No
Comments:		
5. Were sample holding times met?	Yes X	No
Comments:		
6. Were correct concentration units reported?	Yes X	No
Comments:		
7. Were detections found in laboratory blank samples?	Yes X	No

Comments: GC/NPD batch P150204 – Trimethylamine = 1 ppbV. Associated sample results non-detect. No qualifying action required.		
8. Were detections found in field blank, equipment rinse blank, and/or trip blank samples?	Yes	No X
Comments:		
9. Were instrument calibrations within method criteria?	Yes	No X
Comments: GCMS Continuing calibration dated 02/05/15 - %R below limits Cyclohexanecarbolic Acid. Continuing calibration dated 02/06/15 - %Rs below limits for Heptanoic Acid, Cyclohexanecarbonic Acid and Octanoic Acid. Continuing calibration dated 02/11/15 - %Rs below limits for Octanoic Acid. Associated sample results flagged “UJ” and are biased low. Reason Code – CCAL		
10. Were surrogate recoveries within control limits?	Yes NA	No
Comments: Surrogates not required by methods.		
11. Were laboratory control (LC/LD) sample recoveries within control limits?	Yes	No X
Comments: GCMS batch P150211 - %Rs below limits for Acetic Acid, 2-Methylpropanoic Acid and Benzoic Acid. Associated sample results flagged “UJ” and are biased low. Reason Code – LCS		
12. Were site specific matrix spike (MS/MD) recoveries within control limits?	Yes NA	No
Comment: No matrix sample data required. No qualifying action required.		
13. Were RPDs within control limits?	Yes	No X
Comments: GC/NPD batch P150211 – Laboratory control duplicate RPDs above limits for Acetic Acid, Propanoic Acid and 2-Methylpropanoic Acid. Associated results non-detect. No qualifying action required.		
14. Were dilutions required on any samples?	Yes X	No
Comments: Samples analyzed at dilution due to high levels of target analytes. No qualifying action required.		
15. Were Tentatively Identified Compounds (TIC) present?	Yes	No X
Comments:		
16. Were organic system performance criteria met?	Yes	No

	NA		
Comments: No data provided.			
17. Were GC/MS internal standards within method criteria?	NA	Yes	No
Comments: No data provided.			
18. Were inorganic system performance criteria met?	NA	Yes	No
Comments: No data provided.			
19. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results. Duplicate Sample Nos. 127Dup01 127UI-Ald (Pair 1) 127Dup032 127SQ-Carbox2 (Pair 2) 128Dup05 128N-SAmine (Pair 3) 128Dup06 128NQ-SNH3 (Pair 4)		Yes X	No
Comments: Pair 1 – RPDs within limits. Pair 2- Results non-detect, RPD within limits. Pair 3 – Results non-detect, RPD withinlimits. Pair 4 – RPDs within limits.			
20. Were at least 10 percent of the hard copy results compared to the Electronic Data Deliverable Results?	Yes X	No	Initials EAC
Comments:			
21. Other:		Yes	No X
Comments:			

PRECISION, ACCURACY, METHOD COMPLIANCE AND COMPLETENESS ASSESSMENT

Precision:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Sensitivity:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Accuracy:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Representativeness:	Acceptable X	Unacceptable	Initials EAC
Comments:			

Method Compliance:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Completeness:	Acceptable X	Unacceptable	Initials EAC
Comments:			

Stantec Analytical Validation Checklist **Report No. 030215-EC-01**

Project Name: Bridgeton, MO	Project Number: 182608020
Stantec Validator: Elizabeth A. Crowley	Laboratory: ALS –Semi-Valley, CA
Date Validated: 02/26/15	Laboratory Project Number: P1503475/P1503475Rev
Sample Start-End Date: 01/27-01/28/15	Laboratory Report Date: 02/20/15
Parameters Validated: Mercury by NIOSH 6009 Mod. and Hydrogen Cyanide by 6010 Mod.	
Samples Validated: 25 air field samples	

VALIDATION CRITERIA CHECK

Validation Flags Applicable to this Review:

U The analyte was analyzed for, but not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

B The analyte was detected in the method, field, and/or trip blank.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

	Yes	No
1. Were all the analyses requested for the samples submitted with each COC completed by the lab?	X	
Comments:		
2. Did the laboratory identify any non-conformances related to the analytical result?	Yes	No X
Comments:		
3. Were sample Chain-of-Custody forms complete?	Yes X	No
Comments:		
4. Were samples received in good condition and at the appropriate temperature?	Yes X	No
Comments:		
5. Were sample holding times met?	Yes X	No
Comments:		
6. Were correct concentration units reported?	Yes X	No
Comments:		
7. Were detections found in laboratory blank samples?	Yes	No X
Comments:		
8. Were detections found in field blank, equipment rinse	Yes	No

blank, and/or trip blank samples?			X
Comments:			
9. Were instrument calibrations within method criteria?	NA	Yes	No
Comments: Level II data package, no data provided.			
10. Were surrogate recoveries within control limits?	NA	Yes	No
Comments: No organic analysis requested.			
11. Were laboratory control (LC/LD) sample recoveries within control limits?		Yes X	No
Comments:			
12. Were site specific matrix spike (MS/MD) recoveries within control limits?	NA	Yes	No
Comment: No matrix sample data provided. No qualifying action required.			
13. Were RPDs within control limits?		Yes X	No
Comments:			
14. Were dilutions required on any samples?		Yes	No X
Comments:			
15. Were Tentatively Identified Compounds (TIC) present?		Yes	No X
Comments:			
16. Were organic system performance criteria met?	NA	Yes	No
Comments: No organic analysis requested.			
17. Were GC/MS internal standards within method criteria?	NA	Yes	No
Comments: No organic analysis requested.			
18. Were inorganic system performance criteria met?	NA	Yes	No
Comments: Level II data package, no data provided.			
19. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results. Duplicate Sample Nos. 127D1-HG 127Dup02 (Pair 1) 128F-CN 128Dup04 (Pair 2)		Yes X	No
Comments: Pair 1 – Results non-detect, RPD within limits. Pair 2 – Results non-detect, RPD within limits.			

20. Were at least 10 percent of the hard copy results compared to the Electronic Data Deliverable Results?	Yes	No	Initials
	X		EAC
Comments:			
21. Other:		Yes	No
			X
Comments:			

PRECISION, ACCURACY, METHOD COMPLIANCE AND COMPLETENESS ASSESSMENT

Precision:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Sensitivity:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Accuracy:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Representativeness:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Method Compliance:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Completeness:	Acceptable X	Unacceptable	Initials EAC
Comments:			

APPENDIX D – HISTORICAL SUMMARY TABLES OF DETECTED COMPOUNDS

Table D1: Comprehensive Sampling Events 2012 through 2014 – Bridgeton Landfill
Upwind Comparison of Detected Compounds
Concentration in Ambient Air – All Units µg/m³

Analyte	Screening Levels		Upwind Perimeter Sample Locations											
	Ind. RSL [1]	Res. RSL [2]	Grassy Knoll Center	Grassy Knoll West	Grassy Knoll North	Grassy Knoll Center	Grassy Knoll West	Grassy Knoll North	Grassy Knoll Lower Level	Grassy Knoll Upper Level	Pond	Grassy Knoll Lower Level	Grassy Knoll Upper Level	Grassy Knoll Lower Level
			2012						2013			2014		
			8/16	8/16	8/16	8/17	8/17	8/17	5/7	5/7	5/8	7/29	7/30	7/31
Aldehydes/Carbonyl Compounds – Method: EPA TO-11a														
2,5-Dimethylbenzaldehyde	NA[3]	NA	-- [4]	--	--	**0.41**[5]	**0.51**	**0.81**	0.4	0.4	--	--	--	NS [6]
Acetaldehyde	5.6	1.3	**17**[7]	**19**	**18**	**1.3**	**1.2**	**1.2**	**1.3**	**1.1**	**1.3**	**1.1**	**2.5**	NS
Formaldehyde	0.94	0.22	--	--	--	**2.9**	**3.1**	**3.2**	**2.3**	**2.4**	**2.9**	**2.4**	**2.6**	NS
n-Hexaldehyde	NA	NA	--	--	--	--	--	--	0.3	--	**0.8**	--	**0.51**	NS
Hydrogen Cyanide – Method: NIOSH 6010														
Hydrogen Cyanide	3.5	0.83	--	--	--	--	--	--	--	--	--	--	NS	NS
Amine Compounds – Method: NIOSH 2010m														
No Compounds Detected	NA	NA	--	--	--	--	--	--	--	--	--	--	--	NS
Hydrogen Chloride – NIOSH 7903														
Hydrogen Chloride	8.8	2.1	NS	NS	NS	NS	NS	NS	**11**	--	--	NS	NS	NS
Sulfur Dioxide – Method: OSHA ID 200														
Sulfur Dioxide	NA	NA	NS	NS	NS	NS	NS	NS	--	--	--	NS	NS	NS
Mercury – Method: NIOSH 6009														
Mercury	1.3	0.31	--	--	--	--	--	--	--	--	--	--	--	NS
Ammonia – Method*: OSHA ID 188*														
Ammonia	440	100	--	--	--	--	--	--	--	--	--	NS	--	NS
Carboxylic Acid Compounds – Method: CAS AQL 102														
No Compounds Detected	NA	NA	--	--	--	--	--	--	--	--	--	--	--	NS
Volatile Organic Compounds (VOCs) – Method: EPA TO15 + TICs – Standard Analyte List														
2-Butanone (MEK)	22,000	5,200	--	--	--	--	--	--	--	--	--	**0.64**	**0.56**	--
Isopropyl Alcohol	31,000	7,300	--	--	--	--	--	--	--	--	--	**1.1**	--	--
Acetone	140,000	32.000	**12**	**13**	**21**	--	--	--	--	--	**6.5**	**7.5**	**9**	--
Acetonitrile	260	63	--	--	--	**0.78**		**0.88**	**4.8**	**6**	**0.79**	**12**	**0.43**	--
Acrolein	0.088	0.021	--	--	--	--	--	--	--	--	--	**0.34**	**0.27**	--
Benzene	1.6	0.36	--	--	--	--	--	--	--	--	--	**0.23**	--	--
Carbon Tetrachloride	2	0.47	--	--	--	--	--	--	--	--	--	**0.48**	**0.45**	--
Chloromethane	390	94	--	--	--	--	--	--	--	--	--	**0.34**	**0.45**	--
Dichlorodifluoromethane (CFC 12)	440	100	**2.1**	**2.2**	**2.2**	**2.1**	**2.2**	**2.2**	**2.5**	**2.8**	**2**	**2.1**	**2**	**2.3**
Ethanol	NA	NA	--	--	--	--	--	--	--	--	--	**2.7**	**3.8**	--

