Pattonville High School Ambient Air Sampling Prior To and During RCP Removal at Bridgeton Landfill May 2013: Summary of Findings

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Stantec

Sign-Off Sheet

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Executive Summary

The administration of the Pattonville High School requested that air sampling be conducted to determine if excavation into the Bridgeton Landfill to remove remnants of reinforced concrete pipe (RCP) could be impacting the air quality on the high school campus. Activities to remove the RCP commenced the week of May 20, 2013 which was also the last week of school. After reaching agreement with the Pattonville School administration on schedule, Bridgeton Landfill, LLC authorized Stantec Consulting Services Inc. ("Stantec") to collect samples of ambient air on the campus between Tuesday, May 21 and Thursday, May 23, 2013.

The Pattonville High School is located at 2497 Creve Coeur Mill Road, Maryland Heights, Missouri (the "High School") and is approximately 1.5 miles to the southwest of the Bridgeton Landfill, which is located at 13570 St. Charles Rock Road, Bridgeton, Missouri. Ambient air samples were collected from various locations: 1) the high school campus; 2) a location between the RCP removal and the High School (the Materialogic commercial property adjacent to the Metropolitan Sewer District lift station located along Old St. Charles Rock Road); and 3) a background location. Samples were analyzed for the constituents of potential concern that have been analyzed during other ambient air sampling events at Bridgeton Landfill and surrounding areas. These include (Table 1):

- Ammonia: OSHA ID-188
- Reduced Sulfur Compounds: ASTM D5504
- Volatile Organic Compounds and Tentatively Identified Compounds: EPA TO-15
- Aldehydes (Carbonyl Compounds): EPA TO-11A
- Amines (Aliphatic): AQL 101
- Carboxylic Acids: AQL 102
- Polycyclic Aromatic Hydrocarbons (PAHs): EPA TO-13A
- Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans (Dioxins/Dibenzofurans): EPA TO-9

Table 2 presents the concentration of compounds detected by location. Detected concentrations were compared to the conservative US Environmental Protection Agency ("US EPA") Regional Screening Levels ("RSLs") for chronic residential exposure over a lifetime. The concentrations of all constituents found in air samples from the High School were similar to the results from the background location and from the Materialogic property. The results include:

- Ammonia was found only in the background location (and may be an anomalous result).

- No reduced sulfur compounds (including hydrogen sulfide), amines, or carboxylic acids were detected in any sample.

- Concentrations of dioxin found at both the school and the Materialogic property were approximately ten times lower than the US EPA residential RSL.

- Low concentrations of a number of common volatile organic compounds (VOCs), aldehydes, polycyclic aromatic hydrocarbons (PAHs) and dioxins were found in the ambient air samples from the High School and the locations near Bridgeton Landfill.

With the exception of formaldehyde and acetaldehyde (and ammonia in the background location), the levels of all detected constituents were lower than the conservative residential RSLs. The RSLs for formaldehyde and acetaldehyde, two common aldehydes, are just above the laboratory detection limits. Consequently almost any detection of formaldehyde and acetaldehyde will exceed the RSLs for residential exposure. In this case, the US EPA School Air Toxics Initiative Individual Screening Levels (ISLs) are informative and applicable. None of the formaldehyde or acetaldehyde concentrations approached the School ISLs of 50 µg/m^3 and 90 µg/m^3, respectively. Formaldehyde and acetaldehyde are associated with a number of sources, including automotive and diesel exhaust emissions, and low levels are ubiquitous in ambient air.

The results of the sampling support the conclusion that there were no measurable effects on the air quality at the Pattonville High School during the last week of classes that could be attributed to the excavation to remove the RCP from the Bridgeton Landfill.

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1.0 Introduction

The administration of the Pattonville High School (the "High School") requested that air sampling be conducted to determine if excavation into Bridgeton Landfill to remove remnants of reinforced concrete pipe ("RCP") could be impacting the air quality at the High School.. The High School is located at 2497 Creve Coeur Mill Road, Maryland Heights, Missouri approximately one and a half (1.5) miles to the southwest of the Bridgeton Landfill which is located at 13570 St. Charles Rock Road, Bridgeton, Missouri (Figure 1). The High School is situated immediately adjacent to a large operating landfill and recycling facility (Champ Sanitary Landfill) which supplies natural gas to the school.

Bridgeton Landfill, LLC authorized Stantec Consulting Services Inc. ("Stantec") to conduct air monitoring on the school campus comparable to that being conducted on Bridgeton Landfill itself and at community locations in close proximity to Bridgeton Landfill. The schedule for collecting samples and the chemicals to be analyzed were agreed upon between Mr. Ron Orr, CFO of the Pattonville School District and Stantec.

Excavation to remove the RCP commenced on Wednesday May 20, 2013, during the last week of classes at the school. Stantec collected air samples during the three day period of Tuesday, May 21 through Thursday, May 23, 2013. Since the RCP excavation activities began on Wednesday, May 22, 2013, the data collected on Tuesday, May 21, 2013 is considered to represent conditions at the school in the absence of any potential airborne releases from excavation activities at Bridgeton Landfill. Samples for dioxins/dibenzofurans were collected from approximately 11:00 a.m. Wednesday May 22 to 11:00 a.m. Thursday May 23 and represent conditions during the time when the students were on campus and excavation activities were occurring at Bridgeton Landfill.

2.0 Constituents of Interest in Air

Sample collection protocols and laboratory analytical methods were consistent with US Environmental Protection Agency ("US EPA"), Occupational Safety and Health Administration ("OSHA"), American Society for Testing and Materials ("ASTM") and methods developed by Columbia Analytical Laboratories ("CAL/ALS") specifically for odor investigations. A summary of all analytical methods are presented in Table 1. As requested by the Pattonville School administration and agreed to by Bridgeton Landfill, LLC, samples of ambient air were analyzed for the following individual constituents and analytical groupings:

- Aldehydes (Carbonyl Compounds): EPA TO-11A
- Amines (Aliphatic): AQL 101
- Ammonia: OSHA ID-188F
- Carboxylic Acids: AQL 102
- Reduced Sulfur Compounds: ASTM D5504
- Volatile Organic Compounds (VOCs) and Tentatively Identified Compounds (TICs): EPA TO-15
- Polycyclic Aromatic Hydrocarbons (PAHs): EPA TO-13A
- Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans (Dioxins/Dibenzofurans): EPA TO-9

3.0 Sampling Methodology

3.1 COLLECTION OF AMBIENT AIR SAMPLES

With the exception of samples for quantification of PAHs and Dioxins/Dibenzofurans ("dioxins"), relatively small volumes of ambient air were required. Gilian Gilair 3™ personal sampling pumps ("PSPs") equipped with low flow controllers were deployed to collect samples for aldehydes, amines, ammonia and carboxylic acids. Samples for the quantification of volatile organic compounds and reduced sulfur compounds were collected using silica-lined SUMMA™ canisters equipped with 4 hour flow control regulators. All ambient air samples were collected at "breathing zone" height by mounting the PSPs and SUMMA™ canisters on a tower constructed of plastic milk crates so that the sample collection intake ports were approximately 3 to 6 feet above the ground surface. Air samples for all constituents except dioxins and PAHs were collected over a 4-hour period during the school day on Tuesday, May 21 and then again on Thursday, May 23, 2013. Samples for quantification of PAHs and dioxins require large quantities of air to be drawn through special Polyurethane Foam ("PUF") filters using Tisch™ high-volume sampling pumps over (generally) a 24-hour period. The high-volume samplers required an uninterrupted AC power supply to run the pumps. Electrical power was accessible for all of the sample locations. Samples for PAHs and dioxins were collected over a 24 hour period, beginning on Wednesday, May 22 and ending on Thursday, May 23, 2013. Sample locations are described in section 4.0.

3.2 QUALITY ASSURANCE PROCEDURES FOR SAMPLE COLLECTION

Sample 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; elimination of potential cross contamination and elimination of collection of interfering compounds or materials.

All sampling pumps were pre-calibrated using a BIOS Defender Model 510-M revC1 (*BIOS International, Mesa Labs, Butler, New Jersey*) mechanical/digital calibration device traceable to the National Bureau of Standards (NIST) with a laboratory supplied calibration tube for each type of sample. After sample collection, and prior to collecting the next set of samples, the pumps were post-calibrated using the same calibration device and the laboratory supplied calibration tube. Where discrepancies appeared in pump flow rates between pre- and post-calibration, the change was assumed to be linear over time and the sample volume provided to the analytical lab and used in determining concentration was the arithmetic average of the pre- and post-calibration values (consistent with industry standard methods).

All of the Tisch ® high volume PUF air samplers were pre-calibrated, utilizing manufacturer's guidelines (*Tisch Environmental, Inc. Operations Manual TE-PUF Poly-Urethane Foam High Volume Air Sampler*) prior to sample collection. Calibration of the PUF samplers was performed without a foam plug or filter paper. The glass cartridge was in the module to prevent leaks and ensure a good seal. A TE-5040A Calibrator (orifice) was placed on top of the 4" filter holder and the manometer was connected to the pressure top on the calibrator. The unit was

then turned on and 5 manometer readings were recorded with the magnahelic set at 70, 60, 50, 40 and 30 inches of water, respectively. The manometer readings were converted to standard air flows (cubic meters per inch) using the following equation:

Qstd = 1/m[Sqrt((H20)(Pa/760)(298/Ta))-b]

where:
Qstd = actual flow rate as indicated by the calibrator orifice, m3/min
H20 = orifice manometer reading during calibration, in. H20
Ta = ambient temperature during calibration, K (K = 273 + °C)
298 = standard temperature, a constant that never changes, K
Pa = ambient barometric pressure during calibration, mm Hg
760 = standard barometric pressure, a constant that never changes, mm Hg
m = *Qstandard slope of orifice* calibration relationship
b = *Qstandard intercept of orifice* calibration relationship.

The Magnehelic Gage readings was then corrected for current meteorological conditions using the following equation:

FLOW (corrected) = Sqrt((magn)(Pa/760)(298/Ta))

where:
FLOW (corrected) = Magnehelic Gage readings corrected to current Ta and Pa
magn = Magnehelic Gage readings during calibration
Pa = ambient barometric pressure during calibration, mm Hg
760 = standard barometric pressure, a constant, mm Hg
Ta = ambient temperature during calibration, K (K = 273 + °C)
298 = standard temperature, a constant, K

A calibration curve was created for each PUF sampler by graphing the Qstd and corrected flow on an “xy” coordinate system. Using least squares regression, a linear equation was created, yielding a slope, intercept and correlation coefficient. The calibration curve and resulting linear equations were used to calculate flow rates for the sampling event. The correlation coefficient is applied to determine the linearity of the calibration curve. If the curve is not linear (correlation coefficient approximately 0.99) the system is checked for leaks.

Polyurethane filter (PUF) samples for PAHs and dioxins are received from the lab in individual glass sample containers, wrapped in aluminum foil, and shipped on ice-packs in coolers. When ready for sampling, the aluminum outer wrap is removed and the entire glass sample vessel is placed in the high-volume sampler sampling head. Following sampling the process is reversed and the glass sampling vessel is removed and rewrapped in aluminum foil. The PUF is never touched by field personnel’s hands.

Samples are shipped back to the analytical laboratory in the same way they were received, with individual sample numbers written on the exterior of the aluminum foil wrapper, shipped on ice packs in a cooler. Appropriate sample transmittals and chains-of-custody are prepared and

returned with the samples. Other controls, as outlined above for sorbent tube and SUMMA canister samples, apply also to PAH and dioxin samples.

Contemporary sampling media provides little opportunity for cross-contamination or external contamination. Media does not off-gas materials that could be collected in another sample and interfere with accurate analysis or reporting. Similarly, media is well protected by its manufactured configuration at all times so that external dirt, debris, or other materials cannot be readily introduced. All media were virgin materials. SUMMA™ canisters were cleaned and prepared by the analytical laboratory in a manner consistent and appropriate for re-use. After sampling, samples were capped and air-tightly secured, labeled with a unique sample identification code (“Sample ID”), which includes the sample date and a sample location identifier, and placed in a plastic sealable bag which was also labeled with the sample location identifier. In order to reduce volatilization or de-adsorption from the media, sets of samples in sealable bags were stored in a secured refrigerator located at Bridgeton Landfill until shipped to the laboratory for analysis. All samples 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; copies of the chain-of-custody are included in the laboratory analytical report.

4.0 Sampling Locations

Figure 1 shows an aerial view of Bridgeton Landfill, adjacent properties and the Pattonville High School. Locations where ambient samples were collected are indicated. The locations were located using the GPS coordinates recorded at the time of sample collection. All sample locations were selected and mutually agreed upon by Bridgeton Landfill, LLC, Stantec and the school administration on the days that the samples were collected to ensure sample locations were representative based upon conditions on that day.

4.1 DESCRIPTION OF SAMPLE LOCATIONS

The three ambient air sample locations were designated as “the Grassy Knoll”, the “MSD Lift Station” and “High School”. Sampling locations were selected in an attempt to discriminate between the potential sources of compounds detected in ambient air given the numerous potential sources for many of the compounds evaluated. Potential sources include, but are not limited to: Bridgeton Landfill, Champ Sanitary Landfill, Weber Quarry, industrial sources, automobile exhaust as well as compounds routinely identified in urban air.

The High School and MSD Lift Station lie along a conceptual vector which runs from the northeast to southwest, transecting Bridgeton Landfill (northeast), the MSD lift station adjacent to the Materialogic parking lot on Old St. Charles Rock Road to the immediate southwest of the Bridgeton Landfill where activities are taking place, the Pattonville High School and the Champ Sanitary Landfill on the southwest end of the vector. The Grassy Knoll location is on the far northwest portion of the Bridgeton Landfill property and is frequently (but not always) upwind of the areas on the east side of the Bridgeton Landfill where excavation activities were taking place. The MSD Lift Station is adjacent to the Materialogic parking lot on Old St. Charles Rock Road just across from the Bridgeton Landfill fence line and southwest of excavation activities. The High School location was a grassy area situated on the northwest corner of the school property. The Pattonville High School is approximately 1.5 miles southwest of Bridgeton Landfill.

During sampling on Tuesday, May 21, 2013, the wind was steadily blowing from the south /south southwest (5 – 15 mph), which made the Grassy Knoll location downwind and the MSD Lift Station and High School upwind relative to Bridgeton Landfill. The odor was present at the Grassy Knoll (downwind of the active areas of Bridgeton Landfill) at the time sampling was initiated. Odors were not observed at the MSD Lift Station which was upwind on that day. However, odors were observed at the High School, throughout the May 21, 2013 sampling event, even though the High School was 1.5 miles upwind of Bridgeton Landfilland this event occurred in advance of excavation activities. A detailed assessment of sources of odor at the High School other than the Bridgeton Landfill was beyond the scope of this analysis.

At the beginning of sampling on Wednesday, May 22, 2013, the wind was blowing from the south. Winds switched to a westerly direction overnight and continued to blow out of the west until sampling ceased on Thursday, May 23, 2013. On these dates, all locations were cross-wind relative to Bridgeton Landfill. Odors were not observed at any sampling locations on these dates.

5.0 Analytical Results

5.1 RESULTS OF AMBIENT AIR SAMPLES FROM THE HIGH SCHOOL AND COMPARISON LOCATIONS

As described in Section 4.0, (shown on Figure 1), ambient air samples were collected from three locations along a vector, running from the northeast to southwest, which transects Bridgeton Landfill, Champ Sanitary Landfill and the High School. Samples collected on Tuesday, May 21, 2013 were collected prior to RCP abandonment activities and reflect ambient air conditions prior to excavation. The samples collected on Wednesday, May 22 and Thursday, May 23, 2013 were collected during active RCP excavation and reflect ambient conditions during excavation activities. Table 2 presents a summary of the analytical results for all sampling locations. Laboratory analytical reports are provided in Appendix A.

5.1.1 Analytes Not Detected in Any Sample

The following analytes were not detected in any samples of air from any sampling locations:

- Amine compounds;
- Carboxylic acid compounds;
- Reduced sulfur compounds;
- Benzo(a)pyrene and the related carcinogenic PAHs associated with incomplete combustion of organic matter, though other PAHs were identified.

5.1.2 Ammonia

Ammonia was detected at the Grassy Knoll location during RCP removal activities on May 23, 2013; during which time this location was cross-gradient from the RCP removal activities. It was not detected at any other sampling location prior to or during RCP excavation. The found concentration, 110 µg/m^3, exceeded the US Environmental Protection Agency Regional Screening Level for residential air (US EPA residential RSL) of 100 µg/m^3. The primary use of ammonia is as a nitrogen source in fertilizers, especially anhydrous ammonia and urea. Ammonia is released into the environment by many industries and other human activities. In addition, ammonia is part of the nitrogen cycle and is produced in soil from bacterial processes (decomposition).

5.1.3 Volatile Organic Compounds

No VOC or Tentatively Identified Compounds (“TIC”) was found at concentrations exceeding their respective US EPA RSLs for Residential Air. Fifteen Target Analyte VOCs and eighteen TICs were found below residential standards in one or more of the locations sampled. The Target Analytes detected at below residential standards were: propene, dichlorodifluoromethane, ethanol, acetonitrile, acetone, 2-propanol (isopropyl alcohol),

methylene chloride, n-hexane, tetrahydrofuran, toluene, trichlorofluoromethane, alpha-pinene, n-butyl acetate, n-nonane and d-limonene. The TICs detected at below residential standards were: isobutene, isopentane, trimethylsilanol, n-hexanal, hexamethylcyclotrisiloxane, 6-methyl-5-heptene-2-one, n-octanal, 2-ethyl-1-hexanol, n-nonanal, 2-ethylhexylacetate, n-decanal, four unidentified siloxanes and three unidentified compounds. A greater number of compounds were detected in the sample from the Grassy Knoll on the northwest portion of the Bridgeton Landfill than were found at either off-site location (High School or MSD Lift Station) on the days of sampling. Table 2 presents the concentrations of VOCs and TICs detected in air samples from the three sampling locations along with the US EPA RSLs for Residential Air for comparison purposes. All reported concentrations of VOCs were below US EPA RSL concentrations for Residential Air.

5.1.4 Aldehydes

Three common aldehyde compounds, acetaldehyde, hexaldehyde and formaldehyde were detected at low concentrations that did not demonstrate an impact from the RCP excavation. Table 2 presents the concentrations of the individual aldehyde compounds detected in air samples from the three sampling locations along with the US EPA Residential RSLs for comparison purposes.

On May 21, 2013, prior to RCP removal activities, acetaldehyde was detected at low concentrations in all locations with concentrations ranging from 0.93 µg/m^3 at the MSD Lift Station to 1.0 µg/m^3 at the High School. On May 23, 2013, during RCP removal, acetaldehyde was again detected at all locations, concentrations ranged from 0.7 µg/m^3 at the MSD Lift Station to 3.2 µg/m^3 on the Grassy Knoll.

Formaldehyde was detected prior to RCP removal activities, May 21, 2013, in all locations and ranged from 2.4 µg/m^3 on the Grassy Knoll to 3.3 µg/m^3 at the MSD Lift Station. On May 23, 2013, during RCP removal, the formaldehyde concentration ranged from non-detect at the High School to 1.1 µg/m^3 at the MSD Lift Station.

The detected formaldehyde concentrations exceeded the US EPA RSL. Similarly, acetaldehyde concentrations slightly exceeded the US EPA RSL at the High School prior to and during RCP excavation activities and on the Grassy Knoll during excavation. However, the RSL concentrations for these compounds are conservative (close to the laboratory reporting limit). In this case, the US EPA School Air Toxics Initiative Individual Screening Levels (ISLs) are informative. None of the formaldehyde or acetaldehyde concentrations approached the School ISLs, 50 µg/m^3 and 90 µg/m^3, respectively.

On Tuesday, May 21, 2013, low concentrations of hexaldehyde were detected at the MSD Lift Station (0.35 µg/m^3, Detection Limit 0.34 µg/m^3) and High School (0.47 µg/m^3, Detection Limit 0.32 µg/m^3). Hexaldehyde was not detected in any sample during RCP abandonment activities on May 23, 2013. There is no published US EPA RSL or ISL for hexaldehyde.

5.1.5 Polycyclic Aromatic Hydrocarbons

High volume samples for determination of PAHs were taken from the Lift Station and the High School locations. The following five PAH compounds were detected in samples from both locations: naphthalene; acenaphthene; fluorene; phenanthrene; and fluoranthene. Where available, none of the concentrations exceeded US EPA RSLs. Benzo(a)pyrene and other related carcinogenic PAHs were not detected in any sample.

5.1.6 Dioxins/Dibenzofurans

High volume samples for determination of dioxins/dibenzofurans were also collected from the MSD Lift Station and the High School locations. Table 3 shows the concentrations of the individual polychlorinated dibenzo-p-dioxins and dibenzofuran (dioxins/dibenzofurans) isomers that were detected. Consistent with the US EPA guidance, the detected concentrations of the individual dioxins and dibenzofuran isomers were converted to 2, 3, 7, 8-TCDD TEQs. Table 2 presents the total TCDD TEQ calculated for dioxins in the sample collected at the Lift Station (7.99E-09 µg/m^3) and the High School (3.72E-09 µg/m^3). Neither detected concentration exceeds the US EPA residential RSL, 6.4E-08.

6.0 Discussion of Sampling Results

6.1 APPLICABLE PUBLIC HEALTH STANDARDS

6.1.1 Risk-Based Screening Levels

US EPA RSL concentrations for exposure in residential settings are presented on Table 2. The RSLs for carcinogenic chemicals are calculated to correspond to a lifetime cancer risk of 1 in 1,000,000 (1 in 1 million or 1E-06) for a person (receptor) who is assumed to be exposed to that concentration on an ongoing basis over an extended period of time (30 years for residential). The RSLs for non carcinogenic compounds represent concentrations that are very unlikely to produce health effects in people who are exposed over many years. While concentrations below the RSLs generally indicate that there is not a concern for public health, concentrations above RSLs do not necessarily indicate that adverse health effects will occur, only that additional evaluation may be appropriate.

In 2009, the US EPA's School Air Toxics Monitoring Initiative developed Individual Sample Screening Levels ("ISLs") to evaluate ambient air in schools. The screening levels represent inhalation exposure estimates that are unlikely to be associated with appreciable risk of adverse health effects for populations that are exposed continuously for short to intermediate durations. The ISLs consider exposures for sensitive groups such as children. Although the duration of exposure is not expressly described, the use of Acute MRLs in the development of these screening levels suggests that a 14-day exposure duration is appropriate for acute exposure benchmarks (http://www.epa.gov/schoolair/pdfs/UsesofHealthEffectsInfoinEvalSample Results.pdf).

6.1.2 Comparison to Risk-Based Screening Levels

The vast majority of detections were much lower than the residential RSL concentrations. None of the detected VOCs, PAHs or dioxins exceeded their respective residential RSLs. In addition, more VOC compounds were detected on the Grassy Knoll on the northwest portion of the Bridgeton Landfill property boundary than either off-site location (High School or MSD Lift Station), which suggests that intrusive activities to remove the RCP structures were not impacting off-site air quality on the days of sampling because the wind would have taken any chemical compounds generated on the landfill in the other direction.

The detected concentrations of formaldehyde and the majority of the acetaldehyde concentrations exceeded their respective RSLs. As indicated, the residential RSLs for formaldehyde (0.19 µg/m3) and acetaldehyde (0.94 µg/m^3) are close to the detection levels (laboratory MRLs for these compounds in ambient air (0.32 – 0.34 µg/m^3)). No detected formaldehyde or acetaldehyde concentration approached much less exceeded the school-specific ISL, 50 µg/m^3 and 90 µg/m^3, respectively. In urban ambient air, these concentrations

are fairly common because acetaldehyde and formaldehyde have a number of ubiquitous sources such as motor vehicle emissions.