Table D1: Comprehensive Sampling Events 2012 through 2014 – Bridgeton Landfill
Upwind Comparison of Detected Compounds
Concentration in Ambient Air – All Units µg/m³

Analyte	Screening Levels		Upwind Perimeter Sample Locations											
	Ind. RSL [1]	Res. RSL [2]	Grassy Knoll Center	Grassy Knoll West	Grassy Knoll North	Grassy Knoll Center	Grassy Knoll West	Grassy Knoll North	Grassy Knoll Lower Level	Grassy Knoll Upper Level	Pond	Grassy Knoll Lower Level	Grassy Knoll Upper Level	Grassy Knoll Lower Level
			2012						2013			2014		
			8/16	8/16	8/16	8/17	8/17	8/17	5/7	5/7	5/8	7/29	7/30	7/31
Ethyl Acetate	310	73	**2.6**	**3**	**2.7**	--	--	--	--	--	--	**5.2**	**4.6**	--
m,p-Xylenes	880	200	--	--	--	--	--	--	--	--	--	**0.41**	--	--
Methylene Chloride	1,200	100	--	--	--	--	--	--	**6.6**	**4.7**	**0.68**	**1.7**	**1.5**	--
n-Butyl Acetate	NA	NA	--	--	--	--	--	--	**1.5**	--	--	--	--	--
n-Hexane	3,100	730	--	--	--	--	--	--	--	--	--	**0.2**	--	--
Propene	13,000	3,100	--	--	--	--	--	--	--	--	**1.1**	**0.72**	--	**2.1**
Tetrachloroethene	47	11	**1.4**	--	--	--	**1.8**	--	--	--	--	--	--	--
Toluene	22,000	5,200	**1**	**1.4**	**1.1**	--	--	--	**3.1**	--	**1.4**	**2.2**	**0.87**	**1.8**
Trichloroethene	0.88	0.21	--	--	--	--	--	--	--	--	**0.97**	--	--	--
Trichlorofluoromethane	3,100	730	--	--	--	--	--	--	--	--	--	**1.1**	**1.2**	--
Trichlorotrifluoroethane	130,000	31,000	**1.1**	**1.2**	**1.1**	**1.1**	**1.1**	**1.1**	--	--	**1**	**0.52**	**0.54**	--
Volatile Organic Compounds (VOCs) –Method: EPA TO15 + TICs - Tentatively Identified Compounds [8]														
n-Pentane	4,400	1,000	--	--	--	--	--	--	**50**	--	--	--	--	--
Isopentane	NA	NA	--	--	--	--	--	--	--	--	**3.2**	--	--	--
Ethyl propionate	NA	NA	**5**	**4.7**	**5.2**	--	--	--	--	--	--	--	--	--
Ethyl butyrate	NA	NA	**7.6**	**6.5**	**7.9**	**5.4**	**6**	**5.6**	--	--	--	--	--	--
Trimethylsilanol	NA	NA	--	--	--	--	--	--	--	--	--	**2.9**	**3.2**	--
Acetic Acid	NA	NA	--	**3.7**	--	--	--	--	--	--	--	--	--	--
Benzaldehyde	NA	NA	--	--	**3.4**	--	--	--	--	--	--	--	--	--
Hexamethylcyclotrisiloxane	NA	NA	**3.3**	--	**12**	--	--	--	--	**14**	--	**4.2**	**26**	--
n-Octanal	NA	NA	--	--	--	--	--	--	**8.7**	**15**	--	--	**5**	--
n-Nonanal	NA	NA	--	--	--	--	--	--	**24**	**19**	**3.5**	**4.2**	**24**	--
2-Ethylhexylacetate	NA	NA	--	--	--	--	--	--	**15**	**19**	--	--	--	--
2-Ethyl-1-hexanol	NA	NA	--	--	--	--	--	--	**34**	**21**	--	--	--	--
n-Decanal	NA	NA	--	--	--	--	--	--	**17**	--	--	--	**22**	--
C13H28 Branched Alkane	NA	NA	--	--	--	--	--	--	**5.8,5.6**	--	--	--	--	--
Unidentified Siloxane	NA	NA	--	--	--	--	--	--	**13**	**21**	--	**8.9**	--	--
C14H30 Branched Alkane	NA	NA	--	--	--	--	--	--	**8.5**	--	--	--	--	--
Unidentified Siloxane	NA	NA	--	--	--	--	--	--	**11**	**14**	--	**13**	**98**	--
C15H32 Branched Alkane	NA	NA	--	--	--	--	--	--	**7.2**	--	--	--	--	--
Unidentified Siloxane	NA	NA	--	--	--	--	--	--	--	--	--	**3.4**	**2.7**	--
Unidentified Compound	NA	NA	**3.3**	--	**4.6**	--	--	--	**6.1**	--	**5.9**	**3.7**	**20**	--

Table D1: Comprehensive Sampling Events 2012 through 2014 – Bridgeton Landfill
Upwind Comparison of Detected Compounds
Concentration in Ambient Air – All Units µg/m³

Analyte	Screening Levels		Upwind Perimeter Sample Locations											
	Ind. RSL [1]	Res. RSL [2]	Grassy Knoll Center	Grassy Knoll West	Grassy Knoll North	Grassy Knoll Center	Grassy Knoll West	Grassy Knoll North	Grassy Knoll Lower Level	Grassy Knoll Upper Level	Pond	Grassy Knoll Lower Level	Grassy Knoll Upper Level	Grassy Knoll Lower Level
			2012						2013			2014		
			8/16	8/16	8/16	8/17	8/17	8/17	5/7	5/7	5/8	7/29	7/30	7/31
Unidentified Compound	NA	NA	--	--	--	--	--	--	--	--	--	--	**3.3**	--
Reduced Sulfur Compound – ASTM D5504														
No Compounds Detected	NA	NA	NS	--	--	--	--	--	--	--	--	--	--	--
Polynuclear Aromatic Hydrocarbons - Method: EPA TO13a Modified														
Acenaphthene	NA	NA	NS	NS	NS	NS	NS	NS	NS	**0.0036**	NS	**0.0080**	NS	NS
Fluoranthene	NA	NA	NS	NS	NS	NS	NS	NS	NS	**0.0038**	NS	**0.0032**	NS	NS
Fluorene	NA	NA	NS	NS	NS	NS	NS	NS	NS	**0.0056**	NS	**0.0088**	NS	NS
Naphthalene	0.36	0.072	NS	NS	NS	NS	NS	NS	NS	**0.048**	NS	**0.067**	NS	NS
Phenanthrene	NA	NA	NS	NS	NS	NS	NS	NS	NS	**0.016**	NS	**0.022**	NS	NS
Pyrene	NA	NA	NS	NS	NS	NS	NS	NS	NS	**0.0016**	NS	--	NS	NS
Polychlorinated Dibenzo-p-Dioxins, Dibenzofurans – EPA Method TO-9A														
2,3,7,8-TCDD	3.20E-07	6.40E-08	**1.94E-08**	NS	NS	NS	NS	NS	NS	**1.22E-08**	NS	**2.74E-10**	NS	NS

1. United States Environmental Protection Agency Regional Screening Levels for Industrial Air
2. United States Environmental Protection Agency Regional Screening Levels for Residential Air
3. "NA" = Not Available
4. "--": Compound concentration not detected above Method Reporting Limit (MRL)
5. Bold indicates that compound was detected above MRL
6. "NS" = Not Sampled
7. Shading indicates that the detected concentration exceeds the United States Environmental Protection Agency Regional Screening Level for ***Residential Air or Industrial Air.***
8. Tentatively Identified compounds – under EPA Method TO-15 + TICs, the reported concentrations are estimated.