Ammonia was detected at concentrations exceeding the US EPA residential RSL in one sample collected from the Grassy Knoll location during RCP excavation activities. The concentration of ammonia found on the Grassy Knoll is higher than any historical detection on the Bridgeton Landfill itself; and was not found in any other sample. The potential sources of the ammonia at this location are largely unknown, but may include anthropogenic and/or industrial sources; or it may be an anomalous result. However, it is highly unlikely that the ammonia was related to RCP removal activities.

The very low concentrations of naphthalene and related coal-tar pitch volatile PAHs, and dioxins/dibenzofurans found in the ambient air samples were below US EPA residential RSLs. The low concentrations of PAHs and dioxins are consistent with background concentrations in urban settings and are most likely related to various combustion sources including automotive emissions.

7.0 Summary and Conclusions

The purpose of the air monitoring conducted at the Pattonville High School from May 21 to May 23, 2013 was to assess whether the intrusive RCP abandonment work at the Bridgeton Landfill impacted the air quality at the High School campus. . As summarized below, comprehensive sampling conducted during the last week of school demonstrated that there were no impacts to air quality at the school that could be attributed to the RCP excavation.

All detected concentrations of VOCs, PAHs and dioxins were below the corresponding conservative EPA RSLs for long-term exposure in residential air. No amine, carboxylic acid or reduced sulfur compound (including hydrogen sulfide) was detected in any sample. Acetaldehdye, formaldehyde and ammonia were present at concentrations exceeding their respective risk-based US EPA RSLs for residential exposure. However, acetaldehyde and formaldehyde concentrations were below the ISL levels set for schools (there is no ISL for ammonia). The RSLs for these compounds are very close to the detection limits. These compounds are typically found at low $\mu g/m^3$ concentrations in urban/industrial environments and have common sources such as motor vehicle exhaust. Regardless, the detected concentrations of formaldehyde and acetaldehyde were similar in magnitude regardless of location relative to Bridgeton Landfill and wind-direction, suggesting that these concentrations represent regional background levels.

Ammonia was detected above the residential RSL at the Grassy Knoll on the northwest portion of the Bridgeton Landfill property. As stated earlier, this compound has not been detected in historical ambient air sampling conducting on Bridgeton Landfill, and was not detected in any other location during this sampling event. Although this particular finding is unexplained, there are both industrial and anthropogenic sources of ammonia; or the result may be an anomaly.

The number of individual constituents and the concentrations of those constituents found at the High School were similar to what was found at the MSD Lift Station which is immediately across Old St. Charles Rock Road from the portion of the Bridgeton Landfill where RCP abandonment activities were occurring; and would represent air leaving Bridgeton Landfill and moving towards the school.

The results of the sampling conducted between May 21 and May 23, 2013 demonstrate that the ambient air at Pattonville High School was not negatively impacted by the Bridgeton Landfill excavation activities associated RCP removal. No compounds of interest were detected in ambient air at Pattonville High School at concentrations that would pose a health concern to student, staff or visitors to the school.

8.0 Tables & Figures

9.0 Appendix A. Laboratory Analytical Reports

10.0 References

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.*

US EPA Regional Screening Levels Summary Table, May 2013 on-line.

TOXNET, *Toxicology Data Network*, US National Library of Medicine, Sep 2012 on-line.

ATSDR, Agency for Toxic Substances and Disease Registry, Toxic Substances Portal – Ammonia on-line.

TABLES & FIGURES

Table 1

Sample collection protocols
Pattonville High School Prior to and During RCP Removal at
Bridgeton Landfill May 21 through May 23, 2013

Analyte group	*Sample location*	*Analytical method*	*Collection method*	*Sample duration and flow rate*	*Link to methodology*
Volatile organic compounds	Ambient on landfill and off landfill	EPA TO-15	6 Liter Summa canisters	240 min, 240 minute total evacuation time by regulator	http://www.epa.gov/ttnamti1/files/ambient/airtox/to-15r.pdf
Reduced sulfur compounds	Ambient on landfill and off landfill	ASTM D5504	6 Liter Summa canisters	240 min, 240 minute total evacuation time by regulator	http://www.caslab.com/Forms-Downloads/Flyers/REDUCED_SULFUR_BROCHURE.pdf
Carboxylic acids	Ambient on landfill and off landfill	Columbia Analytical AQL Method 102	Treated silica gel sorbent tube	Low flow sampling pump; 240 min @ 0.40 lpm	http://www.caslab.com/Forms-Downloads/Flyers/CARBOXYLIC_SAMPLING_FLYER.pdf
Amines	Ambient on landfill and off landfill	Columbia Analytical AQL Method 101	Specially treated sorbent tube	Low flow sampling pump; 240 min @ 0.40 lpm	http://www.caslab.com/Forms-Downloads/Flyers/AMINES_METHOD_101_FLYER.pdf
Ammonia	Ambient on landfill and off landfill	OSHA ID-188	Carbon beads	Low flow sampling pump; 240 min @ 0.50 lpm	http://www.osha.gov/dts/sltc/methods/inorganic/id188/id188.html
Aldehydes	Ambient on landfill and off landfill	EPA TO-11A	2,4-DNPH coated sorbent tube	Low flow sampling pump; 240 min @ 1.2 lpm	http://www.epa.gov/ttnamti1/files/ambient/airtox/to-11ar.pdf
Dioxins and furans	Ambient on landfill and off landfill	EPA TO-9	High volume sample, PUF sorbent	High volume pump; 24 hours @ >200 LPM	http://www.epa.gov/ttnamti1/files/ambient/airtox/to-9arr.pdf
Polynuclear aromatic hydrocarbons	Ambient on landfill and off landfill	EPA TO-113A	High volume sample, PUF sorbent	High volume pump; 24 hours @ >200 LPM	http://www.epa.gov/ttnamti1/files/ambient/airtox/to-13arr.pdf

Table 2: Ambient Air Sampling Summary
Pattonville High School – Prior to and During RCP Removal at Bridgeton Landfill
May 21 to May 23, 2013
Concentration in Ambient Air – All Units µg/m^3

Analyte	Screening Levels		Sample Locations					
	USEPA Residental Air RSLs	USEPA ISLs	Grassy Knoll		MSD Lift Station By Materialogic		Pattonville High School	
			Sample Date					
			5/21/2013	5/23/2013	5/21/2013	5/23/2013	5/21/2013	5/23/2013
Amine Compounds – Method: CAS AQL 101								
No Compounds Detected	NA [1]	NA	-- [2]	--	--	--	--	--
Carboxylic Acid Compounds – Method: CAS AQL 102								
No Compounds Detected	NA	NA	--	--	--	--	--	--
Reduced Sulfur Compound – ASTM D5504								
No Compounds Detected	NA	NA	--	--	--	--	--	--
Aldehydes/Carbonyl Compounds – Method: EPA TO-11a								
Formaldehyde	0.19	50	**2.4** [3]	**0.4**	**3.3**	**1.1**	**2.9**	--
Acetaldehyde	0.94	90	**0.94**	**3.2**	0.93	0.7	**1.0**	**1.1**
Hexaldehyde	NA	NA	--	--	0.47	--	0.35	--
Ammonia – Method: OSHA ID 188								
Ammonia	10	NA	--	**110**	--	--	--	--
Volatile Organic Compounds (VOCs) – Method: EPA TO15 + TICs								
Propene	NA	NA	9.4	1.0	--	--	--	--
Dichlorodifluoromethane (CFC 12)	10	NA	2.6	2.1	2.4	2.2	2.3	2.1
Ethanol	NA	NA	69	--	6.6	--	--	--
Acetonitrile	6.3	600	5.4	--	--	2.3	1.2	4.0
Acetone	3,200	62,000	25	--	8.6	--	9.7	--
2-Propanol (Isopropyl Alcohol)	730	NA	31	--	--	--	--	--
Methylene Chloride	63	2,000	5.0	1.0	--	--	--	--
n-Hexane	73	NA	3.0	--	--	--	--	--
Tetrahydrofuran (THF)	210	NA	4.8	--	--	--	--	--

Table 2: Ambient Air Sampling Summary
Pattonville High School – Prior to and During RCP Removal at Bridgeton Landfill
May 21 to May 23, 2013
Concentration in Ambient Air – All Units µg/m^3

Analyte	Screening Levels		Sample Locations					
	USEPA Residental Air RSLs	USEPA ISLs	Grassy Knoll		MSD Lift Station By Materialogic		Pattonville High School	
			Sample Date					
			5/21/2013	5/23/2013	5/21/2013	5/23/2013	5/21/2013	5/23/2013
Volatile Organic Compounds (VOCs) – Method: EPA TO15 + TICs (Cont.)								
Toluene	520	4,000	6.5	1.1	--	1.2	--	--
Trichlorofluoromethane	73	NA	--	1.1	1.7	1.1	1.1	1.1
alpha-Pinene	NA	NA	--	--	2.1	--	--	--
n-Butyl Acetate	NA	NA	--	2.3		--	--	--
n-Nonane	21	NA	5.1	--	--	--	--	--
d-Limonene	NA	NA	12	--	0.72	--	--	--
Volatile Organic Compounds (VOCs) – Tentatively Identified Compounds - Method: EPA TO15 + TICs [4]								
Isobutane	NA	NA	10	--	--	--	--	--
Isopentane	NA	NA	25	--	--	--	--	--
Unidentified Cmpd (9.02)	NA	NA	--	--	--	--	2.6	--
Trimethylsilanol	NA	NA	--	4.3	--	--	--	--
n-Hexanal	NA	NA	--	--	8.9	--	--	--
Hexamethylcyclotrisiloxane	NA	NA	--	17	6.2	16	17	2.6
6-Methyl-5-heptene-2-one	NA	NA	--	--	--	--	2.9	--
n-Octanal + Unidentified Cmpd	NA	NA	8.2	--	--	--	--	--
Unidentified Cmpd (18.40)	NA	NA	--	25	7.9	21	15	
2-Ethyl-1-hexanol	NA	NA	24	3.3	7.1	--	--	--
n-Nonanal	NA	NA	24	3.3	31	2.4	7.9	5.5
2-Ethylhexylacetate	NA	NA	12	3.5	3.3	--	--	--
Unidentified Siloxane (19.98)	NA	NA	13	--	11	--	--	2.8
Unidentified Siloxane (19.99)	NA	NA	--	12	--	12	19	--

Table 2: Ambient Air Sampling Summary
Pattonville High School – Prior to and During RCP Removal at Bridgeton Landfill
May 21 to May 23, 2013
Concentration in Ambient Air – All Units µg/m^3

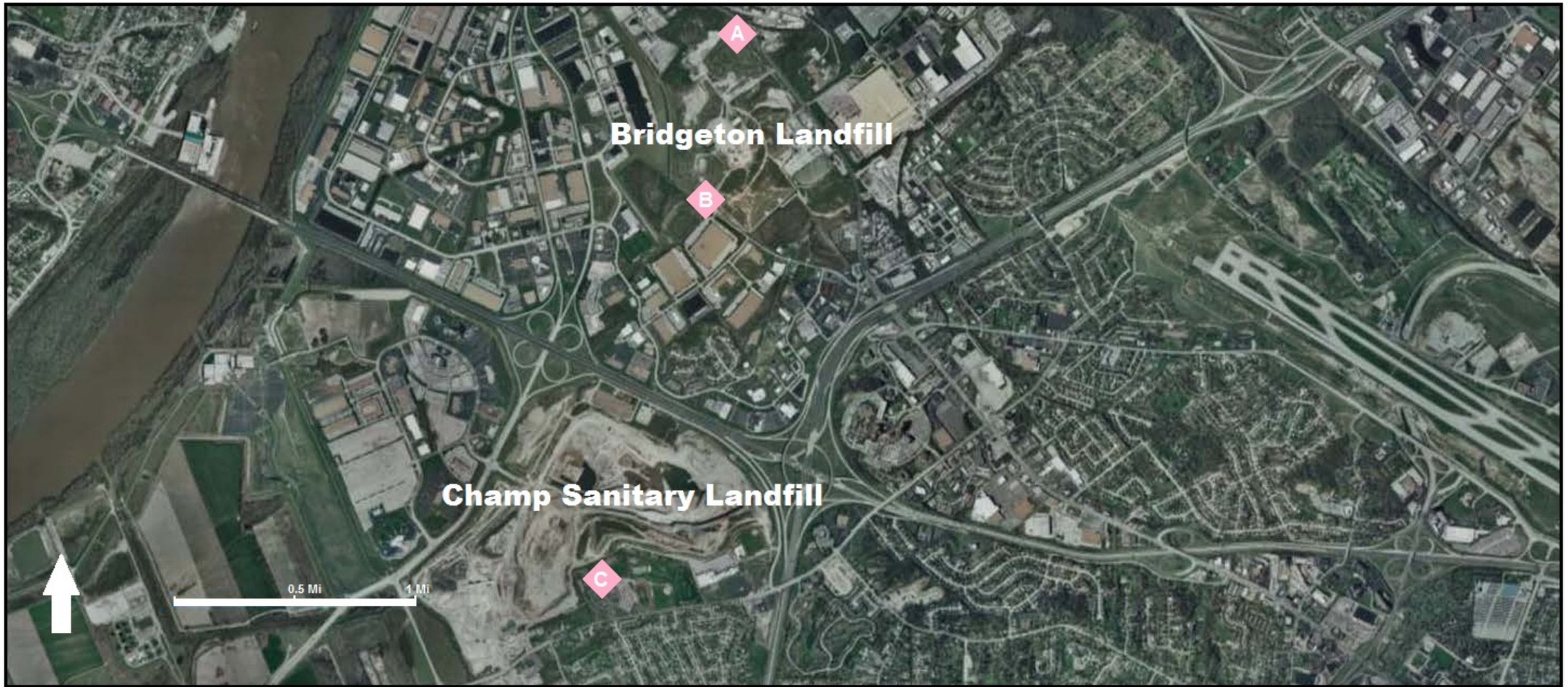
Analyte	Screening Levels		Sample Locations					
	USEPA Residental Air RSLs	USEPA ISLs	Grassy Knoll		MSD Lift Station By Materialogic		Pattonville High School	
			Sample Date					
			5/21/2013	5/23/2013	5/21/2013	5/23/2013	5/21/2013	5/23/2013
Volatile Organic Compounds (VOCs) – Tentatively Identified Compounds - Method: EPA TO15 + TICs (Cont.)								
n-Decanal	NA	NA	8.6	--	5.8	2.6	11	--
Unidentified Siloxane (21.47)	NA	NA	--	2.3	--	--	9.0	--
Unidentified Siloxane (21.48)	NA	NA	--	--	2.5	--	--	--
Unidentified Cmpd (21.96)	NA	NA	9.0	--	--	--	--	--
Polynuclear Aromatic Hydrocarbons - Method: EPA TO13a Modified								
Naphthalene	0.072	30	NS [5]	NS	NS	0.043	NS	0.021
Acenaphthene	NA	NA	NS	NS	NS	0.0017	NS	0.0036
Fluorene	NA	NA	NS	NS	NS	0.0027	NS	0.0025
Phenanthrene	NA	NA	NS	NS	NS	0.011	NS	0.0065
Fluoranthene	NA	NA	NS	NS	NS	0.0028	NS	0.0024
Polychlorinated Dibenzo-p-Dioxins, Dibenzofurans – EPA Method TO-9A								
2,3,7,8-TCDD	6.4E-08	NA	NS	NS	NS	7.99E-09	NS	3.72E-09

1. "NA" = Not Available
2. "—" = Compound not detected
3. Bold and shading indicate that the found concentration exceeds the United States Environmental Protection Agency Regional Screening Level for Residential Air.
4. The reported concentrations for TICs are estimated
5. "NS" = Not Sampled

Table 3: Dioxin & Dibenzofuran Air Sampling Summary
Pattonville High School - Prior to and During RCP Removal at
Bridgeton Landfill May 22 to May 23, 2013 [1,2]

Name	TEF [3]	Pattonville High School				Landfill Comparison Location			
		Mass	TEQ [4]	Air volume	Concentration [5]	Mass	TEQ	Air volume	Concentration
Units	--	pg [6]	pg	Liters	ug/m^3	pg	pg	Liters	ug/m^3
2,3,7,8-TCDD	1	ND [7]	ND	367,455	--	ND	ND	362,000	--
1,2,3,7,8-PeCDD	1	ND	ND	367,455	--	2.51	2.51	362,000	6.93E-09
1,2,3,4,7,8-HxCDD	0.1	1.65	0.165	367,455	4.49E-10	ND	ND	362,000	--
1,2,3,6,7,8-HxCDD	0.1	1.70	0.170	367,455	4.63E-10	ND	ND	362,000	--
1,2,3,7,8,9-HxCDD	0.1	ND	ND	367,455	--	ND	ND	362,000	--
1,2,3,4,6,7,8-HpCDD	0.01	9.53	0.0953	367,455	2.59E-10	12.0	0.120	362,000	3.31E-10
OCDD	0.0003	32.3	0.0097	367,455	2.64E-11	47.6	0.0143	362,000	3.94E-11
2,3,7,8-TCDF	0.1	3.68	0.368	367,455	1.00E-09	ND	ND	362,000	--
1,2,3,7,8-PeCDF	0.03	ND	ND	367,455	--	ND	ND	362,000	--
2,3,4,7,8-PeCDF	0.3	ND	ND	367,455	--	ND	ND	362,000	--
1,2,3,4,7,8-HxCDF	0.1	1.99	0.199	367,455	5.42E-10	ND	ND	362,000	--
1,2,3,6,7,8-HxCDF	0.1	2.15	0.215	367,455	5.85E-10	1.66	0.166	362,000	4.59E-10
1,2,3,7,8,9-HxCDF	0.1	ND	ND	367,455	--	ND	ND	362,000	--
2,3,4,6,7,8-HxCDF	0.1	0.73	0.0728	367,455	1.98E-10	ND	ND	362,000	--
1,2,3,4,6,7,8-HpCDF	0.01	7.12	0.0712	367,455	1.94E-10	8.21	0.0821	362,000	2.27E-10
1,2,3,4,7,8,9-HpCDF	0.01	ND	ND	367,455	--	ND	ND	362,000	--
OCDF	0.0003	6.40	0.00192	367,455	5.23E-12	5.55	0.00167	362,000	4.60E-12
Total TCDD TEQ [8]			**1.37**		**3.72E-09**		**2.89**		**7.99E-09**
USEPA Residential RSL [9]					**6.4E-08**				**6.4E-08**

1. Sampling was conducted between 11:00 A.M. May 22 to 11:00 A.M. May 23, 2013
2. Analytical Method: EPA TO-9a
3. TEF: 2005 World Health Organization (WHO) Toxicity Equivalence Factor
4. TEQ: TCDD Toxicity Equivalent Mass/Concentration
5. Concentration calculation: ((TEQ * Air Volume) * 1,000)/1,000,000
6. pg: Picograms
7. ND: Not Detected
8. Total TCDD TEQ: Total Tetrachlorodibenzodioxin TEQ
9. RSL: Regional Screening Level for Dioxins in Industrial Air



Air Monitoring Location Key

A. Grassy Knoll (Landfill Location)
B. MSD Lift Station (Off-Site Location)
C. Pattonville High School (Off-Site Location)

Stantec Consulting Services, Inc.
1500 Lake Shore Drive, Suite 100
Columbus, Ohio 43230

Stantec

Figure 1. Air Monitoring Locations Prior To And During RCP Abandonment At Bridgeton Landfill, LLC
13570 St. Charles Rock Road
Bridgeton, MO 63044

Checked By: CJL	Aerial Map Provided By USGS	August 2013

Stantec

LABORATORY ANALYTICAL RESULTS

LABORATORY REPORT

May 31, 2013

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

RE: Bridgeton Landfill / 182608005

Dear Deborah:

Enclosed are the results of the samples submitted to our laboratory on May 23, 2013. For your reference, these analyses have been assigned our service request number P1302192.

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.caslab.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 2:29 pm, May 31, 2013

Samantha Henningsen
Project Manager

Client: Stantec Consulting Services, Inc. Service Request No: P1302192
Project: Bridgeton Landfill / 182608005

CASE NARRATIVE

The samples were received intact under chain of custody on May 23, 2013 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 or DoD-ELAP 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 or DoD-ELAP scope of accreditation.

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 or DoD-ELAP 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 or DoD-ELAP scope of accreditation.

Sulfur Analysis

The Silonite Canister samples were also analyzed for twenty sulfur compounds per ASTM D 5504-08 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 or DoD-ELAP scope of accreditation.

Client: Stantec Consulting Services, Inc. Service Request No: P1302192
Project: Bridgeton Landfill / 182608005

CASE NARRATIVE

Volatile Organic Compound Analysis

The summa canister samples were 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. 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 canister pressurization. When necessary, analytical sample volumes were adjusted by a correction factor for canisters pressurized with helium. A summary sheet has been included listing the affected samples. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP scope of accreditation.

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.

The Trip Blank (521Blank-SU) contained TICS (Trimethylsilanol and Hexamethylcyclotrisiloxane). No Target compounds with levels above the reporting limit were detected. The Trip Blank was re-run on a different position with similar results. This ensures the analytical system did not contain any residual contamination. The representativeness of a trip blank for air analyses is debatable since, following the use of any canister, it is standard laboratory procedure to clean and condition each can prior to being released for another project. Based on the results the data does not appear to be significantly affected by this anomaly. No further corrective action was appropriate.

Columbia Analytical Services, Inc. dba 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	L11-203
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	2012039
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	494864
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	T104704413-12-3
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA015272012-2
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.caslab.com, 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.

DETAIL SUMMARY REPORT

Client: Stantec Consulting Services, Inc.
Project ID: Bridgeton Landfill / 182608005
Service Request: P1302192

Date Received: 5/23/2013
Time Received: 11:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pf1 (psig)	ASTM D5504-08 - Sulfur Can	TO-15 - VOC Cans	TO-11A - Carbonyls	Amines - Amines	OSHA ID-164 Modified - Ammonia	Carbox Acids - Carboxy Acids
521GN-SU	P1302192-001	Air	5/21/2013	16:33	AS00460	-10.23	3.56	X	X				
521LF-SU	P1302192-002	Air	5/21/2013	16:23	AS00158	-0.54	3.83	X	X				
521HS-SU	P1302192-003	Air	5/21/2013	15:58	AS00304	-0.52	3.65	X	X				
521BLANK-SU	P1302192-004	Air	5/21/2013	14:22	AS00205	-14.42	3.54	X	X				
521GN-2 ALD	P1302192-005	Air	5/21/2013	19:01						X			
521GN-4 Amine	P1302192-006	Air	5/21/2013	16:33							X		
521GN-6 NH4	P1302192-007	Air	5/21/2013	16:33								X	
521GN-7 CARBOX	P1302192-008	Air	5/21/2013	16:33									X
521LF-2 ALD	P1302192-009	Air	5/21/2013	16:23						X			
521LF-4 Amine	P1302192-010	Air	5/21/2013	16:23							X		
521LF-6 NH4	P1302192-011	Air	5/21/2013	16:23								X	
521LF-7 CARBOX	P1302192-012	Air	5/21/2013	16:23									X
521HS-2 ALD	P1302192-013	Air	5/21/2013	15:58						X			
521HS-4 Amine	P1302192-014	Air	5/21/2013	15:58							X		
521HS-6 NH4	P1302192-015	Air	5/21/2013	15:58								X	
521HS-7 CARBOX	P1302192-016	Air	5/21/2013	15:58									X
521B-10 ALD	P1302192-017	Air	5/21/2013	15:06						X			
521B-12 Amine	P1302192-018	Air	5/21/2013	15:07							X		
521B-14 NH4	P1302192-019	Air	5/21/2013	15:08								X	
521B-15 CARBOX	P1302192-020	Air	5/21/2013	15:09									X

Columbia Analytical Services™

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

Air - 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

CAS Project No. P13D2142

Company Name & Address (Reporting Information)
STANTEC CONSULTING
1500 LAKE SHORE DR
COLUMBUS, OH 43204

Project Name: BRIDGETON LANDFILL

Project Number: 182608005

Project Manager: DEB GRAY

P.O. # / Billing Information: SAME

Phone: 614 486-4303 Fax: 614 486 4387

Email Address for Result Reporting: deb.gray@STANTEC.com

Sampler (Print & Sign): CHRIS LALANDE

CAS Contact: HENNINGSEN

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		Comments e.g. Actual Preservative or specific instructions
						PSI	PSI	mL			
521GN-SV	1 NA	5/21/13	16:33	A500460	SFC00038	-14.33	-12.28		EPA	TO-15 + TICs	-10.27
521LF-SV	2 |	5/21/13	16:23	A500158	SFC00026	-14.33	-0.28		ASTM	D5504	-0.19
521HS-SV	3 |	5/21/13	15:58	A500304	SFC00003	-14.28	-0.22		* BOTH METHODS		-0.21
521BLANK-SV	4 |	5/21/13	14:22	A500205	NA	14.19	14.19	NA	ALL CANS		-14.37
	LCV			Pump ID							
521GN-2 ALD	5 ~~14:58~~ 19:01	5/21/13	~~12:48~~ 16:33	#1964	NA	NA	NA	303,507	EPA	TO 11a	
521GN-4 AMINE	6 |	|	~~12:42~~ 16:55	#2018	|	|	|	84,662	AQL	101	
521GN-6 NH4	7 |	|	~~12:42~~ 16:33	#2012	|	|	|	121,506	OSHA	ID 188	
521GN-7 CARBOX	8 |	|	~~12:48~~ 16:33	#3003	|	|	|	98,906	AQL	102	
521LF-2 ALD	9	5/21/13	12:21 16:27	#2016	NA	NA	NA	290,279	EPA	TO11a	
521LF-4 AMINE	10 |	|	12:21 16:23	#1018	|	|	|	88,330	AQL	101	
521LF-6 NH4	11 |	|	12:21 16:23	#2015	|	|	|	120,516	OSHA	ID 188	
521LF-7 CARBOX	12 |	|	12:23 16:27	#3002	|	|	|	97,899	AQL	102	

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

EDD required Yes / No
Type: _____

Project Requirements (MRLs, QAPP): CSK

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	5/22/13	10:10		5/23/13	1130
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank Temperature 5 °C

Columbia Analytical Services™

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

Air - 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

CAS Project No. P132142

Company Name & Address (Reporting Information)	STANTEC CONSULTING 1500 LAKE SHORE DRIVE COLUMBUS, OH 43204
Project Name	BRIDGETON LANDFILL
Project Number	182608005
Project Manager	DEB GRAY
P.O. # / Billing Information	SAME
Phone	614 486 4383
Fax	614 486 4387
Email Address for Result Reporting	deb.gray@STANTEC.com
Sampler (Print & Sign)	CHRIS LALONDE /
CAS Contact:	HENNINGSEN

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	PUMP ID (Bar code # - AC, SC, etc.)	Flow Controller ID (Bar code # - FC #)	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	ML Sample Volume	Analysis Method		Comments e.g. Actual Preservative or specific instructions
521HS-2 ALD	(13)	5/21/13	11:48 / 15:58	#3006	NA	NA	NA	310,000	EPA	TO11a	
521HS-4 AMINE	(14)		11:48 / 15:58	#3004				60,500	AQL	101	
521HS-6 NH4	(15)		11:48 / 15:58	#2014				124,750	OSHA	ID188	
521HS-7 CARBOX	(16)		11:48 / 15:58	#1023				113,625	AQL	102	
521B-10 ALD	(17)	5/21/13	15:06	NA	FIELD BLANK			0mL	EPA	TO11a	
521B-12 AMINE	(18)		15:07		"	"		0mL	AQL	101	
521B-14 NH4	(19)		15:08		"	"		0mL	OSHA	ID188	
521B-15 CARBOX	(20)		15:09		"	"		0mL	AQL	102	

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

Project Requirements (MRLs, QAPP)

	Date	Time		Date	Time	
Relinquished by: (Signature)	5/22/13	10:10	Received by: (Signature)	5/23/13	1135	
Relinquished by: (Signature)			Received by: (Signature)			Cooler / Blank Temperature ____ °C

Columbia Analytical Services
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2655 Park Center Drive, Suite A, Simi Valley, CA 93065 | 805.526.7161 | www.caslab.com

Sample Acceptance Check Form

Client: Stantec Consulting Services, Inc. Work order: P1302192

Project: Bridgeton Landfill / 182608005

Sample(s) received on: 5/23/13 Date opened: 5/23/13 by: MZAMORA

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: 5° C Blank Temperature: ° C **Gel Packs**			
9	Was a **trip blank** received?	☐	☒	☐
10	Were **custody seals** on outside of cooler/Box?	☒	☐	☐
	Location of seal(s)? Front of cooler, covering opening. 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
P1302192-001.01	6.0 L Silonite Can					Canister possibly leaking.
P1302192-002.01	6.0 L Silonite Can					
P1302192-003.01	6.0 L Silonite Can					
P1302192-004.01	6.0 L Silonite Can					
P1302192-005.01	Silica Gel DNPH Tube					
P1302192-006.03	Treated Alumina Tube					
P1302192-007.04	Anasorb 747 Tube					
P1302192-008.01	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)

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Sample Acceptance Check Form

Client: Stantec Consulting Services, Inc. Work order: P1302192

Project: Bridgeton Landfill / 182608005

Sample(s) received on: 5/23/13 Date opened: 5/23/13 by: MZAMORA

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1302192-009.01	Silica Gel DNPH Tube					
P1302192-010.03	Treated Alumina Tube					
P1302192-011.04	Anasorb 747 Tube					
P1302192-012.01	Silica Gel (C. Acids)					
P1302192-013.01	Silica Gel DNPH Tube					
P1302192-014.03	Treated Alumina Tube					
P1302192-015.04	Anasorb 747 Tube					
P1302192-016.01	Silica Gel (C. Acids)					
P1302192-017.01	Silica Gel DNPH Tube					
P1302192-018.03	Treated Alumina Tube					
P1302192-019.04	Anasorb 747 Tube					
P1302192-020.01	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)

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521GN-2 ALD**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P1302192-005

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

Date Collected: 5/21/13
Date Received: 5/23/13
Date Analyzed: 5/28/13
Desorption Volume: 1.0 ml
Volume Sampled: 303.507 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	740	**2.4**	0.33	**2.0**	0.27	
75-07-0	Acetaldehyde	280	**0.94**	0.33	**0.52**	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	< 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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521LF-2 ALD**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P1302192-009

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

Date Collected: 5/21/13
Date Received: 5/23/13
Date Analyzed: 5/28/13
Desorption Volume: 1.0 ml
Volume Sampled: 290.279 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	950	**3.3**	0.34	**2.7**	0.28	
75-07-0	Acetaldehyde	270	**0.93**	0.34	**0.51**	0.19	
123-38-6	Propionaldehyde	< 100	ND	0.34	ND	0.15	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.34	ND	0.12	
123-72-8	Butyraldehyde	< 100	ND	0.34	ND	0.12	
100-52-7	Benzaldehyde	< 100	ND	0.34	ND	0.079	
590-86-3	Isovaleraldehyde	< 100	ND	0.34	ND	0.098	
110-62-3	Valeraldehyde	< 100	ND	0.34	ND	0.098	
529-20-4	o-Tolualdehyde	< 100	ND	0.34	ND	0.070	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.69	ND	0.14	
66-25-1	n-Hexaldehyde	140	**0.47**	0.34	**0.12**	0.084	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.34	ND	0.063	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521HS-2 ALD**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P1302192-013

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

Date Collected: 5/21/13
Date Received: 5/23/13
Date Analyzed: 5/28/13
Desorption Volume: 1.0 ml
Volume Sampled: 310.000 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	900	**2.9**	0.32	**2.4**	0.26	
75-07-0	Acetaldehyde	310	**1.0**	0.32	**0.56**	0.18	
123-38-6	Propionaldehyde	< 100	ND	0.32	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.32	ND	0.11	
123-72-8	Butyraldehyde	< 100	ND	0.32	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.32	ND	0.074	
590-86-3	Isovaleraldehyde	< 100	ND	0.32	ND	0.092	
110-62-3	Valeraldehyde	< 100	ND	0.32	ND	0.092	
529-20-4	o-Tolualdehyde	< 100	ND	0.32	ND	0.066	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.65	ND	0.13	
66-25-1	n-Hexaldehyde	110	**0.35**	0.32	**0.085**	0.079	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.32	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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521B-10 ALD**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P1302192-017

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

Date Collected: 5/21/13
Date Received: 5/23/13
Date Analyzed: 5/28/13
Desorption Volume: 1.0 ml
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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P130528-MB

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

Date Collected: NA
Date Received: NA
Date Analyzed: 05/28/13
Desorption Volume: 1.0 ml
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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521GN-4 Amine**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P1302192-006

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 5/21/13
Date Received: 5/23/13
Date Analyzed: 5/24/13
Desorption Volume: 2.0 ml
Volume Sampled: 84.662 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 0.53	ND	6.2	ND	3.4	
75-04-7	Ethylamine	< 0.55	ND	6.5	ND	3.5	
75-50-3	Trimethylamine	< 0.52	ND	6.1	ND	2.5	
75-31-0	Isopropylamine	< 0.52	ND	6.2	ND	2.6	
75-64-9	tert-Butylamine	< 1.1	ND	12	ND	4.1	
107-10-8	n-Propylamine	< 0.55	ND	6.5	ND	2.7	
109-89-7	Diethylamine	< 0.52	ND	6.1	ND	2.0	
13952-84-6	sec-Butylamine	< 0.53	ND	6.2	ND	2.1	
78-81-9	Isobutylamine	< 0.54	ND	6.4	ND	2.1	
109-73-9	n-Butylamine	< 0.53	ND	6.3	ND	2.1	
108-18-9	Diisopropylamine	< 0.51	ND	6.0	ND	1.5	
121-44-8	Triethylamine	< 0.51	ND	6.1	ND	1.5	
142-84-7	Dipropylamine	< 0.52	ND	6.1	ND	1.5	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521LF-4 Amine**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P1302192-010

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 5/21/13
Date Received: 5/23/13
Date Analyzed: 5/24/13
Desorption Volume: 2.0 ml
Volume Sampled: 88.330 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 0.53	ND	6.0	ND	3.2	
75-04-7	Ethylamine	< 0.55	ND	6.2	ND	3.4	
75-50-3	Trimethylamine	< 0.52	ND	5.9	ND	2.4	
75-31-0	Isopropylamine	< 0.52	ND	5.9	ND	2.5	
75-64-9	tert-Butylamine	< 1.1	ND	12	ND	4.0	
107-10-8	n-Propylamine	< 0.55	ND	6.2	ND	2.6	
109-89-7	Diethylamine	< 0.52	ND	5.8	ND	2.0	
13952-84-6	sec-Butylamine	< 0.53	ND	6.0	ND	2.0	
78-81-9	Isobutylamine	< 0.54	ND	6.1	ND	2.0	
109-73-9	n-Butylamine	< 0.53	ND	6.0	ND	2.0	
108-18-9	Diisopropylamine	< 0.51	ND	5.8	ND	1.4	
121-44-8	Triethylamine	< 0.51	ND	5.8	ND	1.4	
142-84-7	Dipropylamine	< 0.52	ND	5.8	ND	1.4	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521HS-4 Amine**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P1302192-014

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 5/21/13
Date Received: 5/23/13
Date Analyzed: 5/24/13
Desorption Volume: 2.0 ml
Volume Sampled: 60.500 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 0.53	ND	8.7	ND	4.7	
75-04-7	Ethylamine	< 0.55	ND	9.1	ND	4.9	
75-50-3	Trimethylamine	< 0.52	ND	8.5	ND	3.5	
75-31-0	Isopropylamine	< 0.52	ND	8.7	ND	3.6	
75-64-9	tert-Butylamine	< 1.1	ND	17	ND	5.8	
107-10-8	n-Propylamine	< 0.55	ND	9.1	ND	3.8	
109-89-7	Diethylamine	< 0.52	ND	8.5	ND	2.8	
13952-84-6	sec-Butylamine	< 0.53	ND	8.7	ND	2.9	
78-81-9	Isobutylamine	< 0.54	ND	8.9	ND	3.0	
109-73-9	n-Butylamine	< 0.53	ND	8.8	ND	3.0	
108-18-9	Diisopropylamine	< 0.51	ND	8.4	ND	2.0	
121-44-8	Triethylamine	< 0.51	ND	8.5	ND	2.0	
142-84-7	Dipropylamine	< 0.52	ND	8.5	ND	2.1	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521B-12 Amine**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P1302192-018

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 5/21/13
Date Received: 5/23/13
Date Analyzed: 5/24/13
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	< 0.53	NA	NA	NA	NA	
75-04-7	Ethylamine	< 0.55	NA	NA	NA	NA	
75-50-3	Trimethylamine	< 0.52	NA	NA	NA	NA	
75-31-0	Isopropylamine	< 0.52	NA	NA	NA	NA	
75-64-9	tert-Butylamine	< 1.1	NA	NA	NA	NA	
107-10-8	n-Propylamine	< 0.55	NA	NA	NA	NA	
109-89-7	Diethylamine	< 0.52	NA	NA	NA	NA	
13952-84-6	sec-Butylamine	< 0.53	NA	NA	NA	NA	
78-81-9	Isobutylamine	< 0.54	NA	NA	NA	NA	
109-73-9	n-Butylamine	< 0.53	NA	NA	NA	NA	
108-18-9	Diisopropylamine	< 0.51	NA	NA	NA	NA	
121-44-8	Triethylamine	< 0.51	NA	NA	NA	NA	
142-84-7	Dipropylamine	< 0.52	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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P130524-MB

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: NA
Date Received: NA
Date Analyzed: 5/24/13
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	< 0.53	NA	NA	NA	NA	
75-04-7	Ethylamine	< 0.55	NA	NA	NA	NA	
75-50-3	Trimethylamine	< 0.52	NA	NA	NA	NA	
75-31-0	Isopropylamine	< 0.52	NA	NA	NA	NA	
75-64-9	tert-Butylamine	< 1.1	NA	NA	NA	NA	
107-10-8	n-Propylamine	< 0.55	NA	NA	NA	NA	
109-89-7	Diethylamine	< 0.52	NA	NA	NA	NA	
13952-84-6	sec-Butylamine	< 0.53	NA	NA	NA	NA	
78-81-9	Isobutylamine	< 0.54	NA	NA	NA	NA	
109-73-9	n-Butylamine	< 0.53	NA	NA	NA	NA	
108-18-9	Diisopropylamine	< 0.51	NA	NA	NA	NA	
121-44-8	Triethylamine	< 0.51	NA	NA	NA	NA	
142-84-7	Dipropylamine	< 0.52	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.

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P130524-DLCS

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/24/13
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	CAS Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-40-3	Dimethylamine	9.63	8.59	9.27	**89**	**96**	57-129	8	19	
75-04-7	Ethylamine	10.1	8.74	9.15	**87**	**91**	52-127	4	18	
75-50-3	Trimethylamine	10.8	9.53	10.7	**88**	**99**	44-139	12	35	
75-31-0	Isopropylamine	10.7	9.83	10.4	**92**	**97**	64-127	5	16	
75-64-9	tert-Butylamine	10.5	9.80	9.75	**93**	**93**	65-129	0	20	
107-10-8	n-Propylamine	13.0	11.0	11.3	**85**	**87**	57-127	2	14	
109-89-7	Diethylamine	11.1	10.4	10.7	**94**	**96**	65-128	2	16	
13952-84-6	sec-Butylamine	11.1	10.5	10.4	**95**	**94**	68-125	1	14	
78-81-9	Isobutylamine	11.2	10.4	10.2	**93**	**91**	65-125	2	15	
109-73-9	n-Butylamine	10.7	10.5	9.36	**98**	**87**	68-123	12	16	
108-18-9	Diisopropylamine	10.4	10.4	10.5	**100**	**101**	63-128	1	17	
121-44-8	Triethylamine	10.9	9.99	10.7	**92**	**98**	65-125	6	19	
142-84-7	Dipropylamine	10.4	10.3	10.0	**99**	**96**	70-125	3	14	

Client: **Stantec Consulting Services, Inc.**
Client Project ID: **Bridgeton Landfill / 182608005** CAS Project ID: P1302192

Ammonia

Test Code: OSHA ID-188/ID-164
Instrument ID: PH01/Thermo Orion 920A+/Ammonia ISE
Analyst: Sue Anderson
Sampling Media: Anasorb 747 Tube(s) (Sulfuric Treated)
Test Notes: **BC, DE**

Date(s) Collected: 5/21/13
Date Received: 5/23/13
Date Analyzed: 5/30/13
Desorption Volume: 0.10 Liter(s)

Client Sample ID	CAS Sample ID	Sample Volume Liter(s)	Dilution Factor	Result mg/Tube	Result mg/m³	MRL mg/m³	**Result ppmV**	MRL ppmV	Data Qualifier
521GN-6 NH4	P1302192-007	121.506	1.0	< 0.011	ND	0.088	ND	0.13	
521LF-6 NH4	P1302192-011	120.516	1.0	< 0.011	ND	0.089	ND	0.13	
521HS-6 NH4	P1302192-015	124.750	1.0	< 0.011	ND	0.086	ND	0.12	
521B-14 NH4	P1302192-019	NA	1.0	< 0.011	NA	NA	NA	NA	
Method Blank	P130530-MB	NA	1.0	< 0.011	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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P130530-LCS, P130530-DLCS

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary

Test Code: OSHA ID-188/ID-164
Instrument ID: PH01/Thermo Orion 920A+/Ammonia ISE
Analyst: Sue Anderson
Sampling Media: Anasorb 747 Tube(s) (Sulfuric Treated)
Test Notes:

Date Sampled: N/A
Date Received: N/A
Date Analyzed: 5/30/13
Volume(s) Analyzed: N/A

Compound	Spike Amount LCS / DLCS mg/L	Result LCS mg/L	Result DLCS mg/L	% Recovery LCS	% Recovery DLCS	CAS Acceptance Limits	Relative Percent Difference	RPD Limit	Data Qualifier
Ammonia	1.00	1.07	1.05	107	105	80-109	2	4	

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521GN-7 CARBOX**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P1302192-008

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

Date Collected: 5/21/13
Date Received: 5/23/13
Date Analyzed: 5/29/13
Desorption Volume: 1.0 ml
Volume Sampled: 98.406 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)	< 0.24	ND	2.5	ND	0.81	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.5	ND	0.69	
107-92-6	Butanoic Acid (Butyric)	< 0.24	ND	2.5	ND	0.68	
116-53-0	2-Methylbutanoic Acid	< 0.24	ND	2.5	ND	0.59	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.5	ND	0.60	
109-52-4	Pentanoic Acid (Valeric)	< 0.25	ND	2.5	ND	0.60	
97-61-0	2-Methylpentanoic Acid	< 0.24	ND	2.4	ND	0.51	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.53	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.24	ND	2.5	ND	0.52	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.5	ND	0.53	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.24	ND	2.5	ND	0.46	
149-57-5	2-Ethylhexanoic Acid	< 0.25	ND	2.5	ND	0.42	
98-89-5	Cyclohexanecarboxylic Acid	< 0.24	ND	2.5	ND	0.47	
124-07-2	Octanoic Acid (Caprylic)	< 0.24	ND	2.4	ND	0.41	
65-85-0	Benzoic Acid	< 0.26	ND	2.6	ND	0.52	
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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521LF-7 CARBOX**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P1302192-012

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

Date Collected: 5/21/13
Date Received: 5/23/13
Date Analyzed: 5/29/13
Desorption Volume: 1.0 ml
Volume Sampled: 97.889 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)	< 0.24	ND	2.5	ND	0.82	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.5	ND	0.70	
107-92-6	Butanoic Acid (Butyric)	< 0.24	ND	2.5	ND	0.69	
116-53-0	2-Methylbutanoic Acid	< 0.24	ND	2.5	ND	0.59	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.5	ND	0.60	
109-52-4	Pentanoic Acid (Valeric)	< 0.25	ND	2.5	ND	0.61	
97-61-0	2-Methylpentanoic Acid	< 0.24	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)	< 0.24	ND	2.5	ND	0.52	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.5	ND	0.53	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.24	ND	2.5	ND	0.47	
149-57-5	2-Ethylhexanoic Acid	< 0.25	ND	2.5	ND	0.42	
98-89-5	Cyclohexanecarboxylic Acid	< 0.24	ND	2.5	ND	0.47	
124-07-2	Octanoic Acid (Caprylic)	< 0.24	ND	2.5	ND	0.42	
65-85-0	Benzoic Acid	< 0.26	ND	2.6	ND	0.52	
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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521HS-7 CARBOX**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P1302192-016

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

Date Collected: 5/21/13
Date Received: 5/23/13
Date Analyzed: 5/29/13
Desorption Volume: 1.0 ml
Volume Sampled: 113.625 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	17	ND	7.1	
79-09-4	Propionic Acid (Propanoic)	< 0.24	ND	2.1	ND	0.71	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.2	ND	0.60	
107-92-6	Butanoic Acid (Butyric)	< 0.24	ND	2.1	ND	0.59	
116-53-0	2-Methylbutanoic Acid	< 0.24	ND	2.1	ND	0.51	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.2	ND	0.52	
109-52-4	Pentanoic Acid (Valeric)	< 0.25	ND	2.2	ND	0.52	
97-61-0	2-Methylpentanoic Acid	< 0.24	ND	2.1	ND	0.45	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.2	ND	0.46	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.24	ND	2.1	ND	0.45	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.2	ND	0.46	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.24	ND	2.1	ND	0.40	
149-57-5	2-Ethylhexanoic Acid	< 0.25	ND	2.2	ND	0.37	
98-89-5	Cyclohexanecarboxylic Acid	< 0.24	ND	2.1	ND	0.41	
124-07-2	Octanoic Acid (Caprylic)	< 0.24	ND	2.1	ND	0.36	
65-85-0	Benzoic Acid	< 0.26	ND	2.2	ND	0.45	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.2	ND	0.34	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521B-15 CARBOX**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P1302192-020

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

Date Collected: 5/21/13
Date Received: 5/23/13
Date Analyzed: 5/29 - 5/30/13
Desorption Volume: 1.0 ml
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)	< 0.24	NA	NA	NA	NA	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	NA	NA	NA	NA	
107-92-6	Butanoic Acid (Butyric)	< 0.24	NA	NA	NA	NA	
116-53-0	2-Methylbutanoic Acid	< 0.24	NA	NA	NA	NA	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	NA	NA	NA	NA	
109-52-4	Pentanoic Acid (Valeric)	< 0.25	NA	NA	NA	NA	
97-61-0	2-Methylpentanoic Acid	< 0.24	NA	NA	NA	NA	
105-43-1	3-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.24	NA	NA	NA	NA	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	NA	NA	NA	NA	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.24	NA	NA	NA	NA	
149-57-5	2-Ethylhexanoic Acid	< 0.25	NA	NA	NA	NA	
98-89-5	Cyclohexanecarboxylic Acid	< 0.24	NA	NA	NA	NA	
124-07-2	Octanoic Acid (Caprylic)	< 0.24	NA	NA	NA	NA	
65-85-0	Benzoic Acid	< 0.26	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.
NA = Not applicable.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P130529-MB

Test Code: GC/MS Date Collected: NA
Instrument ID: Agilent 5973/Agilent 6890/MS14 Date Received: NA
Analyst: Evelyn Ibarra Date Analyzed: 5/29/13
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)	< 0.24	NA	NA	NA	NA	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	NA	NA	NA	NA	
107-92-6	Butanoic Acid (Butyric)	< 0.24	NA	NA	NA	NA	
116-53-0	2-Methylbutanoic Acid	< 0.24	NA	NA	NA	NA	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	NA	NA	NA	NA	
109-52-4	Pentanoic Acid (Valeric)	< 0.25	NA	NA	NA	NA	
97-61-0	2-Methylpentanoic Acid	< 0.24	NA	NA	NA	NA	
105-43-1	3-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.24	NA	NA	NA	NA	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	NA	NA	NA	NA	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.24	NA	NA	NA	NA	
149-57-5	2-Ethylhexanoic Acid	< 0.25	NA	NA	NA	NA	
98-89-5	Cyclohexanecarboxylic Acid	< 0.24	NA	NA	NA	NA	
124-07-2	Octanoic Acid (Caprylic)	< 0.24	NA	NA	NA	NA	
65-85-0	Benzoic Acid	< 0.26	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.