Table D2: Comprehensive Sampling Events 2012 through 2014 – Bridgeton Landfill
Downwind Comparison of Detected Compounds
Concentration in Ambient Air – All Units µg/m³

Analyte	Screening Levels		Downwind Perimeter Sample Locations															
	Ind. RSL [1]	Res. RSL [2]	Pond Center	Pond East	Pond West	East Fence #1	East Fence #2	South Fence	MSD Lift Stn.	Materiologic East End	Northwest Auto Repair	Southeast Corner	East Fence	Retention Pond	East Fence	Republic Fueling	SW Corner of Landfill
			2012						2013			2014					
			8/16	8/16	8/16	8/17	8/17	8/17	5/7	5/7	5/8	7/29	7/29	7/30	7/30	7/30	7/31
Aldehydes/Carbonyl Compounds – Method: EPA TO-11a																	
2,5-Dimethylbenzaldehyde	NA[3]	NA	**0.94** [4]	**0.91**	**0.86**	-- [5]	--	--	**1.2**	--	--	--	--	--	--	NS [6]	NS
Acetaldehyde	5.6	1.3	**1.7** [7]	**1.5**	**1.6**	**10**	**8.3**	**1.1**	**3**	**2.1**	**1.7**	**1.2**	**1.2**	**0.87**	**0.82**	NS	NS
Benzaldehyde	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	NS	NS
Butyraldehyde	NA	NA	--	--	--	--	--	--	**0.5**	--	--	--	--	--	--	NS	NS
Crotonaldehyde, Total	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	NS	NS
Formaldehyde	0.94	0.22	**6.3**	**6.2**	**6.2**	--	--	**1.5**	**3**	**2.6**	**3.3**	**2.3**	**3.1**	**2.9**	**2.4**	NS	NS
Isovaleraldehyde	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	NS	NS
m,p-Tolualdehyde	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	NS	NS
n-Hexaldehyde	NA	NA	--	--	--	--	--	--	**0.5**	**0.4**	**1.4**	**0.45**	**0.36**	**0.43**	**0.36**	NS	NS
o-Tolualdehyde	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	NS	NS
Propionaldehyde	35	8.3	--	--	--	--	--	--	**0.4**	--	--	--	--	--	--	NS	NS
Valeraldehyde	NA	NA	**0.47**	**0.62**	**0.46**	--	--	--	--	--	--	--	**1.1**	--	--	NS	NS
Hydrogen Cyanide – Method: NIOSH 6010																	
Hydrogen Cyanide	3.5	0.83	--	--	--	--	--	--	--	--	--	--	NS	NS	NS	NS	NS
Amine Compounds – Method: NIOSH 2010m																	
No Compounds Detected	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	NS	NS
Hydrogen Chloride – NIOSH 7903																	
Hydrogen Chloride	88	21	NS	NS	NS	NS	NS	NS	**21**	--	--	NS	NS	NS	NS	NS	NS
Sulfur Dioxide – Method: OSHA ID 200																	
Sulfur Dioxide	NA	NA	NS	NS	NS	NS	NS	NS	--	--	--	NS	NS	NS	NS	NS	NS
Mercury – Method: NIOSH 6009																	
Mercury	1.3	0.31	--	--	--	--	--	--	--	--	--	--	NS	NS	NS	NS	NS
Ammonia – Method: *OSHA ID 188*																	
Ammonia	440	100	--	--	--	--	--	--	--	--	--	--	--	--	--	NS	NS
Carboxylic Acid Compounds – Method: CAS AQL 102																	
Butanoic Acid (Butyric)	NA	NA	--	--	--	--	--	--	--	--	--	--	**6.5**	--	--	NS	NS
Hexanoic Acid (Caproic)	NA	NA	--	--	--	--	--	--	--	--	--	--	**2.8**	--	--	NS	NS
Volatile Organic Compounds (VOCs) – Method: EPA TO15 + TICs – Standard Analyte List																	
1,2,4-Trimethylbenzene	31	7.3	--	--	--	--	--	--	--	--	--	--	**6.1**	--	--	--	--
1,3,5-Trimethylbenzene	NA	NA	--	--	--	--	--	--	--	--	--	--	**3.6**	--	--	--	--
1,3-Butadiene	0.41	0.094	--	--	--	--	--	--	--	--	--	--	**38**	--	--	--	--
2-Butanone (MEK)	22,000	5,200	--	--	--	--	--	--	--	--	--	**1.8J**	**20**	**0.73J**	**1.4J**	**0.55J**	--
Isopropyl Alcohol	31,000	7,300	--	--	--	--	--	--	--	--	--	**1.0J**	**15J**	**4.3J**	**3.5J**	--	--
4-Ethyltoluene	NA	NA	--	--	--	--	--	--	--	--	--	--	**12**	--	--	--	--
4-Methyl-2-pentanone	13,000	3,100	--	--	--	--	--	--	--	--	--	--	**55**	--	--	--	--
Acetone	140,000	32,000	**17**	**18**	**13**	**11**	--	**21**	**18**	**12**	**9**	**9.2**	**53**	**8.6**	**14**	**8.2J**	--
Acetonitrile	260	63	**0.82**	--	--	**0.88**	**14**	**1.9**	**35**	**5**	**4.2**	**0.83**	**45**	**0.71J**	**2.3**	--	--
Acrolein	0.088	0.021	--	--	--	--	--	--	--	--	--	--	--	--	**0.42J**	--	--
alpha-Pinene	NA	NA	--	--	--	**1.1**	--	--	**1.6**	**1**		--	--	--	--	--	--
Benzene	1.6	0.36	**10**	**10**	**16**	**11**	--	**6.1**	**25**	**12**	**0.79**	**1.7**	**370**	**0.35J**	**1.6**	--	--
Carbon Disulfide	3,100	730	--	--	--	--	--	--	--	--	--	--	**1.7J**	--	--	--	--
Carbon Tetrachloride	2	0.47	--	--	--	--	--	--	--	--	--	**0.48**	--	**0.48J**	**0.51J**	**0.44J**	--
Chloromethane	390	94	--	--	--	--	--	--	--	--	--	**0.41J**	**0.55J**	**0.5J**	**0.44J**	**0.46J**	--
Cumene	1,800	420	--	--	--	--	--	--	--	--	--	--	**11**	--	--	--	--
Cyclohexane	26,000	6,300	--	--	--	--	--	--	--	--	--	--	**14**	--	--	--	--
Dichlorodifluoromethane (CFC 12)	440	100	**2.2**	**2.7**	**2.3**	**2.2**	**2.2**	**2.3**	**2.1**	**2.1**	**1.9**	**2.1**	**2.0**	**2.1**	**2.1**	**2.1**	**2.2**
d-Limonene	NA	NA	**0.099**	--	--	--	--	--	**1.8**	**1.1**	--	--	**49**	**0.22J**	**0.21J**	--	--
Ethanol	NA	NA	--	--	--	--	**12**	--	--	**7.7**	--	**6.0J**	**12J**	**6J**	**6.8J**	**4.6J**	--
Ethyl Acetate	310	73	**17**	**5**	**8.7**	--	--	--	--	--	--	**9.1**	--	**5.3**	**8.7**	**15**	--

Table D2: Comprehensive Sampling Events 2012 through 2014 – Bridgeton Landfill
Downwind Comparison of Detected Compounds
Concentration in Ambient Air – All Units µg/m³