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P130529-DLCS

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Evelyn Ibarra
Sampling Media: Silica Gel Tube
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/29/13
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	CAS Acceptance Limits	RPD	RPD Limit	Data Qualifier
64-19-7	Acetic Acid	22.6	21.5	21.6	**95**	**96**	66-135	1	26	
79-09-4	Propionic Acid (Propanoic)	10.7	10.8	10.3	**101**	**96**	76-126	5	14	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	11.2	11.5	10.8	**103**	**96**	84-118	7	13	
107-92-6	Butanoic Acid (Butyric)	10.8	10.8	10.2	**100**	**94**	85-117	6	11	
116-53-0	2-Methylbutanoic Acid	10.4	10.7	10.2	**103**	**98**	87-116	5	11	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	11.3	11.1	11.0	**98**	**97**	88-114	1	10	
109-52-4	Pentanoic Acid (Valeric)	10.5	10.4	10.1	**99**	**96**	89-113	3	11	
97-61-0	2-Methylpentanoic Acid	10.8	11.1	10.6	**103**	**98**	88-113	5	10	
105-43-1	3-Methylpentanoic Acid	10.9	11.1	10.5	**102**	**96**	88-113	6	10	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	10.8	10.9	10.3	**101**	**95**	89-113	6	11	
142-62-1	Hexanoic Acid (Caproic)	10.9	10.6	10.3	**97**	**94**	87-114	3	11	
111-14-8	Heptanoic Acid (Enanthoic)	8.95	9.21	9.16	**103**	**102**	84-116	1	10	
149-57-5	2-Ethylhexanoic Acid	8.14	8.27	7.92	**102**	**97**	82-111	5	12	
98-89-5	Cyclohexanecarboxylic Acid	6.93	7.09	7.00	**102**	**101**	85-115	1	10	
124-07-2	Octanoic Acid (Caprylic)	8.65	8.70	8.78	**101**	**102**	84-116	1	11	
65-85-0	Benzoic Acid	8.17	8.38	7.76	**103**	**95**	72-109	8	13	
112-05-0	Nonanoic Acid (Pelargonic)	8.82	8.61	8.52	**98**	**97**	84-116	1	10	

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521GN-SU** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302192-001

Test Code: ASTM D 5504-08 Date Collected: 5/21/13
Instrument ID: Agilent 7890A/GC22/SCD Time Collected: 16:33
Analyst: Jennifer Young Date Received: 5/23/13
Sample Type: 6.0 L Summa Canister Date Analyzed: 5/28/13
Test Notes: Time Analyzed: 15:27
Container ID: AS00460 Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -10.23 Final Pressure (psig): 3.56

Canister Dilution Factor: 4.09

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	28	ND	20	
463-58-1	Carbonyl Sulfide	ND	50	ND	20	
74-93-1	Methyl Mercaptan	ND	40	ND	20	
75-08-1	Ethyl Mercaptan	ND	52	ND	20	
75-18-3	Dimethyl Sulfide	ND	52	ND	20	
75-15-0	Carbon Disulfide	ND	32	ND	10	
75-33-2	Isopropyl Mercaptan	ND	64	ND	20	
75-66-1	tert-Butyl Mercaptan	ND	75	ND	20	
107-03-9	n-Propyl Mercaptan	ND	64	ND	20	
624-89-5	Ethyl Methyl Sulfide	ND	64	ND	20	
110-02-1	Thiophene	ND	70	ND	20	
513-44-0	Isobutyl Mercaptan	ND	75	ND	20	
352-93-2	Diethyl Sulfide	ND	75	ND	20	
109-79-5	n-Butyl Mercaptan	ND	75	ND	20	
624-92-0	Dimethyl Disulfide	ND	39	ND	10	
616-44-4	3-Methylthiophene	ND	82	ND	20	
110-01-0	Tetrahydrothiophene	ND	74	ND	20	
638-02-8	2,5-Dimethylthiophene	ND	94	ND	20	
872-55-9	2-Ethylthiophene	ND	94	ND	20	
110-81-6	Diethyl Disulfide	ND	51	ND	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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521LF-SU** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302192-002

Test Code: ASTM D 5504-08 Date Collected: 5/21/13
Instrument ID: Agilent 7890A/GC22/SCD Time Collected: 16:23
Analyst: Jennifer Young Date Received: 5/23/13
Sample Type: 6.0 L Summa Canister Date Analyzed: 5/28/13
Test Notes: Time Analyzed: 15:51
Container ID: AS00158 Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -0.54 Final Pressure (psig): 3.83

Canister Dilution Factor: 1.31

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.1	ND	6.6	
463-58-1	Carbonyl Sulfide	ND	16	ND	6.6	
74-93-1	Methyl Mercaptan	ND	13	ND	6.6	
75-08-1	Ethyl Mercaptan	ND	17	ND	6.6	
75-18-3	Dimethyl Sulfide	ND	17	ND	6.6	
75-15-0	Carbon Disulfide	ND	10	ND	3.3	
75-33-2	Isopropyl Mercaptan	ND	20	ND	6.6	
75-66-1	tert-Butyl Mercaptan	ND	24	ND	6.6	
107-03-9	n-Propyl Mercaptan	ND	20	ND	6.6	
624-89-5	Ethyl Methyl Sulfide	ND	20	ND	6.6	
110-02-1	Thiophene	ND	23	ND	6.6	
513-44-0	Isobutyl Mercaptan	ND	24	ND	6.6	
352-93-2	Diethyl Sulfide	ND	24	ND	6.6	
109-79-5	n-Butyl Mercaptan	ND	24	ND	6.6	
624-92-0	Dimethyl Disulfide	ND	13	ND	3.3	
616-44-4	3-Methylthiophene	ND	26	ND	6.6	
110-01-0	Tetrahydrothiophene	ND	24	ND	6.6	
638-02-8	2,5-Dimethylthiophene	ND	30	ND	6.6	
872-55-9	2-Ethylthiophene	ND	30	ND	6.6	
110-81-6	Diethyl Disulfide	ND	16	ND	3.3	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521HS-SU** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302192-003

Test Code: ASTM D 5504-08 Date Collected: 5/21/13
Instrument ID: Agilent 7890A/GC22/SCD Time Collected: 15:58
Analyst: Jennifer Young Date Received: 5/23/13
Sample Type: 6.0 L Summa Canister Date Analyzed: 5/28/13
Test Notes: Time Analyzed: 16:27
Container ID: AS00304 Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -0.52 Final Pressure (psig): 3.65

Canister Dilution Factor: 1.29

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.0	ND	6.5	
463-58-1	Carbonyl Sulfide	ND	16	ND	6.5	
74-93-1	Methyl Mercaptan	ND	13	ND	6.5	
75-08-1	Ethyl Mercaptan	ND	16	ND	6.5	
75-18-3	Dimethyl Sulfide	ND	16	ND	6.5	
75-15-0	Carbon Disulfide	ND	10	ND	3.2	
75-33-2	Isopropyl Mercaptan	ND	20	ND	6.5	
75-66-1	tert-Butyl Mercaptan	ND	24	ND	6.5	
107-03-9	n-Propyl Mercaptan	ND	20	ND	6.5	
624-89-5	Ethyl Methyl Sulfide	ND	20	ND	6.5	
110-02-1	Thiophene	ND	22	ND	6.5	
513-44-0	Isobutyl Mercaptan	ND	24	ND	6.5	
352-93-2	Diethyl Sulfide	ND	24	ND	6.5	
109-79-5	n-Butyl Mercaptan	ND	24	ND	6.5	
624-92-0	Dimethyl Disulfide	ND	12	ND	3.2	
616-44-4	3-Methylthiophene	ND	26	ND	6.5	
110-01-0	Tetrahydrothiophene	ND	23	ND	6.5	
638-02-8	2,5-Dimethylthiophene	ND	30	ND	6.5	
872-55-9	2-Ethylthiophene	ND	30	ND	6.5	
110-81-6	Diethyl Disulfide	ND	16	ND	3.2	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521BLANK-SU**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P1302192-004

Test Code: ASTM D 5504-08
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Jennifer Young
Sample Type: 6.0 L Summa Canister
Test Notes:
Container ID: AS00205

Date Collected: 5/21/13
Time Collected: 14:22
Date Received: 5/23/13
Date Analyzed: 5/28/13
Time Analyzed: 15:04
Volume(s) Analyzed: 1.0 ml(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302192
CAS Sample ID: P130528-MB

Test Code: ASTM D 5504-08
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Jennifer Young
Sample Type: 6.0 L Summa Canister
Test Notes:

Date Collected: NA
Time Collected: NA
Date Received: NA
Date Analyzed: 5/28/13
Time Analyzed: 14:42
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

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.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P130528-LCS

Test Code: ASTM D 5504-08 Date Collected: NA
Instrument ID: Agilent 7890A/GC22/SCD Date Received: NA
Analyst: Jennifer Young Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount ppbV	Result ppbV	% Recovery	CAS Acceptance Limits	Data Qualifier
7783-06-4	Hydrogen Sulfide	2,050	**2,650**	**129**	63-140	
463-58-1	Carbonyl Sulfide	2,020	**2,520**	**125**	63-138	
74-93-1	Methyl Mercaptan	1,890	**2,420**	**128**	63-144	

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521GN-SU** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302192-001

Test Code: EPA TO-15 Modified Date Collected: 5/21/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/23/13
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00460

Initial Pressure (psig): -10.23 Final Pressure (psig): 3.56

Canister Dilution Factor: 4.09

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	**9.4**	2.0	**5.5**	1.2	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.6**	2.0	**0.52**	0.41	
74-87-3	Chloromethane	ND	2.0	ND	0.99	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	2.0	ND	0.29	
75-01-4	Vinyl Chloride	ND	2.0	ND	0.80	
106-99-0	1,3-Butadiene	ND	2.0	ND	0.92	
74-83-9	Bromomethane	ND	2.0	ND	0.53	
75-00-3	Chloroethane	ND	2.0	ND	0.78	
64-17-5	Ethanol	**69**	20	**37**	11	
75-05-8	Acetonitrile	**5.4**	2.0	**3.2**	1.2	
107-02-8	Acrolein	ND	8.2	ND	3.6	
67-64-1	Acetone	**25**	20	**10**	8.6	
75-69-4	Trichlorofluoromethane	ND	2.0	ND	0.36	
67-63-0	2-Propanol (Isopropyl Alcohol)	**31**	20	**13**	8.3	
107-13-1	Acrylonitrile	ND	2.0	ND	0.94	
75-35-4	1,1-Dichloroethene	ND	2.0	ND	0.52	
75-09-2	Methylene Chloride	**5.0**	2.0	**1.4**	0.59	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	2.0	ND	0.65	
76-13-1	Trichlorotrifluoroethane	ND	2.0	ND	0.27	
75-15-0	Carbon Disulfide	ND	20	ND	6.6	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	ND	0.52	
75-34-3	1,1-Dichloroethane	ND	2.0	ND	0.51	
1634-04-4	Methyl tert-Butyl Ether	ND	2.0	ND	0.57	
108-05-4	Vinyl Acetate	ND	20	ND	5.8	
78-93-3	2-Butanone (MEK)	ND	20	ND	6.9	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521GN-SU** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302192-001

Test Code: EPA TO-15 Modified Date Collected: 5/21/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/23/13
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00460

Initial Pressure (psig): -10.23 Final Pressure (psig): 3.56

Canister Dilution Factor: 4.09

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	2.0	ND	0.52	
141-78-6	Ethyl Acetate	ND	4.1	ND	1.1	
110-54-3	n-Hexane	**3.0**	2.0	**0.84**	0.58	
67-66-3	Chloroform	ND	2.0	ND	0.42	
109-99-9	Tetrahydrofuran (THF)	**4.8**	2.0	**1.6**	0.69	
107-06-2	1,2-Dichloroethane	ND	2.0	ND	0.51	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ND	0.37	
71-43-2	Benzene	ND	2.0	ND	0.64	
56-23-5	Carbon Tetrachloride	ND	2.0	ND	0.33	
110-82-7	Cyclohexane	ND	4.1	ND	1.2	
78-87-5	1,2-Dichloropropane	ND	2.0	ND	0.44	
75-27-4	Bromodichloromethane	ND	2.0	ND	0.31	
79-01-6	Trichloroethene	ND	2.0	ND	0.38	
123-91-1	1,4-Dioxane	ND	2.0	ND	0.57	
80-62-6	Methyl Methacrylate	ND	4.1	ND	1.0	
142-82-5	n-Heptane	ND	2.0	ND	0.50	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ND	0.45	
108-10-1	4-Methyl-2-pentanone	ND	2.0	ND	0.50	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ND	0.45	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ND	0.37	
108-88-3	Toluene	**6.5**	2.0	**1.7**	0.54	
591-78-6	2-Hexanone	ND	2.0	ND	0.50	
124-48-1	Dibromochloromethane	ND	2.0	ND	0.24	
106-93-4	1,2-Dibromoethane	ND	2.0	ND	0.27	
123-86-4	n-Butyl Acetate	ND	2.0	ND	0.43	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.** CAS Project ID: P1302192
Client Sample ID: **521GN-SU** CAS Sample ID: P1302192-001
Client Project ID: **Bridgeton Landfill / 182608005**

Test Code: EPA TO-15 Modified Date Collected: 5/21/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/23/13
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00460

Initial Pressure (psig): -10.23 Final Pressure (psig): 3.56

Canister Dilution Factor: 4.09

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	2.0	ND	0.44	
127-18-4	Tetrachloroethene	ND	2.0	ND	0.30	
108-90-7	Chlorobenzene	ND	2.0	ND	0.44	
100-41-4	Ethylbenzene	ND	2.0	ND	0.47	
179601-23-1	m,p-Xylenes	ND	4.1	ND	0.94	
75-25-2	Bromoform	ND	2.0	ND	0.20	
100-42-5	Styrene	ND	2.0	ND	0.48	
95-47-6	o-Xylene	ND	2.0	ND	0.47	
111-84-2	n-Nonane	**5.1**	2.0	**0.98**	0.39	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ND	0.30	
98-82-8	Cumene	ND	2.0	ND	0.42	
80-56-8	alpha-Pinene	ND	2.0	ND	0.37	
103-65-1	n-Propylbenzene	ND	2.0	ND	0.42	
622-96-8	4-Ethyltoluene	ND	2.0	ND	0.42	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	ND	0.42	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	ND	0.42	
100-44-7	Benzyl Chloride	ND	2.0	ND	0.40	
541-73-1	1,3-Dichlorobenzene	ND	2.0	ND	0.34	
106-46-7	1,4-Dichlorobenzene	ND	2.0	ND	0.34	
95-50-1	1,2-Dichlorobenzene	ND	2.0	ND	0.34	
5989-27-5	d-Limonene	**12**	2.0	**2.2**	0.37	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	ND	0.21	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	ND	0.28	
91-20-3	Naphthalene	ND	2.0	ND	0.39	
87-68-3	Hexachlorobutadiene	ND	2.0	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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521GN-SU** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302192-001

Tentatively Identified Compounds

Test Code: EPA TO-15 Modified Date Collected: 5/21/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/23/13
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AS00460

Initial Pressure (psig): -10.23 Final Pressure (psig): 3.56

Canister Dilution Factor: 4.09

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
4.60	Isobutane	**10**	
6.82	Isopentane	**25**	
18.39	n-Octanal + Unidentifed Compound	**8.2**	
18.71	2-Ethyl-1-hexanol	**24**	
19.46	n-Nonanal	**24**	
19.86	2-Ethylhexylacetate	**12**	
19.98	Unidentified Siloxane	**13**	
20.38	n-Decanal	**8.6**	
21.96	Unidentified Compound	**9.0**	

T = Analyte is a tentatively identified compound, result is estimated.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521LF-SU** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302192-002

Test Code: EPA TO-15 Modified Date Collected: 5/21/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/23/13
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00158

Initial Pressure (psig): -0.54 Final Pressure (psig): 3.83

Canister Dilution Factor: 1.31

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	0.66	ND	0.38	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.4**	0.66	**0.48**	0.13	
74-87-3	Chloromethane	ND	0.66	ND	0.32	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.66	ND	0.094	
75-01-4	Vinyl Chloride	ND	0.66	ND	0.26	
106-99-0	1,3-Butadiene	ND	0.66	ND	0.30	
74-83-9	Bromomethane	ND	0.66	ND	0.17	
75-00-3	Chloroethane	ND	0.66	ND	0.25	
64-17-5	Ethanol	**6.6**	6.6	**3.5**	3.5	
75-05-8	Acetonitrile	ND	0.66	ND	0.39	
107-02-8	Acrolein	ND	2.6	ND	1.1	
67-64-1	Acetone	**8.6**	6.6	**3.6**	2.8	
75-69-4	Trichlorofluoromethane	**1.7**	0.66	**0.31**	0.12	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	6.6	ND	2.7	
107-13-1	Acrylonitrile	ND	0.66	ND	0.30	
75-35-4	1,1-Dichloroethene	ND	0.66	ND	0.17	
75-09-2	Methylene Chloride	ND	0.66	ND	0.19	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.66	ND	0.21	
76-13-1	Trichlorotrifluoroethane	ND	0.66	ND	0.086	
75-15-0	Carbon Disulfide	ND	6.6	ND	2.1	
156-60-5	trans-1,2-Dichloroethene	ND	0.66	ND	0.17	
75-34-3	1,1-Dichloroethane	ND	0.66	ND	0.16	
1634-04-4	Methyl tert-Butyl Ether	ND	0.66	ND	0.18	
108-05-4	Vinyl Acetate	ND	6.6	ND	1.9	
78-93-3	2-Butanone (MEK)	ND	6.6	ND	2.2	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521LF-SU** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302192-002

Test Code: EPA TO-15 Modified Date Collected: 5/21/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/23/13
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00158

Initial Pressure (psig): -0.54 Final Pressure (psig): 3.83

Canister Dilution Factor: 1.31

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.66	ND	0.17	
141-78-6	Ethyl Acetate	ND	1.3	ND	0.36	
110-54-3	n-Hexane	ND	0.66	ND	0.19	
67-66-3	Chloroform	ND	0.66	ND	0.13	
109-99-9	Tetrahydrofuran (THF)	ND	0.66	ND	0.22	
107-06-2	1,2-Dichloroethane	ND	0.66	ND	0.16	
71-55-6	1,1,1-Trichloroethane	ND	0.66	ND	0.12	
71-43-2	Benzene	ND	0.66	ND	0.21	
56-23-5	Carbon Tetrachloride	ND	0.66	ND	0.10	
110-82-7	Cyclohexane	ND	1.3	ND	0.38	
78-87-5	1,2-Dichloropropane	ND	0.66	ND	0.14	
75-27-4	Bromodichloromethane	ND	0.66	ND	0.098	
79-01-6	Trichloroethene	ND	0.66	ND	0.12	
123-91-1	1,4-Dioxane	ND	0.66	ND	0.18	
80-62-6	Methyl Methacrylate	ND	1.3	ND	0.32	
142-82-5	n-Heptane	ND	0.66	ND	0.16	
10061-01-5	cis-1,3-Dichloropropene	ND	0.66	ND	0.14	
108-10-1	4-Methyl-2-pentanone	ND	0.66	ND	0.16	
10061-02-6	trans-1,3-Dichloropropene	ND	0.66	ND	0.14	
79-00-5	1,1,2-Trichloroethane	ND	0.66	ND	0.12	
108-88-3	Toluene	ND	0.66	ND	0.17	
591-78-6	2-Hexanone	ND	0.66	ND	0.16	
124-48-1	Dibromochloromethane	ND	0.66	ND	0.077	
106-93-4	1,2-Dibromoethane	ND	0.66	ND	0.085	
123-86-4	n-Butyl Acetate	ND	0.66	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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.** CAS Project ID: P1302192
Client Sample ID: **521LF-SU** CAS Sample ID: P1302192-002
Client Project ID: **Bridgeton Landfill / 182608005**

Test Code: EPA TO-15 Modified Date Collected: 5/21/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/23/13
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00158

Initial Pressure (psig): -0.54 Final Pressure (psig): 3.83

Canister Dilution Factor: 1.31

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.66	ND	0.14	
127-18-4	Tetrachloroethene	ND	0.66	ND	0.097	
108-90-7	Chlorobenzene	ND	0.66	ND	0.14	
100-41-4	Ethylbenzene	ND	0.66	ND	0.15	
179601-23-1	m,p-Xylenes	ND	1.3	ND	0.30	
75-25-2	Bromoform	ND	0.66	ND	0.063	
100-42-5	Styrene	ND	0.66	ND	0.15	
95-47-6	o-Xylene	ND	0.66	ND	0.15	
111-84-2	n-Nonane	ND	0.66	ND	0.12	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.66	ND	0.095	
98-82-8	Cumene	ND	0.66	ND	0.13	
80-56-8	alpha-Pinene	**2.1**	0.66	**0.38**	0.12	
103-65-1	n-Propylbenzene	ND	0.66	ND	0.13	
622-96-8	4-Ethyltoluene	ND	0.66	ND	0.13	
108-67-8	1,3,5-Trimethylbenzene	ND	0.66	ND	0.13	
95-63-6	1,2,4-Trimethylbenzene	ND	0.66	ND	0.13	
100-44-7	Benzyl Chloride	ND	0.66	ND	0.13	
541-73-1	1,3-Dichlorobenzene	ND	0.66	ND	0.11	
106-46-7	1,4-Dichlorobenzene	ND	0.66	ND	0.11	
95-50-1	1,2-Dichlorobenzene	ND	0.66	ND	0.11	
5989-27-5	d-Limonene	**0.72**	0.66	**0.13**	0.12	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.66	ND	0.068	
120-82-1	1,2,4-Trichlorobenzene	ND	0.66	ND	0.088	
91-20-3	Naphthalene	ND	0.66	ND	0.13	
87-68-3	Hexachlorobutadiene	ND	0.66	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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521LF-SU** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302192-002

Tentatively Identified Compounds

Test Code: EPA TO-15 Modified Date Collected: 5/21/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/23/13
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AS00158

Initial Pressure (psig): -0.54 Final Pressure (psig): 3.83

Canister Dilution Factor: 1.31

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
15.39	n-Hexanal	**8.9**	
16.08	Hexamethylcyclotrisiloxane	**6.2**	
18.40	Unidentified Compound	**7.9**	
18.71	2-Ethyl-1-hexanol	**7.1**	
19.46	n-Nonanal	**31**	
19.86	2-Ethylhexylacetate	**3.3**	
19.98	Unidentified Siloxane	**11**	
20.38	n-Decanal	**5.8**	
21.48	Unidentified Siloxane	**2.5**	

T = Analyte is a tentatively identified compound, result is estimated.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521HS-SU** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302192-003

Test Code: EPA TO-15 Modified Date Collected: 5/21/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/23/13
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00304

Initial Pressure (psig): -0.52 Final Pressure (psig): 3.65

Canister Dilution Factor: 1.29

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	0.65	ND	0.37	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.3**	0.65	**0.47**	0.13	
74-87-3	Chloromethane	ND	0.65	ND	0.31	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.65	ND	0.092	
75-01-4	Vinyl Chloride	ND	0.65	ND	0.25	
106-99-0	1,3-Butadiene	ND	0.65	ND	0.29	
74-83-9	Bromomethane	ND	0.65	ND	0.17	
75-00-3	Chloroethane	ND	0.65	ND	0.24	
64-17-5	Ethanol	ND	6.5	ND	3.4	
75-05-8	Acetonitrile	**1.2**	0.65	**0.71**	0.38	
107-02-8	Acrolein	ND	2.6	ND	1.1	
67-64-1	Acetone	**9.7**	6.5	**4.1**	2.7	
75-69-4	Trichlorofluoromethane	**1.1**	0.65	**0.20**	0.11	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	6.5	ND	2.6	
107-13-1	Acrylonitrile	ND	0.65	ND	0.30	
75-35-4	1,1-Dichloroethene	ND	0.65	ND	0.16	
75-09-2	Methylene Chloride	ND	0.65	ND	0.19	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.65	ND	0.21	
76-13-1	Trichlorotrifluoroethane	ND	0.65	ND	0.084	
75-15-0	Carbon Disulfide	ND	6.5	ND	2.1	
156-60-5	trans-1,2-Dichloroethene	ND	0.65	ND	0.16	
75-34-3	1,1-Dichloroethane	ND	0.65	ND	0.16	
1634-04-4	Methyl tert-Butyl Ether	ND	0.65	ND	0.18	
108-05-4	Vinyl Acetate	ND	6.5	ND	1.8	
78-93-3	2-Butanone (MEK)	ND	6.5	ND	2.2	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521HS-SU** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302192-003

Test Code: EPA TO-15 Modified Date Collected: 5/21/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/23/13
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00304

Initial Pressure (psig): -0.52 Final Pressure (psig): 3.65

Canister Dilution Factor: 1.29

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.65	ND	0.16	
141-78-6	Ethyl Acetate	ND	1.3	ND	0.36	
110-54-3	n-Hexane	ND	0.65	ND	0.18	
67-66-3	Chloroform	ND	0.65	ND	0.13	
109-99-9	Tetrahydrofuran (THF)	ND	0.65	ND	0.22	
107-06-2	1,2-Dichloroethane	ND	0.65	ND	0.16	
71-55-6	1,1,1-Trichloroethane	ND	0.65	ND	0.12	
71-43-2	Benzene	ND	0.65	ND	0.20	
56-23-5	Carbon Tetrachloride	ND	0.65	ND	0.10	
110-82-7	Cyclohexane	ND	1.3	ND	0.37	
78-87-5	1,2-Dichloropropane	ND	0.65	ND	0.14	
75-27-4	Bromodichloromethane	ND	0.65	ND	0.096	
79-01-6	Trichloroethene	ND	0.65	ND	0.12	
123-91-1	1,4-Dioxane	ND	0.65	ND	0.18	
80-62-6	Methyl Methacrylate	ND	1.3	ND	0.32	
142-82-5	n-Heptane	ND	0.65	ND	0.16	
10061-01-5	cis-1,3-Dichloropropene	ND	0.65	ND	0.14	
108-10-1	4-Methyl-2-pentanone	ND	0.65	ND	0.16	
10061-02-6	trans-1,3-Dichloropropene	ND	0.65	ND	0.14	
79-00-5	1,1,2-Trichloroethane	ND	0.65	ND	0.12	
108-88-3	Toluene	ND	0.65	ND	0.17	
591-78-6	2-Hexanone	ND	0.65	ND	0.16	
124-48-1	Dibromochloromethane	ND	0.65	ND	0.076	
106-93-4	1,2-Dibromoethane	ND	0.65	ND	0.084	
123-86-4	n-Butyl Acetate	ND	0.65	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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.** CAS Project ID: P1302192
Client Sample ID: **521HS-SU** CAS Sample ID: P1302192-003
Client Project ID: **Bridgeton Landfill / 182608005**

Test Code: EPA TO-15 Modified Date Collected: 5/21/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/23/13
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00304

Initial Pressure (psig): -0.52 Final Pressure (psig): 3.65

Canister Dilution Factor: 1.29

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.65	ND	0.14	
127-18-4	Tetrachloroethene	ND	0.65	ND	0.095	
108-90-7	Chlorobenzene	ND	0.65	ND	0.14	
100-41-4	Ethylbenzene	ND	0.65	ND	0.15	
179601-23-1	m,p-Xylenes	ND	1.3	ND	0.30	
75-25-2	Bromoform	ND	0.65	ND	0.062	
100-42-5	Styrene	ND	0.65	ND	0.15	
95-47-6	o-Xylene	ND	0.65	ND	0.15	
111-84-2	n-Nonane	ND	0.65	ND	0.12	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.65	ND	0.094	
98-82-8	Cumene	ND	0.65	ND	0.13	
80-56-8	alpha-Pinene	ND	0.65	ND	0.12	
103-65-1	n-Propylbenzene	ND	0.65	ND	0.13	
622-96-8	4-Ethyltoluene	ND	0.65	ND	0.13	
108-67-8	1,3,5-Trimethylbenzene	ND	0.65	ND	0.13	
95-63-6	1,2,4-Trimethylbenzene	ND	0.65	ND	0.13	
100-44-7	Benzyl Chloride	ND	0.65	ND	0.12	
541-73-1	1,3-Dichlorobenzene	ND	0.65	ND	0.11	
106-46-7	1,4-Dichlorobenzene	ND	0.65	ND	0.11	
95-50-1	1,2-Dichlorobenzene	ND	0.65	ND	0.11	
5989-27-5	d-Limonene	ND	0.65	ND	0.12	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.65	ND	0.067	
120-82-1	1,2,4-Trichlorobenzene	ND	0.65	ND	0.087	
91-20-3	Naphthalene	ND	0.65	ND	0.12	
87-68-3	Hexachlorobutadiene	ND	0.65	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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521HS-SU** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302192-003

Tentatively Identified Compounds

Test Code: EPA TO-15 Modified Date Collected: 5/21/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/23/13
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AS00304

Initial Pressure (psig): -0.52 Final Pressure (psig): 3.65

Canister Dilution Factor: 1.29

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
9.02	Unidentified Compound	**2.6**	
16.08	Hexamethylcyclotrisiloxane	**17**	
18.16	6-Methyl-5-heptene-2-one	**2.9**	
18.40	Unidentified Compound	**15**	
19.46	n-Nonanal	**7.9**	
19.99	Unidentified Siloxane	**19**	
20.38	n-Decanal	**11**	
21.47	Unidentified Siloxane	**9.0**	

T = Analyte is a tentatively identified compound, result is estimated.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521BLANK-SU** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302192-004

Test Code: EPA TO-15 Modified Date Collected: 5/21/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/23/13
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00205

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	0.50	ND	0.29	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.50	ND	0.10	
74-87-3	Chloromethane	ND	0.50	ND	0.24	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.50	ND	0.072	
75-01-4	Vinyl Chloride	ND	0.50	ND	0.20	
106-99-0	1,3-Butadiene	ND	0.50	ND	0.23	
74-83-9	Bromomethane	ND	0.50	ND	0.13	
75-00-3	Chloroethane	ND	0.50	ND	0.19	
64-17-5	Ethanol	ND	5.0	ND	2.7	
75-05-8	Acetonitrile	ND	0.50	ND	0.30	
107-02-8	Acrolein	ND	2.0	ND	0.87	
67-64-1	Acetone	ND	5.0	ND	2.1	
75-69-4	Trichlorofluoromethane	ND	0.50	ND	0.089	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	5.0	ND	2.0	
107-13-1	Acrylonitrile	ND	0.50	ND	0.23	
75-35-4	1,1-Dichloroethene	ND	0.50	ND	0.13	
75-09-2	Methylene Chloride	ND	0.50	ND	0.14	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.50	ND	0.16	
76-13-1	Trichlorotrifluoroethane	ND	0.50	ND	0.065	
75-15-0	Carbon Disulfide	ND	5.0	ND	1.6	
156-60-5	trans-1,2-Dichloroethene	ND	0.50	ND	0.13	
75-34-3	1,1-Dichloroethane	ND	0.50	ND	0.12	
1634-04-4	Methyl tert-Butyl Ether	ND	0.50	ND	0.14	
108-05-4	Vinyl Acetate	ND	5.0	ND	1.4	
78-93-3	2-Butanone (MEK)	ND	5.0	ND	1.7	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521BLANK-SU** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302192-004

Test Code: EPA TO-15 Modified Date Collected: 5/21/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/23/13
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00205

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.50	ND	0.13	
141-78-6	Ethyl Acetate	ND	1.0	ND	0.28	
110-54-3	n-Hexane	ND	0.50	ND	0.14	
67-66-3	Chloroform	ND	0.50	ND	0.10	
109-99-9	Tetrahydrofuran (THF)	ND	0.50	ND	0.17	
107-06-2	1,2-Dichloroethane	ND	0.50	ND	0.12	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ND	0.092	
71-43-2	Benzene	ND	0.50	ND	0.16	
56-23-5	Carbon Tetrachloride	ND	0.50	ND	0.080	
110-82-7	Cyclohexane	ND	1.0	ND	0.29	
78-87-5	1,2-Dichloropropane	ND	0.50	ND	0.11	
75-27-4	Bromodichloromethane	ND	0.50	ND	0.075	
79-01-6	Trichloroethene	ND	0.50	ND	0.093	
123-91-1	1,4-Dioxane	ND	0.50	ND	0.14	
80-62-6	Methyl Methacrylate	ND	1.0	ND	0.24	
142-82-5	n-Heptane	ND	0.50	ND	0.12	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ND	0.11	
108-10-1	4-Methyl-2-pentanone	ND	0.50	ND	0.12	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ND	0.11	
79-00-5	1,1,2-Trichloroethane	ND	0.50	ND	0.092	
108-88-3	Toluene	ND	0.50	ND	0.13	
591-78-6	2-Hexanone	ND	0.50	ND	0.12	
124-48-1	Dibromochloromethane	ND	0.50	ND	0.059	
106-93-4	1,2-Dibromoethane	ND	0.50	ND	0.065	
123-86-4	n-Butyl Acetate	ND	0.50	ND	0.11	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.** CAS Project ID: P1302192
Client Sample ID: **521BLANK-SU** CAS Sample ID: P1302192-004
Client Project ID: **Bridgeton Landfill / 182608005**

Test Code: EPA TO-15 Modified Date Collected: 5/21/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/23/13
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00205

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.50	ND	0.11	
127-18-4	Tetrachloroethene	ND	0.50	ND	0.074	
108-90-7	Chlorobenzene	ND	0.50	ND	0.11	
100-41-4	Ethylbenzene	ND	0.50	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.0	ND	0.23	
75-25-2	Bromoform	ND	0.50	ND	0.048	
100-42-5	Styrene	ND	0.50	ND	0.12	
95-47-6	o-Xylene	ND	0.50	ND	0.12	
111-84-2	n-Nonane	ND	0.50	ND	0.095	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	ND	0.073	
98-82-8	Cumene	ND	0.50	ND	0.10	
80-56-8	alpha-Pinene	ND	0.50	ND	0.090	
103-65-1	n-Propylbenzene	ND	0.50	ND	0.10	
622-96-8	4-Ethyltoluene	ND	0.50	ND	0.10	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	ND	0.10	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	ND	0.10	
100-44-7	Benzyl Chloride	ND	0.50	ND	0.097	
541-73-1	1,3-Dichlorobenzene	ND	0.50	ND	0.083	
106-46-7	1,4-Dichlorobenzene	ND	0.50	ND	0.083	
95-50-1	1,2-Dichlorobenzene	ND	0.50	ND	0.083	
5989-27-5	d-Limonene	ND	0.50	ND	0.090	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.50	ND	0.052	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	ND	0.067	
91-20-3	Naphthalene	ND	0.50	ND	0.095	
87-68-3	Hexachlorobutadiene	ND	0.50	ND	0.047	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **521BLANK-SU** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302192-004

Tentatively Identified Compounds

Test Code: EPA TO-15 Modified Date Collected: 5/21/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/23/13
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AS00205

Canister Dilution Factor: 1.00

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
9.65	Trimethylsilanol	**5.3**	
16.08	Hexamethylcyclotrisiloxane	**3.5**	

T = Analyte is a tentatively identified compound, result is estimated.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P130528-MB

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: NA
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	0.50	ND	0.29	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.50	ND	0.10	
74-87-3	Chloromethane	ND	0.50	ND	0.24	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.50	ND	0.072	
75-01-4	Vinyl Chloride	ND	0.50	ND	0.20	
106-99-0	1,3-Butadiene	ND	0.50	ND	0.23	
74-83-9	Bromomethane	ND	0.50	ND	0.13	
75-00-3	Chloroethane	ND	0.50	ND	0.19	
64-17-5	Ethanol	ND	5.0	ND	2.7	
75-05-8	Acetonitrile	ND	0.50	ND	0.30	
107-02-8	Acrolein	ND	2.0	ND	0.87	
67-64-1	Acetone	ND	5.0	ND	2.1	
75-69-4	Trichlorofluoromethane	ND	0.50	ND	0.089	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	5.0	ND	2.0	
107-13-1	Acrylonitrile	ND	0.50	ND	0.23	
75-35-4	1,1-Dichloroethene	ND	0.50	ND	0.13	
75-09-2	Methylene Chloride	ND	0.50	ND	0.14	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.50	ND	0.16	
76-13-1	Trichlorotrifluoroethane	ND	0.50	ND	0.065	
75-15-0	Carbon Disulfide	ND	5.0	ND	1.6	
156-60-5	trans-1,2-Dichloroethene	ND	0.50	ND	0.13	
75-34-3	1,1-Dichloroethane	ND	0.50	ND	0.12	
1634-04-4	Methyl tert-Butyl Ether	ND	0.50	ND	0.14	
108-05-4	Vinyl Acetate	ND	5.0	ND	1.4	
78-93-3	2-Butanone (MEK)	ND	5.0	ND	1.7	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P130528-MB

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: NA
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.50	ND	0.13	
141-78-6	Ethyl Acetate	ND	1.0	ND	0.28	
110-54-3	n-Hexane	ND	0.50	ND	0.14	
67-66-3	Chloroform	ND	0.50	ND	0.10	
109-99-9	Tetrahydrofuran (THF)	ND	0.50	ND	0.17	
107-06-2	1,2-Dichloroethane	ND	0.50	ND	0.12	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ND	0.092	
71-43-2	Benzene	ND	0.50	ND	0.16	
56-23-5	Carbon Tetrachloride	ND	0.50	ND	0.080	
110-82-7	Cyclohexane	ND	1.0	ND	0.29	
78-87-5	1,2-Dichloropropane	ND	0.50	ND	0.11	
75-27-4	Bromodichloromethane	ND	0.50	ND	0.075	
79-01-6	Trichloroethene	ND	0.50	ND	0.093	
123-91-1	1,4-Dioxane	ND	0.50	ND	0.14	
80-62-6	Methyl Methacrylate	ND	1.0	ND	0.24	
142-82-5	n-Heptane	ND	0.50	ND	0.12	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ND	0.11	
108-10-1	4-Methyl-2-pentanone	ND	0.50	ND	0.12	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ND	0.11	
79-00-5	1,1,2-Trichloroethane	ND	0.50	ND	0.092	
108-88-3	Toluene	ND	0.50	ND	0.13	
591-78-6	2-Hexanone	ND	0.50	ND	0.12	
124-48-1	Dibromochloromethane	ND	0.50	ND	0.059	
106-93-4	1,2-Dibromoethane	ND	0.50	ND	0.065	
123-86-4	n-Butyl Acetate	ND	0.50	ND	0.11	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.** CAS Project ID: P1302192
Client Sample ID: **Method Blank** CAS Sample ID: P130528-MB
Client Project ID: **Bridgeton Landfill / 182608005**

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: NA
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.50	ND	0.11	
127-18-4	Tetrachloroethene	ND	0.50	ND	0.074	
108-90-7	Chlorobenzene	ND	0.50	ND	0.11	
100-41-4	Ethylbenzene	ND	0.50	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.0	ND	0.23	
75-25-2	Bromoform	ND	0.50	ND	0.048	
100-42-5	Styrene	ND	0.50	ND	0.12	
95-47-6	o-Xylene	ND	0.50	ND	0.12	
111-84-2	n-Nonane	ND	0.50	ND	0.095	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	ND	0.073	
98-82-8	Cumene	ND	0.50	ND	0.10	
80-56-8	alpha-Pinene	ND	0.50	ND	0.090	
103-65-1	n-Propylbenzene	ND	0.50	ND	0.10	
622-96-8	4-Ethyltoluene	ND	0.50	ND	0.10	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	ND	0.10	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	ND	0.10	
100-44-7	Benzyl Chloride	ND	0.50	ND	0.097	
541-73-1	1,3-Dichlorobenzene	ND	0.50	ND	0.083	
106-46-7	1,4-Dichlorobenzene	ND	0.50	ND	0.083	
95-50-1	1,2-Dichlorobenzene	ND	0.50	ND	0.083	
5989-27-5	d-Limonene	ND	0.50	ND	0.090	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.50	ND	0.052	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	ND	0.067	
91-20-3	Naphthalene	ND	0.50	ND	0.095	
87-68-3	Hexachlorobutadiene	ND	0.50	ND	0.047	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P130528-MB

Tentatively Identified Compounds

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: NA
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L 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		

SURROGATE SPIKE RECOVERY RESULTS

Client: **Stantec Consulting Services, Inc.**
Client Project ID: **Bridgeton Landfill / 182608005** CAS Project ID: P1302192

Test Code: EPA TO-15 Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date(s) Collected: 5/21/13
Analyst: John Rice Date(s) Received: 5/23/13
Sample Type: 6.0 L Summa Canister(s) Date(s) Analyzed: 5/28/13
Test Notes:

Client Sample ID	CAS Sample ID	1,2-Dichloroethane-d4 Percent Recovered	Toluene-d8 Percent Recovered	Bromofluorobenzene Percent Recovered	Acceptance Limits	Data Qualifier
Method Blank	P130528-MB	**98**	**102**	**107**	70-130	
Lab Control Sample	P130528-LCS	**97**	**99**	**107**	70-130	
521GN-SU	P1302192-001	**98**	**99**	**105**	70-130	
521LF-SU	P1302192-002	**99**	**100**	**102**	70-130	
521HS-SU	P1302192-003	**100**	**98**	**102**	70-130	
521BLANK-SU	P1302192-004	**97**	**99**	**104**	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.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P130528-LCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: NA
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	Result µg/m³	% Recovery	CAS Acceptance Limits	Data Qualifier
115-07-1	Propene	204	**216**	**106**	58-139	
75-71-8	Dichlorodifluoromethane (CFC 12)	202	**188**	**93**	63-115	
74-87-3	Chloromethane	196	**175**	**89**	58-122	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	206	**190**	**92**	65-115	
75-01-4	Vinyl Chloride	200	**180**	**90**	64-122	
106-99-0	1,3-Butadiene	210	**193**	**92**	57-141	
74-83-9	Bromomethane	200	**178**	**89**	68-122	
75-00-3	Chloroethane	202	**182**	**90**	66-120	
64-17-5	Ethanol	958	**810**	**85**	58-126	
75-05-8	Acetonitrile	202	**182**	**90**	64-136	
107-02-8	Acrolein	204	**194**	**95**	58-129	
67-64-1	Acetone	1,040	**901**	**87**	60-114	
75-69-4	Trichlorofluoromethane	210	**181**	**86**	62-107	
67-63-0	2-Propanol (Isopropyl Alcohol)	396	**328**	**83**	54-118	
107-13-1	Acrylonitrile	206	**202**	**98**	72-143	
75-35-4	1,1-Dichloroethene	218	**208**	**95**	69-119	
75-09-2	Methylene Chloride	212	**169**	**80**	64-113	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	214	**206**	**96**	59-131	
76-13-1	Trichlorotrifluoroethane	212	**205**	**97**	69-117	
75-15-0	Carbon Disulfide	208	**182**	**88**	65-115	
156-60-5	trans-1,2-Dichloroethene	202	**194**	**96**	70-126	
75-34-3	1,1-Dichloroethane	206	**197**	**96**	68-116	
1634-04-4	Methyl tert-Butyl Ether	204	**204**	**100**	69-120	
108-05-4	Vinyl Acetate	988	**938**	**95**	58-160	
78-93-3	2-Butanone (MEK)	212	**205**	**97**	70-127	

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.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P130528-LCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: NA
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	Result µg/m³	% Recovery	CAS Acceptance Limits	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	214	**207**	**97**	70-119	
141-78-6	Ethyl Acetate	412	**391**	**95**	72-129	
110-54-3	n-Hexane	206	**195**	**95**	63-115	
67-66-3	Chloroform	222	**202**	**91**	68-110	
109-99-9	Tetrahydrofuran (THF)	208	**187**	**90**	60-126	
107-06-2	1,2-Dichloroethane	208	**196**	**94**	69-118	
71-55-6	1,1,1-Trichloroethane	204	**196**	**96**	68-120	
71-43-2	Benzene	208	**174**	**84**	69-117	
56-23-5	Carbon Tetrachloride	212	**217**	**102**	65-134	
110-82-7	Cyclohexane	402	**383**	**95**	69-114	
78-87-5	1,2-Dichloropropane	204	**199**	**98**	70-116	
75-27-4	Bromodichloromethane	204	**204**	**100**	71-126	
79-01-6	Trichloroethene	198	**198**	**100**	71-119	
123-91-1	1,4-Dioxane	206	**224**	**109**	72-126	
80-62-6	Methyl Methacrylate	414	**421**	**102**	75-136	
142-82-5	n-Heptane	202	**196**	**97**	70-117	
10061-01-5	cis-1,3-Dichloropropene	196	**221**	**113**	75-132	
108-10-1	4-Methyl-2-pentanone	210	**199**	**95**	70-133	
10061-02-6	trans-1,3-Dichloropropene	218	**219**	**100**	78-136	
79-00-5	1,1,2-Trichloroethane	202	**198**	**98**	72-119	
108-88-3	Toluene	208	**196**	**94**	65-116	
591-78-6	2-Hexanone	228	**228**	**100**	62-132	
124-48-1	Dibromochloromethane	216	**229**	**106**	66-140	
106-93-4	1,2-Dibromoethane	208	**226**	**109**	69-130	
123-86-4	n-Butyl Acetate	228	**213**	**93**	63-136	

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.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** CAS Project ID: P1302192
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P130528-LCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: NA
Analyst: John Rice Date Analyzed: 5/28/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	Result µg/m³	% Recovery	CAS Acceptance Limits	Data Qualifier
111-65-9	n-Octane	206	**197**	**96**	66-118	
127-18-4	Tetrachloroethene	190	**186**	**98**	63-123	
108-90-7	Chlorobenzene	208	**200**	**96**	66-118	
100-41-4	Ethylbenzene	206	**202**	**98**	66-119	
179601-23-1	m,p-Xylenes	412	**395**	**96**	64-118	
75-25-2	Bromoform	216	**226**	**105**	64-140	
100-42-5	Styrene	208	**234**	**113**	68-132	
95-47-6	o-Xylene	200	**193**	**97**	65-120	
111-84-2	n-Nonane	202	**196**	**97**	64-117	
79-34-5	1,1,2,2-Tetrachloroethane	198	**193**	**97**	63-128	
98-82-8	Cumene	196	**193**	**98**	65-121	
80-56-8	alpha-Pinene	192	**192**	**100**	66-123	
103-65-1	n-Propylbenzene	198	**199**	**101**	65-121	
622-96-8	4-Ethyltoluene	204	**209**	**102**	64-122	
108-67-8	1,3,5-Trimethylbenzene	208	**200**	**96**	64-125	
95-63-6	1,2,4-Trimethylbenzene	200	**207**	**104**	64-131	
100-44-7	Benzyl Chloride	206	**195**	**95**	67-146	
541-73-1	1,3-Dichlorobenzene	206	**210**	**102**	64-130	
106-46-7	1,4-Dichlorobenzene	212	**203**	**96**	61-124	
95-50-1	1,2-Dichlorobenzene	204	**198**	**97**	63-126	
5989-27-5	d-Limonene	206	**231**	**112**	62-133	
96-12-8	1,2-Dibromo-3-chloropropane	202	**226**	**112**	62-155	
120-82-1	1,2,4-Trichlorobenzene	200	**209**	**105**	59-146	
91-20-3	Naphthalene	178	**184**	**103**	56-143	
87-68-3	Hexachlorobutadiene	208	**203**	**98**	58-133	

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.