Analyte	Screening Levels		Downwind Perimeter Sample Locations														
	Ind. RSL [1]	Res. RSL [2]	Pond Center	Pond East	Pond West	East Fence #1	East Fence #2	South Fence	MSD Lift Stn.	Materiologic East End	Northwest Auto Repair	Southeast Corner	East Fence	Retention Pond	East Fence	Republic Fueling	SW Corner of Landfill
			2012						2013			2014					
			8/16	8/16	8/16	8/17	8/17	8/17	5/7	5/7	5/8	7/29	7/29	7/30	7/30	7/30	7/31
Ethylbenzene	4.9	1.1	0.72	0.83	0.91	--	--	--	1.8	0.97	--	--	140	--	0.27J	--	--
m,p-Xylenes	880	200	1.5	1.7	3.2	--	--	--	3.2	1.7	--	--	150	--	0.45J	--	--
Methylene Chloride	1,200	100	--	--	--	0.94	0.79	2.1	4	2.6	1.1	0.40J	--	0.58J	0.55J	0.84J	--
Naphthalene	0.36	0.083	--	--	--	--	--	--	--	--	--	--	0.74J	--	--	--	--
n-Butyl Acetate	NA	NA	--	--	--	--	--	--	--	--	--	0.45J	--	--	0.37J	0.73J	--
n-Heptane	NA	NA	--	--	--	--	--	--	--	--	--	--	40	--	--	--	--
n-Hexane	3,100	730	--	--	--	--	--	--	--	--	--	0.90	34	--	--	--	--
n-Nonane	880	210	--	--	--	--	--	--	--	0.76	--	--	6.7	--	0.24J	--	--
n-Octane	NA	NA	--	--	--	--	--	--	--	--	--	--	19	--	--	--	--
n-Propylbenzene	4,400	1,000	--	--	--	--	--	--	--	--	--	--	6.2	--	--	--	--
o-Xylene	440	100	--	--	--	--	--	--	--	--	--	--	31	--	--	--	--
Propene	13,000	3,100	1.6	1.8	2	1.8	1.1	2.2	5.9	3.3	0.79	0.87	42	1.8	1.5	0.66J	2.6
Styrene	4,400	1,000	--	--	--	--	--	--	--	--	--	--	34	--	--	--	--
Tetrachloroethene	47	11	--	--	--	--	2.1	--	--	--	--	--	--	--	--	--	--
Tetrahydrofuran (THF)	8,800	2,100	2.7	2.6	3	2.5	1.2	2	5.8	3.5		0.76	1.3J	--	0.44J	--	--
Toluene	22,000	5,200	3.7	3.3	3.4	2	--	2.6	6	3.3	1.5	1.4	500	0.54J	1.4	0.87J	1.9
Trichloroethene	0.88	0.21	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--
Trichlorofluoromethane	3,100	730	1.2	1.4	1.3	1.1	1.1	1.1	--	0.97	0.95	1.2	1.1J	2	2.3	1.7	--
Trichlorotrifluoroethane	130,000	31,000	--	--	--	--	--	--	--	--	--	0.51J	--	0.54J	0.55J	0.53J	--
Volatile Organic Compounds (VOCs) –Method: EPA TO15 + TICs - Tentatively Identified Compounds [8]																	
Isobutene	NA	NA	--	--	2.9	--	--	--	--	--	--	--	510	--	--	--	--
Isopentane	NA	NA	--	--	--	--	--	--	--	--	2.8	--	--	--	--	--	--
Isoprene	NA	NA	--	--	--	--	--	--	--	--	--	--	610	--	--	--	--
Ethyl propionate	NA	NA	14	7.1	11	--	--	--	--	--	--	--	--	--	--	--	--
Cyclopentene	NA	NA	--	--	--	--	--	--	--	--	--	--	76	--	--	--	--
Ethyl butyrate	NA	NA	14	8.4	11	3.9	--	4.9	--	--	--	--	--	--	--	--	--
2-butoxyethanol	NA	NA	--	--	--	--	--	--	--	--	--	15	--	--	--	--	--
Furan	NA	NA	3.4	4.7	--	3.5	--	--	--	--	--	--	--	--	--	--	--
Dimethyl sulfide	NA	NA	4.5	4.4	2.8	5.2	--	7.5	--	--	--	--	--	--	--	--	--
2-Methylfuran	NA	NA	3.7	5.4	--	3.9	--	--	--	--	--	--	--	--	--	--	--
Methylfuran isomer	NA	NA	--	--	--		--	--	8.8	5.3	--	--	--	--	--	--	--
Methylcyclopentene Isomer+1-Butanol	NA	NA	--	--	--	--	--	--	6.3	3.7	--	--	--	--	--	--	--
Acetic Acid	NA	NA	--	4.7	--	--	--	--	--	--	--	4.4	--	--	--	--	--
2-Butanol	NA	NA	--		--	--	--	--	--	--	--	--	--	--	--	--	--
Hexamethylcyclotrisiloxane	NA	NA	12	3.5	3.4	15	--	--	--	4.8	8.4	5.3	--	4	16	6.7	--
n-Octanal	NA	NA	--	--	--	--	--	--	26	7.7	--	--	--	--	--	--	--
n-Nonanal	NA	NA	--	--	--	--	--	--	18	24	5	--	--	6.5	--	11	--
Trimethylsilanol	NA	NA	--	--	--	--	--	--	--	--	2.5	3.0	--	--	5.1	--	--
2-Ethylhexylacetate	NA	NA	--	--	--	--	--	--	18	18	--	--	--	--	--	--	--
2-Ethyl-1-hexanol	NA	NA	3.2	--	--	--	--	--	37	38	--	--	--	--	--	--	--
n-Decanal	NA	NA	--	--	--	--	--	--	10	14	--	--	--	6.5	--	--	--
C5H10 Compound	NA	NA	--	--	--	--	--	--	--	--	--	--	160	--	--	--	--
C5H10 Compound	NA	NA	--	--	--	--	--	--	--	--	--	--	52	--	--	--	--
C5H10 Compound	NA	NA	--	--	--	--	--	--	--	--	--	--	640	--	--	--	--
C5H8 Compound	NA	NA	--	--	--	--	--	--	--	--	--	--	69	--	--	--	--
C6H12 Compound	NA	NA	--	--	--	--	--	--	--	--	--	--	120	--	--	--	--
C6H12 Compound	NA	NA	--	--	--	--	--	--	--	--	--	--	110	--	--	--	--
C6H12 Compound	NA	NA	--	--	--	--	--	--	--	--	--	--	130	--	--	--	--
C6H12 Compound	NA	NA	--	--	--	--	--	--	--	--	--	--	170	--	--	--	--
C7H14 Compound	NA	NA	--	--	--	--	--	--	--	--	--	--	69	--	--	--	--
C8H16 + C7H12 Compounds	NA	NA	--	--	--	--	--	--	--	--	--	--	120	--	--	--	--
C8H16 Compound	NA	NA	--	--	--	--	--	--	--	--	--	--	49	--	--	--	--

Table D2: Comprehensive Sampling Events 2012 through 2014 – Bridgeton Landfill
Downwind Comparison of Detected Compounds
Concentration in Ambient Air – All Units µg/m³

Analyte	Screening Levels		Downwind Perimeter Sample Locations														
	Ind. RSL [1]	Res. RSL [2]	Pond Center	Pond East	Pond West	East Fence #1	East Fence #2	South Fence	MSD Lift Stn.	Materiologic East End	Northwest Auto Repair	Southeast Corner	East Fence	Retention Pond	East Fence	Republic Fueling	SW Corner of Landfill
			2012						2013			2014					
			8/16	8/16	8/16	8/17	8/17	8/17	5/7	5/7	5/8	7/29	7/29	7/30	7/30	7/30	7/31
C7H12 Compound	NA	NA	--	--	--	--	--	--	--	--	--	--	**140**	--	--	--	--
Unidentified Siloxane	NA	NA	--	--	--	--	--	--	**15**	**6.3**	--	**5.6**	--	**4.7**	**7.4**	**4.7**	--
Unidentified Siloxane	NA	NA	--	--	--	--	--	--	**8.7**	**6**	--	**4.1**	--	--	--	--	--
Unidentified Siloxane	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Unidentified Compound	NA	NA	**4.1**	**4**	**3.3**	**3.1**	--	--	**--**	**4.9**	**7.7**	**3.5**	--	--	**5.5**	--	--
Unidentified Compound	NA	NA	--	--	--	--	--	--	--	**4.2**	--	--	--	--	--	--	--
Reduced Sulfur Compound – ASTM D5504																	
Dimethyl sulfide	NA	NA	--	NS	NS	**19**	--	--	--	--	--	--	--	--	--	--	--
Polynuclear Aromatic Hydrocarbons - Method: EPA TO13a Modified																	
Acenaphthene	NA	NA	NS	NS	NS	**0.004**	NS	NS	**0.002**	NS	NS	**0.0096**	NS	NS	NS	NS	NS
Fluoranthene	NA	NA	NS	NS	NS	**0.0021**	NS	NS	--	NS	NS	**0.0036**	NS	NS	NS	NS	NS
Fluorene	NA	NA	NS	NS	NS	**0.0038**	NS	NS	**0.0017**	NS	NS	**0.013**	NS	NS	NS	NS	NS
Naphthalene	0.36	0.072	NS	NS	NS	**0.029**	NS	NS	**0.024**	NS	NS	**0.056**	NS	NS	NS	NS	NS
Phenanthrene	NA	NA	NS	NS	NS	**0.011**	NS	NS	**0.0035**	NS	NS	**0.030**	NS	NS	NS	NS	NS
Pyrene	NA	NA	NS	NS	NS	--	NS	NS	--	NS	NS	**0.0017**	NS	NS	NS	NS	NS
Polychlorinated Dibenzo-p-Dioxins, Dibenzofurans – EPA Method TO-9A																	
2,3,7,8-TCDD	3.20E-07	6.40E-08	NS	NS	NS	**7.88E-09**	NS	NS	**1.69E-08**	NS	NS	**3.29E-10**	NS	NS	NS	NS	NS

1. United States Environmental Protection Agency Regional Screening Levels for Residential Air (May 2014)
2. United States Environmental Protection Agency Regional Screening Levels for Industrial Air (May 2014)
3. "NA" = Not Available
4. Bold indicates that compound concentration was detected above laboratory reporting limits.
5. "--": Compound concentration not detected above laboratory detection limit
6. "NS" = Not Sampled
7. Shading indicates that the detected concentration exceeds the United States Environmental Protection Agency Regional Screening Level for **Residential Air** or **Industrial Air.**
8. Tentatively Identified compounds – under EPA Method TO-15 + TICs, the reported concentrations are estimated.
9. J = The result is an estimated concentration that is less than the MRL but great than or equal to the Method Detection Limit (MDL).

Note: A duplicate summa canister was collected and analyzed for VOCs (EPA Method TO-15) at the South Fence Location, the highest detected concentration is reported.

Table D3: Comprehensive Sampling Events 2012 through 2014 - Bridgeton Landfill
Onsite Comparison of Detected Compounds
Concentration in Ambient Air – All Units µg/m³

Analyte	Screening Levels			Upwind Perimeter Sample Locations								
	Ind. RSL [1]	OSHA PELs [2]	ACGIH TLVs [3]	2nd Tier	Amphi-Theater	East Face	Amphi-Theater	2nd Tier	Flare Station	South Quarry	Neck	North Quarry
				2012			2013		2014			
				8/16	8/16	8/17	4/16	5/8	7/29	7/29	7/30	7/30
Aldehydes/Carbonyl Compounds – Method: EPA TO-11a												
2,5-Dimethylbenzaldehyde	NA[4]	NA	NA	**0.9** [5]	-- [6]	--	--	--	--	--	--	--
Acetaldehyde	5.6	360,000	45,000	**1.5**	**19** [7]	**1.5**	**4.4**	**3.1**	**1.3**	**0.78**	**0.91**	**0.88**
Butyraldehyde	NA	NA	NA	--	--	--	--	**0.49**	--	--	--	--
Formaldehyde	0.94	1,000	400	**6.1**	--	**1.7**	**1.8**	**3.9**	**2.5**	**2.5**	**2.9**	**2.8**
n-Hexaldehyde	NA	NA	NA	--	--	--	--	**1**	**0.65**	**0.37**	--	--
Propionaldehyde	3.5	NA	47,500	--	--	--	--	**0.41**	--	--	--	--
Hydrogen Cyanide – Method: NIOSH 6010												
Hydrogen Cyanide	3.5	11,000	5,000	--	--	--	--	--	--	--	--	NS [8]
Amine Compounds – Method: NIOSH 2010m												
No Compounds Detected	*NA*	*NA*	*NA*	--	--	--	--	--	--	--	--	--
Hydrogen Chloride – NIOSH 7903												
Hydrogen Chloride	8.8	7,000	3,000	NS	NS	NS	**1.8ug** [9]	--	NS	NS	NS	NS
Sulfur Dioxide – Method: OSHA ID 200												
Sulfur Dioxide	NA	1.31E+04		NS	NS	NS	--	--	NS	NS	NS	NS
Mercury – Method: NIOSH 6009												
Mercury	1.3	100	25	--	--	--	--	--	--	--	--	--
Ammonia – Method*: OSHA ID 188*												
Ammonia	440	35,000	17,500	--	--	--	--	--	**130**	--	--	--
Carboxylic Acid Compounds – Method: CAS AQL 102												
Hexanoic Acid (Caproic)	NA	NA	NA	--	--	--	--	**11**	--	--	--	--
Pentanoic Acid (Valeric)	NA	NA	NA	--	--	--	--	**4.4**	--	--	--	--
Butanoic Acid (Butyric)	NA	NA	NA	--	--	--	--	**12**	--	--	--	--
Propionic Acid (Propanoic)	NA	NA	NA	--	--	--	--	**5.6**	--	--	--	--
Volatile Organic Compounds (VOCs) – Method: EPA TO15 + TICs – Standard Analyte List												
1,2,4-Trimethylbenzene	31	NA	NA	--	--	--	--	**2.4**	--	**0.32**	--	--
1,4-Dichlorobenzene	1.1	450,000	60,000	--	--	--	--	**2.4**	--	--	--	--
2-Butanone (MEK)	22,000	590,000	590,000	--	--	**11**	**32**	**9.5**	**1.1**	**3.3**	**0.92**	**0.8**
4-Methyl-2-pentanone	NA	NA	NA	--	--	--	**2.1**	--	--	--	--	--
Isopropyl Alcohol	31,000	980,000	490,000	--	--	--	**38**	--	**1.9**	**2.2**	**1.7**	**1.6**
Acetone	140,000	2,4E+06	1.2E+06	**13**	**14**	**19**	**66**	**18**	**10**	**17**	**10**	**8.8**
Acetonitrile	260	70,000	35,000	--	**0.76**	--	--	**5.4**	**2.6**	**1.4**	**0.43**	**11**
Acrolein	0.088	250	250	--	--	--	--	--	--	**0.81**	**0.43**	**0.31**

Table D3: Comprehensive Sampling Events 2012 through 2014 - Bridgeton Landfill
Onsite Comparison of Detected Compounds
Concentration in Ambient Air – All Units µg/m³

Analyte	Screening Levels			Upwind Perimeter Sample Locations								
	Ind. RSL [1]	OSHA PELs [2]	ACGIH TLVs [3]	2nd Tier	Amphi-Theater	East Face	Amphi-Theater	2nd Tier	Flare Station	South Quarry	Neck	North Quarry
				2012			2013		2014			
				8/16	8/16	8/17	4/16	5/8	7/29	7/29	7/30	7/30
alpha-Pinene	NA	550,000	100,000	--	--	--	**1.4**	**0.9**	--	--	--	--
Benzene	1.6	32,000	1,600	--	**1.1**	**6.2**	**27**	**9.7**	**0.42**	**0.71**	**0.47**	**0.28**
Carbon Disulfide	3,100	60,000	3,000	--	--	--	--	--	--	**0.27**	--	--
Carbon Tetrachloride	2	30,000	15,000	--	--	--	--	--	**0.47**	**0.51**	**0.43**	**0.5**
Chloromethane	390	200,000	100,000	--	--	--	--	--	**0.36**	**0.36**	**0.37**	**0.43**
Cyclohexane	26,000	1.05E+06	350,000	--	--	--	--	--	--	**0.58**	--	--
Dichlorodifluoromethane (CFC 12)	440	4.95E+06	4.95E+06	**2.2**	**2.1**	**2.2**	**2.1**	**2.1**	**2.1**	**2.2**	**2**	**2.1**
d-Limonene	NA	NA	NA	--	--	--	**1.3**	**1.7**	**0.44**	**0.54**	--	--
Ethanol	NA	1.9E+06	1.9E+06	--	**16**	**8.5**	**58**	**11**	**7.8**	**18**	**6.6**	**7.2**
Ethyl Acetate	310	1.4E+06	1.4E+06	**8**	**3.1**	**1.6**	**4.9**	**--**	**11**	**9.3**	**5.1**	**9.9**
Ethylbenzene	4.9	435,000	87,000	--	--	--	**2**	**1.9**	--	**0.48**	--	--
m,p-Xylenes	880	870,000	870,000	--	--	--	**3.9**	**3.7**	--	**1**	--	--
Methylene Chloride	1,200	85,000	170,000	--	--	**0.88**	**1.8**	**0.73**	**2.8**	**1.8**	**0.69**	**0.93**
n-Butyl Acetate	NA	710,000	710,000	--	--	--	**1.6**	**1.1**	--	**0.61**	**0.45**	--
n-Heptane	NA	2.0E+06	1.6E+06	--	--	--	--	--	--	**0.51**	--	--
n-Hexane	3,100	1.8E+06	180,000	--	--	--	--	--	**1.5**	**1.6**	**0.23**	--
n-Nonane	880	NA	NA	--	--	--	**1.1**	**1**	**0.67**	**0.73**	--	--
Naphthalene	0.36	50,000	50,000	--	--	--	--	**1.5**	--	--	--	--
o-Xylene	440	435,000	435,000	--	--	--	**1.1**	**1.4**	--	**0.36**	--	--
Propene	13,000	NA	NA	--	--	**1.8**	**14**	**2.1**	**0.84**	**1.6**	**0.66**	**1.1**
Styrene	4,400	400,000	85,000	--	--	--	--	--	--	**0.22**	--	--
Tetrahydrofuran (THF)	8,800	590,000	147,500	--	--	**4.7**	**27**	**4.7**	--	**0.32**	--	--
Toluene	22,000	750,000	75,000	**1.7**	**1.6**	**1.6**	**8.8**	**3.6**	**4.1**	**10**	**0.67**	**0.69**
Trichloroethene	0.88	500,000	50,000	--	--	--	--	**0.98**	--	--	--	--
Trichlorofluoromethane	3,100	5.6E+06	5.6E+06	**1.3**	**1.1**	**1.1**	**1.2**	**1**	**1.3**	**2**	**1.6**	**1.6**
Trichlorotrifluoroethane	130,000	7.6E+06	7.6E+06	--	--	--	--	--	**0.53**	**0.55**	**0.47**	**0.57**
Volatile Organic Compounds (VOCs) –Method: EPA TO15 + TICs - Tentatively Identified Compounds [10]												
Propane	NA	NA	NA	--	--	--	--	--	**23**	--	--	--
Isobutane	NA	NA	NA	--	--	--	**10**	--	--	**3.1**		
Isobutene	NA	NA	NA	--	--	--	**6.9**	--	--	--	--	--
Isopentane	NA	NA	NA	--	**4.9**	--	--	--	--	--	--	--
n-Pentane	4,400	2.95E+06	2.95E+06	--	--	--	**7.1**	--	--	**4.4**	--	--
1-Propanol	NA	NA	250,000	--	--	--	--	--	--	**3.4**	--	--
Ethyl propionate	NA	NA	NA	**9.9**	**4.1**	--	--	--	--	--	--	--
Ethyl butyrate	NA	NA	NA	**9.7**	**5.9**	**4.5**	--	--	--	--	--	--