LABORATORY REPORT

June 3, 2013

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

RE: Bridgeton Landfill / 182608005

Dear Deborah:

Enclosed are the results of the samples submitted to our laboratory on May 24, 2013. For your reference, these analyses have been assigned our service request number P1302212.

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.caslab.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 3:55 pm, Jun 03, 2013

Samantha Henningsen
Project Manager

Client: Stantec Consulting Services, Inc. Service Request No: P1302212
Project: Bridgeton Landfill / 182608005

CASE NARRATIVE

The samples were received intact under chain of custody on May 24, 2013 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 or DoD-ELAP scope of accreditation.

Amine Analysis

The Alumina tuebe samples were analyzed for triethylamine and dimethylisopropyl amine using a gas chromatograph equipped with a nitrogen phosphorus detector (NPD). This method is not included on the laboratory's NELAP or DoD-ELAP scope of accreditation.

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 or DoD-ELAP scope of accreditation.

The tube for sample 523GN-6 NH4 (P1302212-007) contained moisture.

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 or DoD-ELAP scope of accreditation.

Sulfur Analysis

The Silonite Canister samples were also analyzed for twenty sulfur compounds per ASTM D 5504-08 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 or DoD-ELAP scope of accreditation.

Client: Stantec Consulting Services, Inc. Service Request No: P1302212
Project: Bridgeton Landfill / 182608005

CASE NARRATIVE

Volatile Organic Compound Analysis

The Silonite Canister 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. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP scope of accreditation.

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.

The Trip Blank (523Blank-SU) contained multiple TICS. No Target compounds with levels above the reporting limit were detected. The representativeness of a trip blank for air analyses is debatable since, following the use of any canister, it is standard laboratory procedure to clean and condition each can prior to being released for another project. Based on the results the data does not appear to be significantly affected by this anomaly. No further corrective action was appropriate.

Columbia Analytical Services, Inc. dba 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	L11-203
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	2012039
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	494864
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	T104704413-12-3
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA015272012-2
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.caslab.com, 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.

DETAIL SUMMARY REPORT

Client: Stantec Consulting Services, Inc.
Project ID: Bridgeton Landfill / 182608005
Service Request: P1302212

Date Received: 5/24/2013
Time Received: 09:45

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pf1 (psig)	ASTM D5504-08 - Sulfur Can	TO-15 - VOC Cans	TO-11A - Carbonyls	Amines - Amines	OSHA ID-164 Modified - Ammonia	Carbox Acids - Carboxy Acids
523GN-SU	P1302212-001	Air	5/23/2013	15:55	AS00432	0.56	3.58	X	X				
523LF-SU	P1302212-002	Air	5/23/2013	14:55	AS00313	0.60	3.75	X	X				
523HS-SU	P1302212-003	Air	5/23/2013	15:15	AS00068	0.58	3.53	X	X				
523Blank-SU	P1302212-004	Air	5/23/2013	10:15	AS00198	-14.30	3.70	X	X				
523GN-2 ALD	P1302212-005	Air	5/23/2013	15:55						X			
523GN-4 Amine	P1302212-006	Air	5/23/2013	15:55							X		
523GN-6 NH4	P1302212-007	Air	5/23/2013	15:55								X	
523GN-7 CARBOX	P1302212-008	Air	5/23/2013	15:55									X
523LF-2 ALD	P1302212-009	Air	5/23/2013	14:55						X			
523LF-4 Amine	P1302212-010	Air	5/23/2013	14:55							X		
523LF-6 NH4	P1302212-011	Air	5/23/2013	14:55								X	
523LF-7 CARBOX	P1302212-012	Air	5/23/2013	14:55									X
523HS-2 ALD	P1302212-013	Air	5/23/2013	14:45						X			
523HS-4 Amine	P1302212-014	Air	5/23/2013	15:15							X		
523HS-6 NH4	P1302212-015	Air	5/23/2013	15:15								X	
523HS-7 CARBOX	P1302212-016	Air	5/23/2013	17:09									X
523B-10 ALD	P1302212-017	Air	5/23/2013	10:20						X			
523B-12 Amine	P1302212-018	Air	5/23/2013	10:20							X		
523B-14 NH4	P1302212-019	Air	5/23/2013	10:20								X	
523B-15 CARBOX	P1302212-020	Air	5/23/2013	10:20									X

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Air - 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

CAS Project No. P130221

Company Name & Address (Reporting Information)
STANTEC CONSULTING
1500 LAKE SHORE DRIVE
COLUMBUS, OH 43204

Project Name: BRIDGETON LANDFILL

Project Number: 182608005

CAS Contact: SAMANTHA HENNINGSEN

Project Manager: DEB GRAY

P.O. # / Billing Information: SAME

Phone: 614 486 4383 Fax: 614 486 4387

Email Address for Result Reporting: deb.gray@STANTEC.com

Sampler (Print & Sign): CHRIS LALONDE

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	mL Sample Volume	Analysis Method	Comments e.g. Actual Preservative or specific instructions
523GN - SU	(1) to 34	5/23/13	15:55	14206	sfc00042	-14.46	-0.01		EPA TO15 + TICs	
523LF - SU	(2) to 40		14:55	13685	sfc00003	-14.46	-0.04		ASTM D5504	
523HS - SU	(3) 40 77		15:15	4596	sfc00026	-14.46	-0.04		* BOTH METHODS	
523BLANK - SU	(4) -1447		10:15	12176	NA	-14.46	-14.46		ALL CANS	
				PUMP ID						
523GN-2 ALD	(5)	5/23/13	11:55 15:55	2016	NA	NA	NA	286,800	EPA TO11a	
523GN-4 AMINE	(6)		11:55 15:55	3004				48,828	AQL 101	
523GN-6 NH4	(7)		11:55 15:55	2012				122,040	OSHA ID 188	
523GN-7 CARBOX	(8)		11:55 15:55	3003				0 * fault quantitate mass only	AQL 102	
523LF-2 ALD	(9)	5/23/13	10:48 14:55	3006	NA	NA	NA	299,982	EPA TO11a	
523LF-4 AMINE	(10)		10:48 14:55	1016				54,464	AQL 101	
523LF-6 NH4	(11)		10:48 14:55	2015				121,771	OSHA ID 188	
523LF-7 CARBOX	(12)		10:48 14:55	3002				100,159	AQL 102	

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

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP): CS OK

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	5/23/13	7:30pm		5/24/13	0900
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank Temperature 6 °C

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Air - 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

CAS Project No. P130212

CAS Contact: SAMANTHA HENNINGSEN

Company Name & Address (Reporting Information)
STANTEC CONSULTING
1500 LAKE SHORE DRIVE
COLUMBUS, OH 43204

Project Name: BRIDGETON LANDFILL

Project Number: 182608005

Project Manager: DEB GRAY

P.O. # / Billing Information: SAME

Phone: 614 486 4383 Fax: 614 486 4387

Email Address for Result Reporting: deb.gray@STANTEC.com

Sampler (Print & Sign): CHRIS LaLONDE

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Pump ID (Bar code # - AC, SC, etc.)	Flow Controller ID (Bar code #- FC #)	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	mL Sample Volume	Analysis Method	Comments e.g. Actual Preservative or specific instructions
523 HS-2 ALD	(13)	5/23/13	11:05 / 14:45	1964	NA	NA	NA	265,717	EPA	TO11a
523 HS-4 AMINE	(11)	"	11:05 / 15:15	2018	"	"	"	57,798	AQL	101
523 HS-6 NH4	(15)	"	11:05 / 15:15	2014	"	"	"	120,299	OSHA	ID188
523 HS-7 CARBOX	(16)	"	13:01 / 13:09	1021	"	"	"	49,276 / 99,820 (ESL)	AQL	102
523B-10 ALD	(17)	5/23/13	10:20	NA	FIELD	BLANKS		0	EPA	TO11a
523B-12 AMINE	(18)	"	"	"	"	"		0	AQL	101
523B-14 NH4	(14)	"	"	"	"	"		0	OSHA	ID188
523B-15 CARBOX	(12)	"	"	"	"	"		0	AQL	102

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

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	5/23/13	7:30		5/24/13	0945
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank Temperature ____°C

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Sample Acceptance Check Form

Client: Stantec Consulting Services, Inc. Work order: P1302212

Project: Bridgeton Landfill / 182608005

Sample(s) received on: 5/24/13 Date opened: 5/24/13 by: MZAMORA

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: 6° C Blank Temperature: ° C **Gel Packs**			
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
P1302212-001.01	6.0 L Silonite Can					
P1302212-002.01	6.0 L Silonite Can					
P1302212-003.01	6.0 L Silonite Can					
P1302212-004.01	6.0 L Silonite Can					
P1302212-005.01	Silica Gel DNPH Tube					
P1302212-006.03	Treated Alumina Tube					
P1302212-007.04	Anasorb 747 Tube					Moisture present in the tube
P1302212-008.01	Silica Gel (C. Acids)					

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

Flow controllers listed on COC werte NOT received.

Client is writing sample IDs directly on the canisters, and placing tape (w/ the sample ID on it) directly on the canisters.

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

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Sample Acceptance Check Form

Client: Stantec Consulting Services, Inc. Work order: P1302212

Project: Bridgeton Landfill / 182608005

Sample(s) received on: 5/24/13 Date opened: 5/24/13 by: MZAMORA

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1302212-009.01	Silica Gel DNPH Tube					
P1302212-010.03	Treated Alumina Tube					
P1302212-011.04	Anasorb 747 Tube					
P1302212-012.01	Silica Gel (C. Acids)					
P1302212-013.01	Silica Gel DNPH Tube					
P1302212-014.03	Treated Alumina Tube					
P1302212-015.04	Anasorb 747 Tube					
P1302212-016.01	Silica Gel (C. Acids)					
P1302212-017.01	Silica Gel DNPH Tube					
P1302212-018.03	Treated Alumina Tube					
P1302212-019.04	Anasorb 747 Tube					
P1302212-020.01	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)

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523GN-2 ALD**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P1302212-005

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

Date Collected: 5/23/13
Date Received: 5/24/13
Date Analyzed: 5/28/13
Desorption Volume: 1.0 ml
Volume Sampled: 286.8 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	120	**0.40**	0.35	**0.33**	0.28	
75-07-0	Acetaldehyde	920	**3.2**	0.35	**1.8**	0.19	**BH**
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	0.080	
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	< 100	ND	0.35	ND	0.085	
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.
BH = Results indicate breakthrough; back section of tube greater than front section.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523LF-2 ALD**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P1302212-009

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

Date Collected: 5/23/13
Date Received: 5/24/13
Date Analyzed: 5/28/13
Desorption Volume: 1.0 ml
Volume Sampled: 299.982 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	**0.89**	0.27	
75-07-0	Acetaldehyde	210	**0.70**	0.33	**0.39**	0.19	
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	0.077	
590-86-3	Isovaleraldehyde	< 100	ND	0.33	ND	0.095	
110-62-3	Valeraldehyde	< 100	ND	0.33	ND	0.095	
529-20-4	o-Tolualdehyde	< 100	ND	0.33	ND	0.068	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.67	ND	0.14	
66-25-1	n-Hexaldehyde	< 100	ND	0.33	ND	0.081	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.33	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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523HS-2 ALD**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P1302212-013

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

Date Collected: 5/23/13
Date Received: 5/24/13
Date Analyzed: 5/28/13
Desorption Volume: 1.0 ml
Volume Sampled: 265.717 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	0.38	ND	0.31	
75-07-0	Acetaldehyde	290	**1.1**	0.38	**0.60**	0.21	
123-38-6	Propionaldehyde	< 100	ND	0.38	ND	0.16	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.38	ND	0.13	
123-72-8	Butyraldehyde	< 100	ND	0.38	ND	0.13	
100-52-7	Benzaldehyde	< 100	ND	0.38	ND	0.087	
590-86-3	Isovaleraldehyde	< 100	ND	0.38	ND	0.11	
110-62-3	Valeraldehyde	< 100	ND	0.38	ND	0.11	
529-20-4	o-Tolualdehyde	< 100	ND	0.38	ND	0.077	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.75	ND	0.15	
66-25-1	n-Hexaldehyde	< 100	ND	0.38	ND	0.092	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.38	ND	0.069	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523B-10 ALD**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P1302212-017

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

Date Collected: 5/23/13
Date Received: 5/24/13
Date Analyzed: 5/28/13
Desorption Volume: 1.0 ml
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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P130528-MB

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

Date Collected: NA
Date Received: NA
Date Analyzed: 05/28/13
Desorption Volume: 1.0 ml
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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523GN-4 Amine**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P1302212-006

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 5/23/13
Date Received: 5/24/13
Date Analyzed: 5/30/13
Desorption Volume: 2.0 ml
Volume Sampled: 48.828 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 0.53	ND	11	ND	5.9	
75-04-7	Ethylamine	< 0.55	ND	11	ND	6.1	
75-50-3	Trimethylamine	< 0.52	ND	11	ND	4.4	
75-31-0	Isopropylamine	< 0.52	ND	11	ND	4.4	
75-64-9	tert-Butylamine	< 1.1	ND	22	ND	7.2	
107-10-8	n-Propylamine	< 0.55	ND	11	ND	4.7	
109-89-7	Diethylamine	< 0.52	ND	11	ND	3.5	
13952-84-6	sec-Butylamine	< 0.53	ND	11	ND	3.6	
78-81-9	Isobutylamine	< 0.54	ND	11	ND	3.7	
109-73-9	n-Butylamine	< 0.53	ND	11	ND	3.7	
108-18-9	Diisopropylamine	< 0.51	ND	10	ND	2.5	
121-44-8	Triethylamine	< 0.51	ND	10	ND	2.5	
142-84-7	Dipropylamine	< 0.52	ND	11	ND	2.6	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523LF-4 Amine**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P1302212-010

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 5/23/13
Date Received: 5/24/13
Date Analyzed: 5/30/13
Desorption Volume: 2.0 ml
Volume Sampled: 54.464 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 0.53	ND	9.7	ND	5.3	
75-04-7	Ethylamine	< 0.55	ND	10	ND	5.4	
75-50-3	Trimethylamine	< 0.52	ND	9.5	ND	3.9	
75-31-0	Isopropylamine	< 0.52	ND	9.6	ND	4.0	
75-64-9	tert-Butylamine	< 1.1	ND	19	ND	6.5	
107-10-8	n-Propylamine	< 0.55	ND	10	ND	4.2	
109-89-7	Diethylamine	< 0.52	ND	9.5	ND	3.2	
13952-84-6	sec-Butylamine	< 0.53	ND	9.7	ND	3.2	
78-81-9	Isobutylamine	< 0.54	ND	9.9	ND	3.3	
109-73-9	n-Butylamine	< 0.53	ND	9.8	ND	3.3	
108-18-9	Diisopropylamine	< 0.51	ND	9.3	ND	2.3	
121-44-8	Triethylamine	< 0.51	ND	9.4	ND	2.3	
142-84-7	Dipropylamine	< 0.52	ND	9.5	ND	2.3	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523HS-4 Amine**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P1302212-014

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 5/23/13
Date Received: 5/24/13
Date Analyzed: 5/30/13
Desorption Volume: 2.0 ml
Volume Sampled: 57.798 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 0.53	ND	9.1	ND	5.0	
75-04-7	Ethylamine	< 0.55	ND	9.5	ND	5.1	
75-50-3	Trimethylamine	< 0.52	ND	8.9	ND	3.7	
75-31-0	Isopropylamine	< 0.52	ND	9.1	ND	3.8	
75-64-9	tert-Butylamine	< 1.1	ND	18	ND	6.1	
107-10-8	n-Propylamine	< 0.55	ND	9.5	ND	3.9	
109-89-7	Diethylamine	< 0.52	ND	8.9	ND	3.0	
13952-84-6	sec-Butylamine	< 0.53	ND	9.2	ND	3.1	
78-81-9	Isobutylamine	< 0.54	ND	9.3	ND	3.1	
109-73-9	n-Butylamine	< 0.53	ND	9.2	ND	3.1	
108-18-9	Diisopropylamine	< 0.51	ND	8.8	ND	2.1	
121-44-8	Triethylamine	< 0.51	ND	8.9	ND	2.1	
142-84-7	Dipropylamine	< 0.52	ND	8.9	ND	2.2	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523B-12 Amine**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P1302212-018

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 5/23/13
Date Received: 5/24/13
Date Analyzed: 5/30/13
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	< 0.53	NA	NA	NA	NA	
75-04-7	Ethylamine	< 0.55	NA	NA	NA	NA	
75-50-3	Trimethylamine	< 0.52	NA	NA	NA	NA	
75-31-0	Isopropylamine	< 0.52	NA	NA	NA	NA	
75-64-9	tert-Butylamine	< 1.1	NA	NA	NA	NA	
107-10-8	n-Propylamine	< 0.55	NA	NA	NA	NA	
109-89-7	Diethylamine	< 0.52	NA	NA	NA	NA	
13952-84-6	sec-Butylamine	< 0.53	NA	NA	NA	NA	
78-81-9	Isobutylamine	< 0.54	NA	NA	NA	NA	
109-73-9	n-Butylamine	< 0.53	NA	NA	NA	NA	
108-18-9	Diisopropylamine	< 0.51	NA	NA	NA	NA	
121-44-8	Triethylamine	< 0.51	NA	NA	NA	NA	
142-84-7	Dipropylamine	< 0.52	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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P130530-MB

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: NA
Date Received: NA
Date Analyzed: 5/30/13
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	< 0.53	NA	NA	NA	NA	
75-04-7	Ethylamine	< 0.55	NA	NA	NA	NA	
75-50-3	Trimethylamine	< 0.52	NA	NA	NA	NA	
75-31-0	Isopropylamine	< 0.52	NA	NA	NA	NA	
75-64-9	tert-Butylamine	< 1.1	NA	NA	NA	NA	
107-10-8	n-Propylamine	< 0.55	NA	NA	NA	NA	
109-89-7	Diethylamine	< 0.52	NA	NA	NA	NA	
13952-84-6	sec-Butylamine	< 0.53	NA	NA	NA	NA	
78-81-9	Isobutylamine	< 0.54	NA	NA	NA	NA	
109-73-9	n-Butylamine	< 0.53	NA	NA	NA	NA	
108-18-9	Diisopropylamine	< 0.51	NA	NA	NA	NA	
121-44-8	Triethylamine	< 0.51	NA	NA	NA	NA	
142-84-7	Dipropylamine	< 0.52	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.

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P130530-DLCS

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Zheng Wang
Sampling Media: Treated Alumina Tube
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/30/13
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	CAS Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-40-3	Dimethylamine	8.30	7.90	8.17	**95**	**98**	57-129	3	19	
75-04-7	Ethylamine	8.39	7.92	8.37	**94**	**100**	52-127	6	18	
75-50-3	Trimethylamine	9.97	8.59	8.91	**86**	**89**	44-139	3	35	
75-31-0	Isopropylamine	9.01	8.79	9.35	**98**	**104**	64-127	6	16	
75-64-9	tert-Butylamine	8.65	8.31	8.87	**96**	**103**	65-129	7	20	
107-10-8	n-Propylamine	9.89	9.83	10.6	**99**	**107**	57-127	8	14	
109-89-7	Diethylamine	9.19	9.18	9.70	**100**	**106**	65-128	6	16	
13952-84-6	sec-Butylamine	9.24	9.28	9.98	**100**	**108**	68-125	8	14	
78-81-9	Isobutylamine	8.80	8.92	9.52	**101**	**108**	65-125	7	15	
109-73-9	n-Butylamine	8.53	8.79	9.07	**103**	**106**	68-123	3	16	
108-18-9	Diisopropylamine	8.34	8.09	8.85	**97**	**106**	63-128	9	17	
121-44-8	Triethylamine	9.01	8.56	9.13	**95**	**101**	65-125	6	19	
142-84-7	Dipropylamine	8.48	8.81	9.22	**104**	**109**	70-125	5	14	

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Project ID: **Bridgeton Landfill / 182608005** CAS Project ID: P1302212

Ammonia

Test Code: OSHA ID-188/ID-164
Instrument ID: PH01/Thermo Orion 920A+/Ammonia ISE
Analyst: Sue Anderson
Sampling Media: Anasorb 747 Tube(s) (Sulfuric Treated)
Test Notes: **BC, DE**

Date(s) Collected: 5/23/13
Date Received: 5/24/13
Date Analyzed: 5/30/13
Desorption Volume: 0.10 Liter(s)

Client Sample ID	CAS Sample ID	Sample Volume Liter(s)	Dilution Factor	Result mg/Tube	Result mg/m³	MRL mg/m³	**Result ppmV**	MRL ppmV	Data Qualifier
523GN-6 NH4	P1302212-007	122.040	1.0	0.014	**0.11**	0.088	**0.16**	0.13	
523LF-6 NH4	P1302212-011	121.771	1.0	< 0.011	ND	0.088	ND	0.13	
523HS-6 NH4	P1302212-015	120.289	1.0	< 0.011	ND	0.089	ND	0.13	
523B-14 NH4	P1302212-019	NA	1.0	< 0.011	NA	NA	NA	NA	
Method Blank	P130530-MB	NA	1.0	< 0.011	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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P130530-LCS, P130530-DLCS

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary

Test Code: OSHA ID-188/ID-164
Instrument ID: PH01/Thermo Orion 920A+/Ammonia ISE
Analyst: Sue Anderson
Sampling Media: Anasorb 747 Tube(s) (Sulfuric Treated)
Test Notes:

Date Sampled: N/A
Date Received: N/A
Date Analyzed: 5/30/13
Volume(s) Analyzed: N/A

Compound	Spike Amount LCS / DLCS mg/L	Result LCS mg/L	Result DLCS mg/L	% Recovery LCS	% Recovery DLCS	CAS Acceptance Limits	Relative Percent Difference	RPD Limit	Data Qualifier
Ammonia	1.00	1.07	1.05	107	105	80-104	2	5	

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523GN-7 CARBOX**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P1302212-008

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

Date Collected: 5/23/13
Date Received: 5/24/13
Date Analyzed: 5/29 - 5/30/13
Desorption Volume: 1.0 ml
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)	< 0.24	NA	NA	NA	NA	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	NA	NA	NA	NA	
107-92-6	Butanoic Acid (Butyric)	< 0.24	NA	NA	NA	NA	
116-53-0	2-Methylbutanoic Acid	< 0.24	NA	NA	NA	NA	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	NA	NA	NA	NA	
109-52-4	Pentanoic Acid (Valeric)	< 0.25	NA	NA	NA	NA	
97-61-0	2-Methylpentanoic Acid	< 0.24	NA	NA	NA	NA	
105-43-1	3-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.24	NA	NA	NA	NA	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	NA	NA	NA	NA	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.24	NA	NA	NA	NA	
149-57-5	2-Ethylhexanoic Acid	< 0.25	NA	NA	NA	NA	
98-89-5	Cyclohexanecarboxylic Acid	< 0.24	NA	NA	NA	NA	
124-07-2	Octanoic Acid (Caprylic)	< 0.24	NA	NA	NA	NA	
65-85-0	Benzoic Acid	< 0.26	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.
NA = Not applicable.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523LF-7 CARBOX**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P1302212-012