Table D3: Comprehensive Sampling Events 2012 through 2014 - Bridgeton Landfill
Onsite Comparison of Detected Compounds
Concentration in Ambient Air – All Units µg/m³

Analyte	Screening Levels			Upwind Perimeter Sample Locations								
	Ind. RSL [1]	OSHA PELs [2]	ACGIH TLVs [3]	2nd Tier	Amphi-Theater	East Face	Amphi-Theater	2nd Tier	Flare Station	South Quarry	Neck	North Quarry
				2012			2013		2014			
				8/16	8/16	8/17	4/16	5/8	7/29	7/29	7/30	7/30
2-butoxyethanol	NA	NA	NA	**2.8**	--	--	--	--	--	--	--	--
Furan	NA	NA	NA	--	--	**13**	**26**	**7**	--	--	--	--
Dimethyl sulfide	NA	NA	25,400	--	--	**12**	**34**	**12**	--	--	--	--
Dimethyl Ether	NA	NA	NA	--	--	--	**6.7**	--	--	--	--	--
Methyl acetate	NA	NA	NA	--	--	**10**	--	--	--	--	--	--
Methyl hexanoate	NA	NA	NA					**6.6**				
Bromotrifluoromethane	NA	6.09E+06	6.09E+06	--	--	--	**5.4**	--	--	--	--	--
2-Methylfuran	NA	NA	NA	--	--	**14**	--	--	--	--	--	--
Methylfuran isomer	NA	NA	NA	--	--	--	**9.7**	**3.9**	--	--	--	--
Methyl propionate	NA	NA	NA	--	--	**5.5**	**9.9**	--	--	--	--	--
Methyl butyrate	NA	NA	NA	--	--	**12**	**13**	**11**	--	--	--	--
2-Butanol	NA	455,000	303,000	--	--	--	**15**	--	--	--	--	--
Hexamethylcyclotrisiloxane	NA	NA	NA	--	--	--	--	--	**5.9**	**3.2**	**2.8**	**3.7**
n-Octanal	NA	NA	NA	--	--	--	--	**3.6**	--	**4.8**	--	--
n-Nonanal	NA	NA	NA	--	--	--	**10**	**17**	**9.6**	**11**	**7.2**	**7.7**
p-Cymene	NA	NA	NA					**14**				
n-Undecane	NA	NA	NA					**9.9**				
n-Dodecane	NA	NA	NA					**5.3**				
Trimethylsilanol	NA	NA	NA	--	--	--	--	--	**5.6**	**7.5**	--	**3.1**
2-Ethylhexylacetate	NA	NA	NA					**3.4**				
1-Butanol	NA	NA	60,000	--	--	--	**17**	**6.1**	--	**4**	--	--
2-Ethylhexylacetate	NA	NA	NA	--	--	--	--	--	**6.3**	--	--	--
2-Ethyl-1-hexanol	NA	NA	NA	--	--	--	**5.6**	**14**	--	--	--	--
n-Decanal	NA	NA	NA	--	--	--	**5.5**	**8.1**	**9.2**	**7.7**	**4.7**	**5.4**
C6-C10 Alkene (13.0 RT)	NA	NA	NA	--	--	**4.6**	--	--	--	--	--	--
C13H28 Branched Alkane	NA	NA	NA	--	--	--	--	--	--	**3.1**	--	--
Unidentified Siloxane	NA	NA	NA	--	--	--	--	--	**5.6**	**13**	--	**4.7**
Unidentified Compound	NA	NA	NA	--	--	--	--	**3.3**	--	**2.7**	**4.1**	--
Reduced Sulfur Compound – ASTM D5504												
Dimethyl disulfide	NA	NA	NA	--	--	--	**26**	--	--	--	--	--
Dimethyl sulfide	NA	NA	NA	--	--	**33**	**37**	--	--	--	--	--
Polynuclear Aromatic Hydrocarbons - Method: EPA TO13a Modified												
Acenaphthene	NA	NA	NA	**0.0076**	NS	NS	**0.013**	NS	**0.010**	NS	NS	NS
Fluoranthene	NA	NA	NA	**0.004**	NS	NS	**0.005**	NS	**0.0042**	NS	NS	NS
Fluorene	NA	NA	NA	**0.0089**	NS	NS	**0.014**	NS	**0.013**	NS	NS	NS

Table D3: Comprehensive Sampling Events 2012 through 2014 - Bridgeton Landfill
Onsite Comparison of Detected Compounds
Concentration in Ambient Air – All Units µg/m³

Analyte	Screening Levels			Upwind Perimeter Sample Locations								
	Ind. RSL [1]	OSHA PELs [2]	ACGIH TLVs [3]	2nd Tier	Amphi-Theater	East Face	Amphi-Theater	2nd Tier	Flare Station	South Quarry	Neck	North Quarry
				2012			2013		2014			
				8/16	8/16	8/17	4/16	5/8	7/29	7/29	7/30	7/30
Naphthalene	0.36	50,000	50,000	**0.089**	NS	NS	**0.13**	NS	**0.035**	NS	NS	NS
Phenanthrene	NA	NA	NA	**0.023**	NS	NS	**0.024**	NS	**0.032**	NS	NS	NS
Pyrene	NA	NA	NA	**0.002**	NS	NS	**0.003**	NS	**0.0019**	NS	NS	NS
Polychlorinated Dibenzo-p-Dioxins, Dibenzofurans – EPA Method TO-9A												
2,3,7,8-TCDD	3.20E-07	NA	NA	**1.49E-08**	NS	NS	**6.31E-09**	NS	**3.12E-10**	NS	NS	NS

1. United States Environmental Protection Agency Regional Screening Levels for Industrial Air
2. Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit.
3. American Conference of Governmental Industrial Hygienists – Threshold Limit Value.
4. "NA" = Not Available
5. Bold indicates that compound concentration was detected above laboratory reporting limits.
6. "--": Compound concentration not detected above Method Reporting Limit (MRL).
7. Shading indicates that the detected concentration exceeds the United States Environmental Protection Agency Regional Screening Level for ***Industrial Air.***
8. "NS" = Not Sampled
9. Tentatively Identified compounds – under EPA Method TO-15 + TICs, the reported concentrations are estimated.

Table D4 - Comprehensive Sampling Events 2012 through 2014 - Bridgeton Landfill
Source Gas Comparison Table
Detected Compound Concentrations in Source Gas – All units µg/m³

Analyte	Sample Locations									
	Amphi-theater	Second Tier	East Face	Amphi-theater	Second Tier	East Face	South Quarry	Neck	North Quarry	Flare Inlet
	2012			2013			2014			
Hydrochloric Acid – NIOSH 7903										
Hydrogen Chloride	NS[1]	NS	NS	1,100	1,100	1,600	NS	NS	NS	NS
Aldehydes/Carbonyl Compounds – Method: EPA TO-11a										
2,5-Dimethylbenzaldehyde	720	--	960	--	--	--	110	--	--	--
Acetaldehyde	1,200	--	350	3,400	120	--	1,600	64	49	3,000
Benzaldehyde	2,300	140	990	2,100	--	--	270	--	--	3,100
Butyraldehyde	3,000	--	1,500	6,000	1,100	560	10,000	--	--	6,900
Formaldehyde	--	--	--	--	--	--	--	--	--	78
Isovaleraldehyde	--	120	--	340	--	--	--	--	--	--
m,p-Tolualdehyde	--	--	--	5,500	21,000	--	--	--	--	4,000
n-Hexaldehyde	--	--	--	1,700	--	840	450	--	--	--
o-Tolualdehyde	--	340	92	--	--	--	--	--	--	--
Propionaldehyde	660	--	140	1,700	180	280	1,300	--	--	1,700
Valeraldehyde	--	1,200	--	--	--	--	--	--	--	--
Hydrogen Cyanide										
Hydrogen Cyanide	--	--	--	--	--	--	--	--	--	--
Amine Compounds										
	AQL 101			NIOSH 2010m			AQL 101			
Diisopropylamine	--	--	--	--	5,700	--	--	--	--	--
Isopropylamine	--	--	--	2,400	--	--	--	--	--	--
sec-Butylamine	--	--	--	2,700	6,200	2,100	--	--	--	--
Trimethylamine	--	--	--	--	1,700	--	--	--	--	--
Mercury – Method: NIOSH 6009										
Mercury	--	--	--	--	--	--	--	--	--	70
Ammonia – Method: OSHA ID 188										
Ammonia	--	--	--	--	--	--	--	--	--	--
Carboxylic Acid Compounds – Method: CAS AQL 102										
2-Ethylhexanoic Acid	4,800	--	1,800	1,300	480	1,000	260	--	--	18,000
2-Methylbutanoic Acid	--	--	--	17,000	51,000	19,000	12,000	--	--	25,000
2-Methylpentanoic Acid	--	--	--	1,900	--	950	1,700	--	--	4,700
2-Methylpropanoic Acid (Isobutyric)	--	--	--	46,000	170,000	73,000	40,000	--	--	88,000
2-Methylpropionic Acid	12,000	--	13,000	--	--	--	--	--	--	--
3-Methylbutanoic Acid (Isovaleric)	11,000	--	9,000	28,000	89,000	34,000	20,000	--	--	41,000
3-Methylpentanoic Acid	610	--	--	350	--	--	340	--	--	2,900