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

Date Collected: 5/23/13
Date Received: 5/24/13
Date Analyzed: 5/30/13
Desorption Volume: 1.0 ml
Volume Sampled: 100.159 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	8.1	
79-09-4	Propionic Acid (Propanoic)	< 0.24	ND	2.4	ND	0.80	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.4	ND	0.68	
107-92-6	Butanoic Acid (Butyric)	< 0.24	ND	2.4	ND	0.67	
116-53-0	2-Methylbutanoic Acid	< 0.24	ND	2.4	ND	0.58	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.4	ND	0.59	
109-52-4	Pentanoic Acid (Valeric)	< 0.25	ND	2.5	ND	0.59	
97-61-0	2-Methylpentanoic Acid	< 0.24	ND	2.4	ND	0.51	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.52	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.24	ND	2.4	ND	0.51	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.5	ND	0.52	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.24	ND	2.4	ND	0.46	
149-57-5	2-Ethylhexanoic Acid	< 0.25	ND	2.4	ND	0.42	
98-89-5	Cyclohexanecarboxylic Acid	< 0.24	ND	2.4	ND	0.46	
124-07-2	Octanoic Acid (Caprylic)	< 0.24	ND	2.4	ND	0.41	
65-85-0	Benzoic Acid	< 0.26	ND	2.5	ND	0.51	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.5	ND	0.38	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523HS-7 CARBOX**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P1302212-016

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

Date Collected: 5/23/13
Date Received: 5/24/13
Date Analyzed: 5/30/13
Desorption Volume: 1.0 ml
Volume Sampled: 99.820 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	8.1	
79-09-4	Propionic Acid (Propanoic)	< 0.24	ND	2.4	ND	0.80	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.5	ND	0.68	
107-92-6	Butanoic Acid (Butyric)	< 0.24	ND	2.4	ND	0.68	
116-53-0	2-Methylbutanoic Acid	< 0.24	ND	2.4	ND	0.58	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.5	ND	0.59	
109-52-4	Pentanoic Acid (Valeric)	< 0.25	ND	2.5	ND	0.59	
97-61-0	2-Methylpentanoic Acid	< 0.24	ND	2.4	ND	0.51	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.52	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.24	ND	2.4	ND	0.51	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.5	ND	0.52	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.24	ND	2.4	ND	0.46	
149-57-5	2-Ethylhexanoic Acid	< 0.25	ND	2.5	ND	0.42	
98-89-5	Cyclohexanecarboxylic Acid	< 0.24	ND	2.4	ND	0.46	
124-07-2	Octanoic Acid (Caprylic)	< 0.24	ND	2.4	ND	0.41	
65-85-0	Benzoic Acid	< 0.26	ND	2.6	ND	0.51	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.5	ND	0.38	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523B-15 CARBOX**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P1302212-020

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

Date Collected: 5/23/13
Date Received: 5/24/13
Date Analyzed: 5/30/13
Desorption Volume: 1.0 ml
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)	< 0.24	NA	NA	NA	NA	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	NA	NA	NA	NA	
107-92-6	Butanoic Acid (Butyric)	< 0.24	NA	NA	NA	NA	
116-53-0	2-Methylbutanoic Acid	< 0.24	NA	NA	NA	NA	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	NA	NA	NA	NA	
109-52-4	Pentanoic Acid (Valeric)	< 0.25	NA	NA	NA	NA	
97-61-0	2-Methylpentanoic Acid	< 0.24	NA	NA	NA	NA	
105-43-1	3-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.24	NA	NA	NA	NA	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	NA	NA	NA	NA	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.24	NA	NA	NA	NA	
149-57-5	2-Ethylhexanoic Acid	< 0.25	NA	NA	NA	NA	
98-89-5	Cyclohexanecarboxylic Acid	< 0.24	NA	NA	NA	NA	
124-07-2	Octanoic Acid (Caprylic)	< 0.24	NA	NA	NA	NA	
65-85-0	Benzoic Acid	< 0.26	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.
NA = Not applicable.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P130529-MB

Test Code: GC/MS Date Collected: NA
Instrument ID: Agilent 5973/Agilent 6890/MS14 Date Received: NA
Analyst: Evelyn Ibarra Date Analyzed: 5/29/13
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)	< 0.24	NA	NA	NA	NA	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	NA	NA	NA	NA	
107-92-6	Butanoic Acid (Butyric)	< 0.24	NA	NA	NA	NA	
116-53-0	2-Methylbutanoic Acid	< 0.24	NA	NA	NA	NA	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	NA	NA	NA	NA	
109-52-4	Pentanoic Acid (Valeric)	< 0.25	NA	NA	NA	NA	
97-61-0	2-Methylpentanoic Acid	< 0.24	NA	NA	NA	NA	
105-43-1	3-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.24	NA	NA	NA	NA	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	NA	NA	NA	NA	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.24	NA	NA	NA	NA	
149-57-5	2-Ethylhexanoic Acid	< 0.25	NA	NA	NA	NA	
98-89-5	Cyclohexanecarboxylic Acid	< 0.24	NA	NA	NA	NA	
124-07-2	Octanoic Acid (Caprylic)	< 0.24	NA	NA	NA	NA	
65-85-0	Benzoic Acid	< 0.26	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.
NA = Not applicable.

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P130529-DLCS

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Evelyn Ibarra
Sampling Media: Silica Gel Tube
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/29/13
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	CAS Acceptance Limits	RPD	RPD Limit	Data Qualifier
64-19-7	Acetic Acid	22.6	21.5	21.6	**95**	**96**	66-135	1	26	
79-09-4	Propionic Acid (Propanoic)	10.7	10.8	10.3	**101**	**96**	76-126	5	14	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	11.2	11.5	10.8	**103**	**96**	84-118	7	13	
107-92-6	Butanoic Acid (Butyric)	10.8	10.8	10.2	**100**	**94**	85-117	6	11	
116-53-0	2-Methylbutanoic Acid	10.4	10.7	10.2	**103**	**98**	87-116	5	11	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	11.3	11.1	11.0	**98**	**97**	88-114	1	10	
109-52-4	Pentanoic Acid (Valeric)	10.5	10.4	10.1	**99**	**96**	89-113	3	11	
97-61-0	2-Methylpentanoic Acid	10.8	11.1	10.6	**103**	**98**	88-113	5	10	
105-43-1	3-Methylpentanoic Acid	10.9	11.1	10.5	**102**	**96**	88-113	6	10	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	10.8	10.9	10.3	**101**	**95**	89-113	6	11	
142-62-1	Hexanoic Acid (Caproic)	10.9	10.6	10.3	**97**	**94**	87-114	3	11	
111-14-8	Heptanoic Acid (Enanthoic)	8.95	9.21	9.16	**103**	**102**	84-116	1	10	
149-57-5	2-Ethylhexanoic Acid	8.14	8.27	7.92	**102**	**97**	82-111	5	12	
98-89-5	Cyclohexanecarboxylic Acid	6.93	7.09	7.00	**102**	**101**	85-115	1	10	
124-07-2	Octanoic Acid (Caprylic)	8.65	8.70	8.78	**101**	**102**	84-116	1	11	
65-85-0	Benzoic Acid	8.17	8.38	7.76	**103**	**95**	72-109	8	13	
112-05-0	Nonanoic Acid (Pelargonic)	8.82	8.61	8.52	**98**	**97**	84-116	1	10	

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523GN-SU**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P1302212-001

Test Code: ASTM D 5504-08
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Mike Conejo
Sample Type: 6.0 L Summa Canister
Test Notes:
Container ID: AS00432

Date Collected: 5/23/13
Time Collected: 15:55
Date Received: 5/24/13
Date Analyzed: 5/29/13
Time Analyzed: 09:45
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): 0.56 Final Pressure (psig): 3.58

Canister Dilution Factor: 1.20

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	8.4	ND	6.0	
463-58-1	Carbonyl Sulfide	ND	15	ND	6.0	
74-93-1	Methyl Mercaptan	ND	12	ND	6.0	
75-08-1	Ethyl Mercaptan	ND	15	ND	6.0	
75-18-3	Dimethyl Sulfide	ND	15	ND	6.0	
75-15-0	Carbon Disulfide	ND	9.3	ND	3.0	
75-33-2	Isopropyl Mercaptan	ND	19	ND	6.0	
75-66-1	tert-Butyl Mercaptan	ND	22	ND	6.0	
107-03-9	n-Propyl Mercaptan	ND	19	ND	6.0	
624-89-5	Ethyl Methyl Sulfide	ND	19	ND	6.0	
110-02-1	Thiophene	ND	21	ND	6.0	
513-44-0	Isobutyl Mercaptan	ND	22	ND	6.0	
352-93-2	Diethyl Sulfide	ND	22	ND	6.0	
109-79-5	n-Butyl Mercaptan	ND	22	ND	6.0	
624-92-0	Dimethyl Disulfide	ND	12	ND	3.0	
616-44-4	3-Methylthiophene	ND	24	ND	6.0	
110-01-0	Tetrahydrothiophene	ND	22	ND	6.0	
638-02-8	2,5-Dimethylthiophene	ND	28	ND	6.0	
872-55-9	2-Ethylthiophene	ND	28	ND	6.0	
110-81-6	Diethyl Disulfide	ND	15	ND	3.0	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523LF-SU** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302212-002

Test Code: ASTM D 5504-08 Date Collected: 5/23/13
Instrument ID: Agilent 7890A/GC22/SCD Time Collected: 14:55
Analyst: Mike Conejo Date Received: 5/24/13
Sample Type: 6.0 L Summa Canister Date Analyzed: 5/29/13
Test Notes: Time Analyzed: 10:40
Container ID: AS00313 Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): 0.60 Final Pressure (psig): 3.75

Canister Dilution Factor: 1.21

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	8.4	ND	6.1	
463-58-1	Carbonyl Sulfide	ND	15	ND	6.1	
74-93-1	Methyl Mercaptan	ND	12	ND	6.1	
75-08-1	Ethyl Mercaptan	ND	15	ND	6.1	
75-18-3	Dimethyl Sulfide	ND	15	ND	6.1	
75-15-0	Carbon Disulfide	ND	9.4	ND	3.0	
75-33-2	Isopropyl Mercaptan	ND	19	ND	6.1	
75-66-1	tert-Butyl Mercaptan	ND	22	ND	6.1	
107-03-9	n-Propyl Mercaptan	ND	19	ND	6.1	
624-89-5	Ethyl Methyl Sulfide	ND	19	ND	6.1	
110-02-1	Thiophene	ND	21	ND	6.1	
513-44-0	Isobutyl Mercaptan	ND	22	ND	6.1	
352-93-2	Diethyl Sulfide	ND	22	ND	6.1	
109-79-5	n-Butyl Mercaptan	ND	22	ND	6.1	
624-92-0	Dimethyl Disulfide	ND	12	ND	3.0	
616-44-4	3-Methylthiophene	ND	24	ND	6.1	
110-01-0	Tetrahydrothiophene	ND	22	ND	6.1	
638-02-8	2,5-Dimethylthiophene	ND	28	ND	6.1	
872-55-9	2-Ethylthiophene	ND	28	ND	6.1	
110-81-6	Diethyl Disulfide	ND	15	ND	3.0	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523HS-SU**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P1302212-003

Test Code: ASTM D 5504-08
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Mike Conejo
Sample Type: 6.0 L Summa Canister
Test Notes:
Container ID: AS00068

Date Collected: 5/23/13
Time Collected: 15:15
Date Received: 5/24/13
Date Analyzed: 5/29/13
Time Analyzed: 10:58
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): 0.58 Final Pressure (psig): 3.53

Canister Dilution Factor: 1.19

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	8.3	ND	6.0	
463-58-1	Carbonyl Sulfide	ND	15	ND	6.0	
74-93-1	Methyl Mercaptan	ND	12	ND	6.0	
75-08-1	Ethyl Mercaptan	ND	15	ND	6.0	
75-18-3	Dimethyl Sulfide	ND	15	ND	6.0	
75-15-0	Carbon Disulfide	ND	9.3	ND	3.0	
75-33-2	Isopropyl Mercaptan	ND	19	ND	6.0	
75-66-1	tert-Butyl Mercaptan	ND	22	ND	6.0	
107-03-9	n-Propyl Mercaptan	ND	19	ND	6.0	
624-89-5	Ethyl Methyl Sulfide	ND	19	ND	6.0	
110-02-1	Thiophene	ND	20	ND	6.0	
513-44-0	Isobutyl Mercaptan	ND	22	ND	6.0	
352-93-2	Diethyl Sulfide	ND	22	ND	6.0	
109-79-5	n-Butyl Mercaptan	ND	22	ND	6.0	
624-92-0	Dimethyl Disulfide	ND	11	ND	3.0	
616-44-4	3-Methylthiophene	ND	24	ND	6.0	
110-01-0	Tetrahydrothiophene	ND	21	ND	6.0	
638-02-8	2,5-Dimethylthiophene	ND	27	ND	6.0	
872-55-9	2-Ethylthiophene	ND	27	ND	6.0	
110-81-6	Diethyl Disulfide	ND	15	ND	3.0	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523Blank-SU** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302212-004

Test Code: ASTM D 5504-08 Date Collected: 5/23/13
Instrument ID: Agilent 7890A/GC22/SCD Time Collected: 10:15
Analyst: Mike Conejo Date Received: 5/24/13
Sample Type: 6.0 L Summa Canister Date Analyzed: 5/29/13
Test Notes: Time Analyzed: 11:16
Container ID: AS00198 Volume(s) Analyzed: 1.0 ml(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302212
CAS Sample ID: P130529-MB

Test Code: ASTM D 5504-08
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Mike Conejo
Sample Type: 6.0 L Summa Canister
Test Notes:

Date Collected: NA
Time Collected: NA
Date Received: NA
Date Analyzed: 5/29/13
Time Analyzed: 07:55
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

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.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P130529-LCS

Test Code: ASTM D 5504-08 Date Collected: NA
Instrument ID: Agilent 7890A/GC22/SCD Date Received: NA
Analyst: Mike Conejo Date Analyzed: 5/29/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount ppbV	Result ppbV	% Recovery	CAS Acceptance Limits	Data Qualifier
7783-06-4	Hydrogen Sulfide	2,050	**2,420**	**118**	63-140	
463-58-1	Carbonyl Sulfide	2,020	**2,260**	**112**	63-138	
74-93-1	Methyl Mercaptan	1,890	**2,180**	**115**	63-144	

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523GN-SU** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302212-001

Test Code: EPA TO-15 Date Collected: 5/23/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/24/13
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00432

Initial Pressure (psig): 0.56 Final Pressure (psig): 3.58

Canister Dilution Factor: 1.20

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	**1.0**	0.60	**0.58**	0.35	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.1**	0.60	**0.43**	0.12	
74-87-3	Chloromethane	ND	0.60	ND	0.29	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.60	ND	0.086	
75-01-4	Vinyl Chloride	ND	0.60	ND	0.23	
106-99-0	1,3-Butadiene	ND	0.60	ND	0.27	
74-83-9	Bromomethane	ND	0.60	ND	0.15	
75-00-3	Chloroethane	ND	0.60	ND	0.23	
64-17-5	Ethanol	ND	6.0	ND	3.2	
75-05-8	Acetonitrile	ND	0.60	ND	0.36	
107-02-8	Acrolein	ND	2.4	ND	1.0	
67-64-1	Acetone	ND	6.0	ND	2.5	
75-69-4	Trichlorofluoromethane	**1.1**	0.60	**0.20**	0.11	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	6.0	ND	2.4	
107-13-1	Acrylonitrile	ND	0.60	ND	0.28	
75-35-4	1,1-Dichloroethene	ND	0.60	ND	0.15	
75-09-2	Methylene Chloride	**1.0**	0.60	**0.30**	0.17	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.60	ND	0.19	
76-13-1	Trichlorotrifluoroethane	ND	0.60	ND	0.078	
75-15-0	Carbon Disulfide	ND	6.0	ND	1.9	
156-60-5	trans-1,2-Dichloroethene	ND	0.60	ND	0.15	
75-34-3	1,1-Dichloroethane	ND	0.60	ND	0.15	
1634-04-4	Methyl tert-Butyl Ether	ND	0.60	ND	0.17	
108-05-4	Vinyl Acetate	ND	6.0	ND	1.7	
78-93-3	2-Butanone (MEK)	ND	6.0	ND	2.0	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523GN-SU** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302212-001

Test Code: EPA TO-15 Date Collected: 5/23/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/24/13
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00432

Initial Pressure (psig): 0.56 Final Pressure (psig): 3.58

Canister Dilution Factor: 1.20

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.60	ND	0.15	
141-78-6	Ethyl Acetate	ND	1.2	ND	0.33	
110-54-3	n-Hexane	ND	0.60	ND	0.17	
67-66-3	Chloroform	ND	0.60	ND	0.12	
109-99-9	Tetrahydrofuran (THF)	ND	0.60	ND	0.20	
107-06-2	1,2-Dichloroethane	ND	0.60	ND	0.15	
71-55-6	1,1,1-Trichloroethane	ND	0.60	ND	0.11	
71-43-2	Benzene	ND	0.60	ND	0.19	
56-23-5	Carbon Tetrachloride	ND	0.60	ND	0.095	
110-82-7	Cyclohexane	ND	1.2	ND	0.35	
78-87-5	1,2-Dichloropropane	ND	0.60	ND	0.13	
75-27-4	Bromodichloromethane	ND	0.60	ND	0.090	
79-01-6	Trichloroethene	ND	0.60	ND	0.11	
123-91-1	1,4-Dioxane	ND	0.60	ND	0.17	
80-62-6	Methyl Methacrylate	ND	1.2	ND	0.29	
142-82-5	n-Heptane	ND	0.60	ND	0.15	
10061-01-5	cis-1,3-Dichloropropene	ND	0.60	ND	0.13	
108-10-1	4-Methyl-2-pentanone	ND	0.60	ND	0.15	
10061-02-6	trans-1,3-Dichloropropene	ND	0.60	ND	0.13	
79-00-5	1,1,2-Trichloroethane	ND	0.60	ND	0.11	
108-88-3	Toluene	**1.1**	0.60	**0.29**	0.16	
591-78-6	2-Hexanone	ND	0.60	ND	0.15	
124-48-1	Dibromochloromethane	ND	0.60	ND	0.070	
106-93-4	1,2-Dibromoethane	ND	0.60	ND	0.078	
123-86-4	n-Butyl Acetate	**2.3**	0.60	**0.49**	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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.** CAS Project ID: P1302212
Client Sample ID: **523GN-SU** CAS Sample ID: P1302212-001
Client Project ID: **Bridgeton Landfill / 182608005**

Test Code: EPA TO-15 Date Collected: 5/23/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/24/13
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00432

Initial Pressure (psig): 0.56 Final Pressure (psig): 3.58

Canister Dilution Factor: 1.20

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.60	ND	0.13	
127-18-4	Tetrachloroethene	ND	0.60	ND	0.089	
108-90-7	Chlorobenzene	ND	0.60	ND	0.13	
100-41-4	Ethylbenzene	ND	0.60	ND	0.14	
179601-23-1	m,p-Xylenes	ND	1.2	ND	0.28	
75-25-2	Bromoform	ND	0.60	ND	0.058	
100-42-5	Styrene	ND	0.60	ND	0.14	
95-47-6	o-Xylene	ND	0.60	ND	0.14	
111-84-2	n-Nonane	ND	0.60	ND	0.11	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.60	ND	0.087	
98-82-8	Cumene	ND	0.60	ND	0.12	
80-56-8	alpha-Pinene	ND	0.60	ND	0.11	
103-65-1	n-Propylbenzene	ND	0.60	ND	0.12	
622-96-8	4-Ethyltoluene	ND	0.60	ND	0.12	
108-67-8	1,3,5-Trimethylbenzene	ND	0.60	ND	0.12	
95-63-6	1,2,4-Trimethylbenzene	ND	0.60	ND	0.12	
100-44-7	Benzyl Chloride	ND	0.60	ND	0.12	
541-73-1	1,3-Dichlorobenzene	ND	0.60	ND	0.10	
106-46-7	1,4-Dichlorobenzene	ND	0.60	ND	0.10	
95-50-1	1,2-Dichlorobenzene	ND	0.60	ND	0.10	
5989-27-5	d-Limonene	ND	0.60	ND	0.11	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.60	ND	0.062	
120-82-1	1,2,4-Trichlorobenzene	ND	0.60	ND	0.081	
91-20-3	Naphthalene	ND	0.60	ND	0.11	
87-68-3	Hexachlorobutadiene	ND	0.60	ND	0.056	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523GN-SU** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302212-001

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 5/23/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/24/13
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AS00432

Initial Pressure (psig): 0.56 Final Pressure (psig): 3.58

Canister Dilution Factor: 1.20

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
9.65	Trimethylsilanol	**4.3**	
16.08	Hexamethylcyclotrisiloxane	**17**	
18.40	Unidentified Compound	**25**	
18.71	2-Ethyl-1-hexanol	**3.3**	
19.46	n-Nonanal	**3.3**	
19.86	2-Ethylhexylacetate	**3.5**	
19.99	Unidentified Siloxane	**12**	
21.47	Unidentified Siloxane	**2.3**	

T = Analyte is a tentatively identified compound, result is estimated.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523LF-SU** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302212-002

Test Code: EPA TO-15 Date Collected: 5/23/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/24/13
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00313

Initial Pressure (psig): 0.60 Final Pressure (psig): 3.75

Canister Dilution Factor: 1.21

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	0.61	ND	0.35	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.2**	0.61	**0.44**	0.12	
74-87-3	Chloromethane	ND	0.61	ND	0.29	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.61	ND	0.087	
75-01-4	Vinyl Chloride	ND	0.61	ND	0.24	
106-99-0	1,3-Butadiene	ND	0.61	ND	0.27	
74-83-9	Bromomethane	ND	0.61	ND	0.16	
75-00-3	Chloroethane	ND	0.61	ND	0.23	
64-17-5	Ethanol	ND	6.1	ND	3.2	
75-05-8	Acetonitrile	**2.3**	0.61	**1.4**	0.36	
107-02-8	Acrolein	ND	2.4	ND	1.1	
67-64-1	Acetone	ND	6.1	ND	2.5	
75-69-4	Trichlorofluoromethane	**1.1**	0.61	**0.20**	0.11	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	6.1	ND	2.5	
107-13-1	Acrylonitrile	ND	0.61	ND	0.28	
75-35-4	1,1-Dichloroethene	ND	0.61	ND	0.15	
75-09-2	Methylene Chloride	ND	0.61	ND	0.17	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.61	ND	0.19	
76-13-1	Trichlorotrifluoroethane	ND	0.61	ND	0.079	
75-15-0	Carbon Disulfide	ND	6.1	ND	1.9	
156-60-5	trans-1,2-Dichloroethene	ND	0.61	ND	0.15	
75-34-3	1,1-Dichloroethane	ND	0.61	ND	0.15	
1634-04-4	Methyl tert-Butyl Ether	ND	0.61	ND	0.17	
108-05-4	Vinyl Acetate	ND	6.1	ND	1.7	
78-93-3	2-Butanone (MEK)	ND	6.1	ND	2.1	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523LF-SU** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302212-002

Test Code: EPA TO-15 Date Collected: 5/23/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/24/13
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00313

Initial Pressure (psig): 0.60 Final Pressure (psig): 3.75

Canister Dilution Factor: 1.21

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.61	ND	0.15	
141-78-6	Ethyl Acetate	ND	1.2	ND	0.34	
110-54-3	n-Hexane	ND	0.61	ND	0.17	
67-66-3	Chloroform	ND	0.61	ND	0.12	
109-99-9	Tetrahydrofuran (THF)	ND	0.61	ND	0.21	
107-06-2	1,2-Dichloroethane	ND	0.61	ND	0.15	
71-55-6	1,1,1-Trichloroethane	ND	0.61	ND	0.11	
71-43-2	Benzene	ND	0.61	ND	0.19	
56-23-5	Carbon Tetrachloride	ND	0.61	ND	0.096	
110-82-7	Cyclohexane	ND	1.2	ND	0.35	
78-87-5	1,2-Dichloropropane	ND	0.61	ND	0.13	
75-27-4	Bromodichloromethane	ND	0.61	ND	0.090	
79-01-6	Trichloroethene	ND	0.61	ND	0.11	
123-91-1	1,4-Dioxane	ND	0.61	ND	0.17	
80-62-6	Methyl Methacrylate	ND	1.2	ND	0.30	
142-82-5	n-Heptane	ND	0.61	ND	0.15	
10061-01-5	cis-1,3-Dichloropropene	ND	0.61	ND	0.13	
108-10-1	4-Methyl-2-pentanone	ND	0.61	ND	0.15	
10061-02-6	trans-1,3-Dichloropropene	ND	0.61	ND	0.13	
79-00-5	1,1,2-Trichloroethane	ND	0.61	ND	0.11	
108-88-3	Toluene	**1.2**	0.61	**0.33**	0.16	
591-78-6	2-Hexanone	ND	0.61	ND	0.15	
124-48-1	Dibromochloromethane	ND	0.61	ND	0.071	
106-93-4	1,2-Dibromoethane	ND	0.61	ND	0.079	
123-86-4	n-Butyl Acetate	ND	0.61	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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.** CAS Project ID: P1302212
Client Sample ID: **523LF-SU** CAS Sample ID: P1302212-002
Client Project ID: **Bridgeton Landfill / 182608005**