Table D4 - Comprehensive Sampling Events 2012 through 2014 - Bridgeton Landfill
Source Gas Comparison Table
Detected Compound Concentrations in Source Gas – All units µg/m³

Analyte	Sample Locations									
	Amphi-theater	Second Tier	East Face	Amphi-theater	Second Tier	East Face	South Quarry	Neck	North Quarry	Flare Inlet
	2012			2013			2014			
4-Methylpentanoic Acid (Isocaproic)	1,100	--	--	2,000	--	--	800	--	--	6,800
Acetic Acid	11,000	--	--	94,000	99,000	53,000	35,000	--	--	100,000
Benzoic Acid	--	--	--	--	--	--	150	--	--	1,200
Butanoic Acid (Butyric)	56,000	--	41,000	290,000	590,000	200,000	200,000	--	--	750,000
Heptanoic Acid (Enanthoic)	2,900	--	--	3,600	290	320	--	--	--	25,000
Hexanoic Acid (Caproic)	53,000	--	1,200	110,000	15,000	13,000	10,000	--	--	440,000
Nonanoic Acid (Pelargonic)	--	--	--	--	--	--	--	--	--	1,000
Octanoic Acid (Caprylic)	690	--	--	320	--	--	--	--	--	15,000
Pentanoic Acid (Valeric)	23,000	--	3,800	84,000	58,000	24,000	28,000	--	--	220,000
Propionic Acid (Propanoic)	13,000	--	9,200	100,000	140,000	89,000	41,000	--	--	150,000
Sulfur Dioxide – Method: OSHA ID 200										
Sulfur Dioxide	NS	NS	NS	2,600	9,100	1,600	NS	NS	NS	NS
Volatile Organic Compounds (VOCs) – Method: EPA TO15 – Standard Analyte List										
1,2,4-Trimethylbenzene	19,000	--	8,300	5,100	--	3,800	75,000	380	860	95,000
1,2-Dichloro-1,1,2,2-tetrafluoroethane	--	--	--	--	--	--	--	--	43J	--
1,2-Dichloroethane	--	--	--	--	--	--	4,200J	--	--	--
1,3,5-Trimethylbenzene	6,700	--	3,500	--	--	--	29,000	810	970	29,000
1,3-Butadiene	590	--	--	3,800	--	4,000	8,100J	210J	150	6,900
1,4-Dichlorobenzene	10,000	--	3,200	--	--	--	21,000	2,100	180	68,000
1,4-Dioxane	4,100	--	--	5,400	--	--	--	--	--	27,000
2-Butanone (MEK)	340,000	--	89,000	440,000	1.3E+06	91,000	2.3E+06	--	--	1.4E+06
2-Hexanone	11,000	--	3,100	9,500	17,000	--	48,000	--	--	38,000
2-Propanol (Isopropyl Alcohol)	60,000	--	--	110,000	480,000	--	1.6E+06	--	--	590,000
4-Ethyltoluene	4,900	--	2,900	--	--	--	31,000	300	340	26,000
4-Methyl-2-pentanone	30,000	--	16,000	15,000	140,000	5,100	160,000	--	--	72,000
Acetone	500,000	--	72,000	600,000	980,000	88,000	2.6E+06	940J	--	2.0E+06
Acetonitrile	--	--	--	--	--	--	--	120J	190	--
alpha-Pinene	12,000	53,000	16,000	6,400	180,000	5,700	380,000	2,800	570	100,000
Benzene	120,000	620,000	390,000	370,000	2.0E+06	360,000	1.5E+06	40,000	9,200	880,000
Carbon Disulfide	--	--	--	--	--	--	--	--	--	2,000
Chlorobenzene	3,000	--	--	--	--	--	7,700J	1,100	2,700	6,200
Chloroethane	--	5600	--	--	--	--	6,500J	--	--	4,900
Chloromethane	--	--	2,700	7,100	--	8,200	20,000	--	--	16,000
cis-1,2-Dichloroethene	--	--	--	--	--	--	--	--	53	--
Cumene	6,000	5,200	4,300	--	19,000	--	43,000	750	730	29,000

Table D4 - Comprehensive Sampling Events 2012 through 2014 - Bridgeton Landfill
Source Gas Comparison Table
Detected Compound Concentrations in Source Gas – All units µg/m³

Analyte	Sample Locations									
	Amphi-theater	Second Tier	East Face	Amphi-theater	Second Tier	East Face	South Quarry	Neck	North Quarry	Flare Inlet
	2012			2013			2014			
Cyclohexane	1,100	--	--	--	--	--	--	560	410	--
Dichlorodifluoromethane (CFC 12)	--	--	--	--	--	--	--	110	92	--
d-Limonene	22,000	22,000	21,000	4,000	46,000	6,700	300,000	580	--	200,000
Ethanol	99,000	--	--	290,000	--	--	510,000	--	--	1.8E+06
Ethyl Acetate	4,800	--	--	29,000	120,000	--	250,000	--	--	280,000
Ethylbenzene	27,000	32,000	22,000	18,000	160,000	16,000	200,000	2,400	1,700	120,000
m,p-Xylenes	57,000	37,000	40,000	31,000	260,000	21,000	390,000	5,100	4,000	220,000
Methyl tert-Butyl Ether	--	--	--	--	--	--	--	210	110	1,800J
Naphthalene	510	--	--	--	--	--	--	--	--	2,900J
n-Butyl Acetate	12,000	--	--	25,000	54,000	--	200,000	--	--	230,000
n-Heptane	3,200	8,000	3,300	5,300	13,000	6,000	--	1,100	850	--
n-Hexane	2,100	--	2,900	4,200	--	7,600	11,000	1,600	930	6,400
n-Nonane	16,000	17,000	9,000	8,600	76,000	5,900	110,000	850	820	60,000
n-Octane	9,500	17,000	13,000	12,000	59,000	10,000	58,000	2,500	1,400	36,000
n-Propylbenzene	3,800	--	2,200	--	--	--	24,000	140J	290	19,000
o-Xylene	20,000	12,000	16,000	9,700	72,000	9,900	150,000	2,400	1,500	88,000
Propene	27,000	95,000	37,000	160,000	200,000	160,000	140,000	16,000	12,000	170,000
Styrene	1,200	--	--	--	--	--	13,000	--	--	8,600
Tetrachloroethene	--	--	--	--	--	--	2,900J	--	--	--
Tetrahydrofuran (THF)	170,000	39,000	70,000	190,000	1.4E+06	92,000	2.8E+06	1,700	540	920,000
Toluene	43,000	100,000	48,000	53,000	420,000	40,000	270,000	3,800	1,000	200,000
Trichlorotrifluoroethane	--	--	--	--	--	--	--	72J	43J	--
Vinyl Acetate	--	--	--	--	--	--	--	--	--	7,600J
Vinyl Chloride	--	--	--	--	--	--	--	--	130	--
Volatile Organic Compounds (VOCs) – Method: EPA TO15 – Tentatively Identified Compounds [3]										
1-Butanol	73,000	--	--	140,000	--	--	--	--	--	--
1-Propanol	--	--	--	--	--	--	--	--	--	3.2E+06
2-Butanol	--	--	--	--	440,000	--	14E+06	--	--	4.7E+06
2-Ethyl cyclopentanone	41,000	--	--	--	--	--	--	--	--	--
2-Ethylfuran	--	--	--	--	--	--	2.1E+06	--	--	--
2-Methylcyclopentanone	51,000	--	--	--	--	--	--	--	--	3.2E+06
2-Methylfuran	68,000	380,000	240,000	--	--	--	13E+06	--	--	7.2E+06
2-Methyltetrahydrofuran	--	--	--	--	--	--	2.2E+06	--	--	--
2-Pentanone	59,000	--	--	--	150,000	--	3.1E+06	--	--	--
3-Ethyltoluene	--	--	--	--	--	--	--	--	2,600	--

Table D4 - Comprehensive Sampling Events 2012 through 2014 - Bridgeton Landfill
Source Gas Comparison Table
Detected Compound Concentrations in Source Gas – All units µg/m³

Analyte	Sample Locations									
	Amphi-theater	Second Tier	East Face	Amphi-theater	Second Tier	East Face	South Quarry	Neck	North Quarry	Flare Inlet
	2012			2013			2014			
3-Methyl-3-heptene	--	27,000	29,000	--	--	--	--	--	--	--
3-Methyl-Methylbutyrate	--	--	--	--	--	--	2.1E+06	--	--	--
Butyl Butanoate	--	--	--	--	--	--	--	--	--	2.8E+06
C10-C12 Alkene (14.58 RT)	--	92,000	71,000	--	--	--	--	--	--	--
C10-C12 Alkene (14.63 RT)	--	110,000	93,000	--	--	--	--	--	--	--
C11H24 Branched Alkane	--	--	--	--	--	--	--	--	3,100	--
C12H26 Branched Alkane	--	--	--	--	--	--	--	4,800	--	--
C12H26 Branched Alkane	--	--	--	--	--	--	--	--	2,300	--
C4-C8 Alkene (5.51 RT)	--	83,000	33,000	--	--	--	--	--	--	--
C4-C8 Alkene (5.80 RT)	--	90,000	34,000	--	--	--	--	--	--	--
C4H8 Alkene	--	--	--	--	--	--	--	14,000	7,600	--
C4H8 Alkene	--	--	--	--	--	--	--	9,800	5,700	--
C4H8 Alkene (4.92)	--	--	--	110,000	200,000	--	--	--	--	--
C4H8 Alkene (5.29)	--	--	--	--	--	98,000	--	--	--	--
C4H8 Alkene (5.58)	--	--	--	100,000	140,000	84,000	--	--	--	--
C5H10 Compound	--	--	--	--	--	--	--	5,200	--	--
C5H10 Compound	--	--	--	--	--	70,000	--	6,600	4,200	--
C6-C10 Alkene (13.0 RT)	--	110,000	74,000	--	--	--	--	--	--	--
C7H12 Compound	--	--	--	--	--	--	--	--	6,300	--
C7H12 Compound	--	--	--	--	--	--	--	15,000	5,500	--
C7H12 Compound	--	--	--	--	--	--	--	--	2,300	--
C7H12 Compound (13.71)	--	--	--	--	160,000	98,000	--	--	--	--
C7H12 Compound (13.75)	--	--	--	--	220,000	120,000	--	--	--	--
C8-C14 Alkene (16.89 RT)	--	--	31,000	--	--	--	--	--	--	--
C8-C14 Alkene (16.96 RT)	--	22,000	--	--	--	--	--	--	--	--
C8H14 Compound	--	--	--	--	--	--	--	5,400	--	--
C8H16 Compound	--	--	--	--	--	--	--	6,500	--	--
C8H16 Compound	--	--	--	--	--	--	--	6,600	--	--
C8H16 Compound	--	--	--	--	--	--	--	6,200	--	--
Camphene	--	--	--	--	--	--	--	7,000	--	--
Cyclopentene	--	41,000	33,000	--	--	90,000	--	6,400	3,700	--
Dimethyl disulfide	70,000	--	42,000	100,000	--	100,000	2.2E+06	--	--	3.1E+06
Dimethyl ether	--	120,000	--	130,000	210,000	130,000	--	--	--	--
Dimethyl Sulfide	68,000	83,000	280,000	710,000	2.0E+06	1.3E+06	1.7E+07	--	--	2.0E+07
Ethyl Butanoate	--	--	--	--	--	--	--	--	--	2.2E+06

Table D4 - Comprehensive Sampling Events 2012 through 2014 - Bridgeton Landfill
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Analyte	Sample Locations									
	Amphi-theater	Second Tier	East Face	Amphi-theater	Second Tier	East Face	South Quarry	Neck	North Quarry	Flare Inlet
	2012			2013			2014			
Ethyl butyrate	--	--	--	--	--	--	2.0E+06	--	--	--
Furan	46,000	120,000	300,000	340,000	1.4E+06	540,000	--	--	--	--
Isobutane	--	--	--	--	--	--	--	--	5,100	--
Isobutene	140,000	--	85,000	140,000	--	230,000	--	24,000	15,000	--
Isopentene	--	42,000	--	--	--	--	--	--	--	--
Methyl 3-Methylbutanoate	--	--	--	--	--	--	--	--	--	2.4E+06
Methyl Acetate	44,000	--	--	400,000	280,000	--	6.8E+06	--	--	1.0E+07
Methyl Acetate	--	--	--	--	--	--	--	--	--	--
Methyl Butanoate	--	--	--	--	--	--	--	--	--	1.5E=07
Methyl butyrate	110,000	--	--	370,000	540,000	--	1.4E+07	--	--	--
Methyl Hexanoate	43,000	--	--	--	--	--	--	--	--	4.2E+06
Methyl isobutyrate	--	--	--	61,000	170,000	--	2.9E+06	--	--	--
Methyl Pentanoate	--	--	--	--	--	--	--	--	--	2.3E+06
Methyl Propionate	45,000	--	--	220,000	230,000	57,000	8.5E+06	--	--	8.0E+06
Methylcyclopentene Isomer	--	--	--	58,000	150,000	150,000	--	--	5,800	--
Methylfuran Isomer	--	--	--	190,000	890,000	400,000	--	--	--	--
Methylvalerate	--	--	--	55,000	--	190,000	--	--	--	--
n-Butane	--	41,000	35,000	--	--	--	--	15,000	8,000	--
n-Decane	40,000	--	--	--	--	--	2.3E+06	--	--	--
n-Undecane	46,000	--	--	--	--	--	--	--	--	--
p-Isopropyltoluene	120,000	--	42,000	--	--	--	3.6E+06	--	--	5.5E+06
Propane	--	--	--	--	--	--	--	6,000	4,000	--
Reduced Sulfur Compound – ASTM D5504										
2,5-Dimethylthiophene	--	--	800	580	2,100	830	--	--	--	4,100
2-Ethylthiophene	--	--	840	290	2,500	760	--	--	--	2,600
3-Methylthiophene	840	330	900	1,600	8,400	3,300	3,800	340	120	4,600
Carbon Disulfide	190	180	2,300	170	250	38	1,200	28	25	1,600
Carbonyl Sulfide	--	150	150	--	190	--	1,300	--	--	1,100
Dimethyl Disulfide	4,100	20,000	54,000	82,000	26,000	130,000	110,000	330	1,100	210,000
Dimethyl Sulfide	240,000	600,000	570,000	740,000	1.4E+06	920,000	1.1E+06	2,100	4,900	2.4E+06
Ethyl Mercaptan	460	130	17	1,600	3,200	370	--	--	--	2,200
Ethyl Methyl Sulfide	12,000	4,000	5,100	8,900	35,000	12,000	9,400	44	52	18,000
Hydrogen Sulfide	--	27	--	4,500	38,000	1,600	--	--	--	320
Isobutyl Mercaptan	--	420	--	--	--	--	--	--	--	--
Isopropyl Mercaptan	210	170	--	880	2,700	150	--	--	--	--

Table D4 - Comprehensive Sampling Events 2012 through 2014 - Bridgeton Landfill
Source Gas Comparison Table
Detected Compound Concentrations in Source Gas – All units µg/m³

Analyte	Sample Locations									
	Amphi-theater	Second Tier	East Face	Amphi-theater	Second Tier	East Face	South Quarry	Neck	North Quarry	Flare Inlet
	2012			2013			2014			
Methyl Mercaptan	490	4,000	260	25,000	60,000	54,000	2,400	--	--	210,000
n-Butyl Mercaptan	2,100	710	1,400	2,600	13,000	3,400	2,800	--	--	5,200
n-Propyl Mercaptan	--	--	--	480	--	--	--	--	--	--
tert-Butyl Mercaptan	380	29	--	220	1,200	--	--	--	--	--
Tetrahydrothiophene	--	210	380	3,400	7,900	4,700	5,400	--	180	8,600
Thiophene	11,000	5,000	19,000	14,000	56,000	31,000	15,000	1,700	1,200	30,000
Polynuclear Aromatic Hydrocarbons - Method: EPA TO13a Modified										
Acenaphthene	4.5	0.23	0.22	35	0.18	5.4	0.95	0.074	--	NS
Anthracene	0.19	0.022	0.041	--	--	--	--	--	--	NS
Fluoranthene	--	0.019	0.026	--	--	--	--	--	--	NS
Fluorene	3.4	0.2	0.18	12	0.051	1.3	0.16	--	--	NS
Naphthalene	35	7.9	13	220	30	120	300	5.1	--	NS
Phenanthrene	0.21	0.44	0.19	1	0.029	--	--	--	--	NS
Pyrene	--	0.021	0.016	--	--	--	--	--	--	NS
Polychlorinated Dibenzo-p-Dioxins, Dibenzofurans – EPA Method TO-9A										
2,3,7,8-TCDD (TCDD TEQ)	1.52E-08	1.03E-08	3.00E-08	8.68E-08	1.49E-07	1.05E-07	3.36E-11	--	5.13E-11	NS

1. "NS" = Not Sampled
2. "--": Compound concentration not detected above Method Reporting Limit (MRL).
3. Tentatively Identified compounds – under EPA Method TO-15 + TICs, the reported concentrations are estimated.