Test Code: EPA TO-15 Date Collected: 5/23/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/24/13
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00313

Initial Pressure (psig): 0.60 Final Pressure (psig): 3.75

Canister Dilution Factor: 1.21

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.61	ND	0.13	
127-18-4	Tetrachloroethene	ND	0.61	ND	0.089	
108-90-7	Chlorobenzene	ND	0.61	ND	0.13	
100-41-4	Ethylbenzene	ND	0.61	ND	0.14	
179601-23-1	m,p-Xylenes	ND	1.2	ND	0.28	
75-25-2	Bromoform	ND	0.61	ND	0.059	
100-42-5	Styrene	ND	0.61	ND	0.14	
95-47-6	o-Xylene	ND	0.61	ND	0.14	
111-84-2	n-Nonane	ND	0.61	ND	0.12	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.61	ND	0.088	
98-82-8	Cumene	ND	0.61	ND	0.12	
80-56-8	alpha-Pinene	ND	0.61	ND	0.11	
103-65-1	n-Propylbenzene	ND	0.61	ND	0.12	
622-96-8	4-Ethyltoluene	ND	0.61	ND	0.12	
108-67-8	1,3,5-Trimethylbenzene	ND	0.61	ND	0.12	
95-63-6	1,2,4-Trimethylbenzene	ND	0.61	ND	0.12	
100-44-7	Benzyl Chloride	ND	0.61	ND	0.12	
541-73-1	1,3-Dichlorobenzene	ND	0.61	ND	0.10	
106-46-7	1,4-Dichlorobenzene	ND	0.61	ND	0.10	
95-50-1	1,2-Dichlorobenzene	ND	0.61	ND	0.10	
5989-27-5	d-Limonene	ND	0.61	ND	0.11	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.61	ND	0.063	
120-82-1	1,2,4-Trichlorobenzene	ND	0.61	ND	0.082	
91-20-3	Naphthalene	ND	0.61	ND	0.12	
87-68-3	Hexachlorobutadiene	ND	0.61	ND	0.057	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523LF-SU** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302212-002

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 5/23/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/24/13
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AS00313

Initial Pressure (psig): 0.60 Final Pressure (psig): 3.75

Canister Dilution Factor: 1.21

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
16.08	Hexamethylcyclotrisiloxane	**16**	
18.40	Unidentified Compound	**21**	
19.46	n-Nonanal	**2.4**	
19.99	Unidentified Siloxane	**12**	
20.38	n-Decanal	**2.6**	

T = Analyte is a tentatively identified compound, result is estimated.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523HS-SU** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302212-003

Test Code: EPA TO-15 Date Collected: 5/23/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/24/13
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00068

Initial Pressure (psig): 0.58 Final Pressure (psig): 3.53

Canister Dilution Factor: 1.19

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	0.60	ND	0.35	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.1**	0.60	**0.43**	0.12	
74-87-3	Chloromethane	ND	0.60	ND	0.29	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.60	ND	0.085	
75-01-4	Vinyl Chloride	ND	0.60	ND	0.23	
106-99-0	1,3-Butadiene	ND	0.60	ND	0.27	
74-83-9	Bromomethane	ND	0.60	ND	0.15	
75-00-3	Chloroethane	ND	0.60	ND	0.23	
64-17-5	Ethanol	ND	6.0	ND	3.2	
75-05-8	Acetonitrile	**4.0**	0.60	**2.4**	0.35	
107-02-8	Acrolein	ND	2.4	ND	1.0	
67-64-1	Acetone	ND	6.0	ND	2.5	
75-69-4	Trichlorofluoromethane	**1.1**	0.60	**0.19**	0.11	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	6.0	ND	2.4	
107-13-1	Acrylonitrile	ND	0.60	ND	0.27	
75-35-4	1,1-Dichloroethene	ND	0.60	ND	0.15	
75-09-2	Methylene Chloride	ND	0.60	ND	0.17	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.60	ND	0.19	
76-13-1	Trichlorotrifluoroethane	ND	0.60	ND	0.078	
75-15-0	Carbon Disulfide	ND	6.0	ND	1.9	
156-60-5	trans-1,2-Dichloroethene	ND	0.60	ND	0.15	
75-34-3	1,1-Dichloroethane	ND	0.60	ND	0.15	
1634-04-4	Methyl tert-Butyl Ether	ND	0.60	ND	0.17	
108-05-4	Vinyl Acetate	ND	6.0	ND	1.7	
78-93-3	2-Butanone (MEK)	ND	6.0	ND	2.0	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523HS-SU** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302212-003

Test Code: EPA TO-15 Date Collected: 5/23/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/24/13
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00068

Initial Pressure (psig): 0.58 Final Pressure (psig): 3.53

Canister Dilution Factor: 1.19

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.60	ND	0.15	
141-78-6	Ethyl Acetate	ND	1.2	ND	0.33	
110-54-3	n-Hexane	ND	0.60	ND	0.17	
67-66-3	Chloroform	ND	0.60	ND	0.12	
109-99-9	Tetrahydrofuran (THF)	ND	0.60	ND	0.20	
107-06-2	1,2-Dichloroethane	ND	0.60	ND	0.15	
71-55-6	1,1,1-Trichloroethane	ND	0.60	ND	0.11	
71-43-2	Benzene	ND	0.60	ND	0.19	
56-23-5	Carbon Tetrachloride	ND	0.60	ND	0.095	
110-82-7	Cyclohexane	ND	1.2	ND	0.35	
78-87-5	1,2-Dichloropropane	ND	0.60	ND	0.13	
75-27-4	Bromodichloromethane	ND	0.60	ND	0.089	
79-01-6	Trichloroethene	ND	0.60	ND	0.11	
123-91-1	1,4-Dioxane	ND	0.60	ND	0.17	
80-62-6	Methyl Methacrylate	ND	1.2	ND	0.29	
142-82-5	n-Heptane	ND	0.60	ND	0.15	
10061-01-5	cis-1,3-Dichloropropene	ND	0.60	ND	0.13	
108-10-1	4-Methyl-2-pentanone	ND	0.60	ND	0.15	
10061-02-6	trans-1,3-Dichloropropene	ND	0.60	ND	0.13	
79-00-5	1,1,2-Trichloroethane	ND	0.60	ND	0.11	
108-88-3	Toluene	ND	0.60	ND	0.16	
591-78-6	2-Hexanone	ND	0.60	ND	0.15	
124-48-1	Dibromochloromethane	ND	0.60	ND	0.070	
106-93-4	1,2-Dibromoethane	ND	0.60	ND	0.077	
123-86-4	n-Butyl Acetate	ND	0.60	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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.** CAS Project ID: P1302212
Client Sample ID: **523HS-SU** CAS Sample ID: P1302212-003
Client Project ID: **Bridgeton Landfill / 182608005**

Test Code: EPA TO-15 Date Collected: 5/23/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/24/13
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00068

Initial Pressure (psig): 0.58 Final Pressure (psig): 3.53

Canister Dilution Factor: 1.19

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.60	ND	0.13	
127-18-4	Tetrachloroethene	ND	0.60	ND	0.088	
108-90-7	Chlorobenzene	ND	0.60	ND	0.13	
100-41-4	Ethylbenzene	ND	0.60	ND	0.14	
179601-23-1	m,p-Xylenes	ND	1.2	ND	0.27	
75-25-2	Bromoform	ND	0.60	ND	0.058	
100-42-5	Styrene	ND	0.60	ND	0.14	
95-47-6	o-Xylene	ND	0.60	ND	0.14	
111-84-2	n-Nonane	ND	0.60	ND	0.11	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.60	ND	0.087	
98-82-8	Cumene	ND	0.60	ND	0.12	
80-56-8	alpha-Pinene	ND	0.60	ND	0.11	
103-65-1	n-Propylbenzene	ND	0.60	ND	0.12	
622-96-8	4-Ethyltoluene	ND	0.60	ND	0.12	
108-67-8	1,3,5-Trimethylbenzene	ND	0.60	ND	0.12	
95-63-6	1,2,4-Trimethylbenzene	ND	0.60	ND	0.12	
100-44-7	Benzyl Chloride	ND	0.60	ND	0.11	
541-73-1	1,3-Dichlorobenzene	ND	0.60	ND	0.099	
106-46-7	1,4-Dichlorobenzene	ND	0.60	ND	0.099	
95-50-1	1,2-Dichlorobenzene	ND	0.60	ND	0.099	
5989-27-5	d-Limonene	ND	0.60	ND	0.11	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.60	ND	0.062	
120-82-1	1,2,4-Trichlorobenzene	ND	0.60	ND	0.080	
91-20-3	Naphthalene	ND	0.60	ND	0.11	
87-68-3	Hexachlorobutadiene	ND	0.60	ND	0.056	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523HS-SU** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302212-003

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 5/23/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/24/13
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AS00068

Initial Pressure (psig): 0.58 Final Pressure (psig): 3.53

Canister Dilution Factor: 1.19

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
16.08	Hexamethylcyclotrisiloxane	**2.6**	
19.46	n-Nonanal	**5.5**	
19.98	Unidentified Siloxane	**2.8**	

T = Analyte is a tentatively identified compound, result is estimated.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523Blank-SU** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302212-004

Test Code: EPA TO-15 Date Collected: 5/23/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/24/13
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00198

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	0.50	ND	0.29	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.50	ND	0.10	
74-87-3	Chloromethane	ND	0.50	ND	0.24	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.50	ND	0.072	
75-01-4	Vinyl Chloride	ND	0.50	ND	0.20	
106-99-0	1,3-Butadiene	ND	0.50	ND	0.23	
74-83-9	Bromomethane	ND	0.50	ND	0.13	
75-00-3	Chloroethane	ND	0.50	ND	0.19	
64-17-5	Ethanol	ND	5.0	ND	2.7	
75-05-8	Acetonitrile	ND	0.50	ND	0.30	
107-02-8	Acrolein	ND	2.0	ND	0.87	
67-64-1	Acetone	ND	5.0	ND	2.1	
75-69-4	Trichlorofluoromethane	ND	0.50	ND	0.089	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	5.0	ND	2.0	
107-13-1	Acrylonitrile	ND	0.50	ND	0.23	
75-35-4	1,1-Dichloroethene	ND	0.50	ND	0.13	
75-09-2	Methylene Chloride	ND	0.50	ND	0.14	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.50	ND	0.16	
76-13-1	Trichlorotrifluoroethane	ND	0.50	ND	0.065	
75-15-0	Carbon Disulfide	ND	5.0	ND	1.6	
156-60-5	trans-1,2-Dichloroethene	ND	0.50	ND	0.13	
75-34-3	1,1-Dichloroethane	ND	0.50	ND	0.12	
1634-04-4	Methyl tert-Butyl Ether	ND	0.50	ND	0.14	
108-05-4	Vinyl Acetate	ND	5.0	ND	1.4	
78-93-3	2-Butanone (MEK)	ND	5.0	ND	1.7	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523Blank-SU** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302212-004

Test Code: EPA TO-15 Date Collected: 5/23/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/24/13
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00198

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.50	ND	0.13	
141-78-6	Ethyl Acetate	ND	1.0	ND	0.28	
110-54-3	n-Hexane	ND	0.50	ND	0.14	
67-66-3	Chloroform	ND	0.50	ND	0.10	
109-99-9	Tetrahydrofuran (THF)	ND	0.50	ND	0.17	
107-06-2	1,2-Dichloroethane	ND	0.50	ND	0.12	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ND	0.092	
71-43-2	Benzene	ND	0.50	ND	0.16	
56-23-5	Carbon Tetrachloride	ND	0.50	ND	0.080	
110-82-7	Cyclohexane	ND	1.0	ND	0.29	
78-87-5	1,2-Dichloropropane	ND	0.50	ND	0.11	
75-27-4	Bromodichloromethane	ND	0.50	ND	0.075	
79-01-6	Trichloroethene	ND	0.50	ND	0.093	
123-91-1	1,4-Dioxane	ND	0.50	ND	0.14	
80-62-6	Methyl Methacrylate	ND	1.0	ND	0.24	
142-82-5	n-Heptane	ND	0.50	ND	0.12	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ND	0.11	
108-10-1	4-Methyl-2-pentanone	ND	0.50	ND	0.12	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ND	0.11	
79-00-5	1,1,2-Trichloroethane	ND	0.50	ND	0.092	
108-88-3	Toluene	ND	0.50	ND	0.13	
591-78-6	2-Hexanone	ND	0.50	ND	0.12	
124-48-1	Dibromochloromethane	ND	0.50	ND	0.059	
106-93-4	1,2-Dibromoethane	ND	0.50	ND	0.065	
123-86-4	n-Butyl Acetate	ND	0.50	ND	0.11	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.** CAS Project ID: P1302212
Client Sample ID: **523Blank-SU** CAS Sample ID: P1302212-004
Client Project ID: **Bridgeton Landfill / 182608005**

Test Code: EPA TO-15 Date Collected: 5/23/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/24/13
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00198

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.50	ND	0.11	
127-18-4	Tetrachloroethene	ND	0.50	ND	0.074	
108-90-7	Chlorobenzene	ND	0.50	ND	0.11	
100-41-4	Ethylbenzene	ND	0.50	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.0	ND	0.23	
75-25-2	Bromoform	ND	0.50	ND	0.048	
100-42-5	Styrene	ND	0.50	ND	0.12	
95-47-6	o-Xylene	ND	0.50	ND	0.12	
111-84-2	n-Nonane	ND	0.50	ND	0.095	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	ND	0.073	
98-82-8	Cumene	ND	0.50	ND	0.10	
80-56-8	alpha-Pinene	ND	0.50	ND	0.090	
103-65-1	n-Propylbenzene	ND	0.50	ND	0.10	
622-96-8	4-Ethyltoluene	ND	0.50	ND	0.10	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	ND	0.10	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	ND	0.10	
100-44-7	Benzyl Chloride	ND	0.50	ND	0.097	
541-73-1	1,3-Dichlorobenzene	ND	0.50	ND	0.083	
106-46-7	1,4-Dichlorobenzene	ND	0.50	ND	0.083	
95-50-1	1,2-Dichlorobenzene	ND	0.50	ND	0.083	
5989-27-5	d-Limonene	ND	0.50	ND	0.090	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.50	ND	0.052	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	ND	0.067	
91-20-3	Naphthalene	ND	0.50	ND	0.095	
87-68-3	Hexachlorobutadiene	ND	0.50	ND	0.047	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **523Blank-SU** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P1302212-004

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 5/23/13
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: 5/24/13
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AS00198

Canister Dilution Factor: 1.00

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
9.65	Trimethylsilanol	**5.9**	
13.35	Hexamethyldisiloxane	**5.2**	
16.08	Hexamethylcyclotrisiloxane	**11**	
17.05	Octamethyltrisiloxane	**10**	
18.40	Unidentified Compound	**150**	
19.16	Unidentified Siloxane	**15**	
19.99	Unidentified Siloxane	**110**	
20.69	Unidentified Siloxane	**8.3**	
21.47	Unidentified Siloxane	**24**	
22.06	Unidentified Siloxane	**7.0**	
23.05	Unidentified Siloxane	**4.3**	

T = Analyte is a tentatively identified compound, result is estimated.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P130530-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: NA
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	0.50	ND	0.29	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.50	ND	0.10	
74-87-3	Chloromethane	ND	0.50	ND	0.24	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.50	ND	0.072	
75-01-4	Vinyl Chloride	ND	0.50	ND	0.20	
106-99-0	1,3-Butadiene	ND	0.50	ND	0.23	
74-83-9	Bromomethane	ND	0.50	ND	0.13	
75-00-3	Chloroethane	ND	0.50	ND	0.19	
64-17-5	Ethanol	ND	5.0	ND	2.7	
75-05-8	Acetonitrile	ND	0.50	ND	0.30	
107-02-8	Acrolein	ND	2.0	ND	0.87	
67-64-1	Acetone	ND	5.0	ND	2.1	
75-69-4	Trichlorofluoromethane	ND	0.50	ND	0.089	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	5.0	ND	2.0	
107-13-1	Acrylonitrile	ND	0.50	ND	0.23	
75-35-4	1,1-Dichloroethene	ND	0.50	ND	0.13	
75-09-2	Methylene Chloride	ND	0.50	ND	0.14	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.50	ND	0.16	
76-13-1	Trichlorotrifluoroethane	ND	0.50	ND	0.065	
75-15-0	Carbon Disulfide	ND	5.0	ND	1.6	
156-60-5	trans-1,2-Dichloroethene	ND	0.50	ND	0.13	
75-34-3	1,1-Dichloroethane	ND	0.50	ND	0.12	
1634-04-4	Methyl tert-Butyl Ether	ND	0.50	ND	0.14	
108-05-4	Vinyl Acetate	ND	5.0	ND	1.4	
78-93-3	2-Butanone (MEK)	ND	5.0	ND	1.7	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P130530-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: NA
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.50	ND	0.13	
141-78-6	Ethyl Acetate	ND	1.0	ND	0.28	
110-54-3	n-Hexane	ND	0.50	ND	0.14	
67-66-3	Chloroform	ND	0.50	ND	0.10	
109-99-9	Tetrahydrofuran (THF)	ND	0.50	ND	0.17	
107-06-2	1,2-Dichloroethane	ND	0.50	ND	0.12	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ND	0.092	
71-43-2	Benzene	ND	0.50	ND	0.16	
56-23-5	Carbon Tetrachloride	ND	0.50	ND	0.080	
110-82-7	Cyclohexane	ND	1.0	ND	0.29	
78-87-5	1,2-Dichloropropane	ND	0.50	ND	0.11	
75-27-4	Bromodichloromethane	ND	0.50	ND	0.075	
79-01-6	Trichloroethene	ND	0.50	ND	0.093	
123-91-1	1,4-Dioxane	ND	0.50	ND	0.14	
80-62-6	Methyl Methacrylate	ND	1.0	ND	0.24	
142-82-5	n-Heptane	ND	0.50	ND	0.12	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ND	0.11	
108-10-1	4-Methyl-2-pentanone	ND	0.50	ND	0.12	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ND	0.11	
79-00-5	1,1,2-Trichloroethane	ND	0.50	ND	0.092	
108-88-3	Toluene	ND	0.50	ND	0.13	
591-78-6	2-Hexanone	ND	0.50	ND	0.12	
124-48-1	Dibromochloromethane	ND	0.50	ND	0.059	
106-93-4	1,2-Dibromoethane	ND	0.50	ND	0.065	
123-86-4	n-Butyl Acetate	ND	0.50	ND	0.11	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.** CAS Project ID: P1302212
Client Sample ID: **Method Blank** CAS Sample ID: P130530-MB
Client Project ID: **Bridgeton Landfill / 182608005**

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: NA
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.50	ND	0.11	
127-18-4	Tetrachloroethene	ND	0.50	ND	0.074	
108-90-7	Chlorobenzene	ND	0.50	ND	0.11	
100-41-4	Ethylbenzene	ND	0.50	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.0	ND	0.23	
75-25-2	Bromoform	ND	0.50	ND	0.048	
100-42-5	Styrene	ND	0.50	ND	0.12	
95-47-6	o-Xylene	ND	0.50	ND	0.12	
111-84-2	n-Nonane	ND	0.50	ND	0.095	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	ND	0.073	
98-82-8	Cumene	ND	0.50	ND	0.10	
80-56-8	alpha-Pinene	ND	0.50	ND	0.090	
103-65-1	n-Propylbenzene	ND	0.50	ND	0.10	
622-96-8	4-Ethyltoluene	ND	0.50	ND	0.10	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	ND	0.10	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	ND	0.10	
100-44-7	Benzyl Chloride	ND	0.50	ND	0.097	
541-73-1	1,3-Dichlorobenzene	ND	0.50	ND	0.083	
106-46-7	1,4-Dichlorobenzene	ND	0.50	ND	0.083	
95-50-1	1,2-Dichlorobenzene	ND	0.50	ND	0.083	
5989-27-5	d-Limonene	ND	0.50	ND	0.090	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.50	ND	0.052	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	ND	0.067	
91-20-3	Naphthalene	ND	0.50	ND	0.095	
87-68-3	Hexachlorobutadiene	ND	0.50	ND	0.047	

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.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P130530-MB

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: NA
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L 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		

SURROGATE SPIKE RECOVERY RESULTS

Client: **Stantec Consulting Services, Inc.**
Client Project ID: **Bridgeton Landfill / 182608005** CAS Project ID: P1302212

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date(s) Collected: 5/23/13
Analyst: John Rice Date(s) Received: 5/24/13
Sample Type: 6.0 L Summa Canister(s) Date(s) Analyzed: 5/30/13
Test Notes:

Client Sample ID	CAS Sample ID	1,2-Dichloroethane-d4 Percent Recovered	Toluene-d8 Percent Recovered	Bromofluorobenzene Percent Recovered	Acceptance Limits	Data Qualifier
Method Blank	P130530-MB	**90**	**102**	**113**	70-130	
Lab Control Sample	P130530-LCS	**92**	**102**	**119**	70-130	
523GN-SU	P1302212-001	**95**	**100**	**111**	70-130	
523LF-SU	P1302212-002	**96**	**99**	**111**	70-130	
523HS-SU	P1302212-003	**92**	**100**	**110**	70-130	
523Blank-SU	P1302212-004	**91**	**101**	**116**	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.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P130530-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: NA
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	Result µg/m³	% Recovery	CAS Acceptance Limits	Data Qualifier
115-07-1	Propene	204	**186**	**91**	58-139	
75-71-8	Dichlorodifluoromethane (CFC 12)	202	**172**	**85**	63-115	
74-87-3	Chloromethane	196	**142**	**72**	58-122	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	206	**191**	**93**	65-115	
75-01-4	Vinyl Chloride	200	**158**	**79**	64-122	
106-99-0	1,3-Butadiene	210	**169**	**80**	57-141	
74-83-9	Bromomethane	200	**167**	**84**	68-122	
75-00-3	Chloroethane	202	**162**	**80**	66-120	
64-17-5	Ethanol	958	**694**	**72**	58-126	
75-05-8	Acetonitrile	202	**156**	**77**	64-136	
107-02-8	Acrolein	204	**169**	**83**	58-129	
67-64-1	Acetone	1,040	**768**	**74**	60-114	
75-69-4	Trichlorofluoromethane	210	**177**	**84**	62-107	
67-63-0	2-Propanol (Isopropyl Alcohol)	396	**278**	**70**	54-118	
107-13-1	Acrylonitrile	206	**174**	**84**	72-143	
75-35-4	1,1-Dichloroethene	218	**198**	**91**	69-119	
75-09-2	Methylene Chloride	212	**156**	**74**	64-113	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	214	**182**	**85**	59-131	
76-13-1	Trichlorotrifluoroethane	212	**207**	**98**	69-117	
75-15-0	Carbon Disulfide	208	**167**	**80**	65-115	
156-60-5	trans-1,2-Dichloroethene	202	**175**	**87**	70-126	
75-34-3	1,1-Dichloroethane	206	**175**	**85**	68-116	
1634-04-4	Methyl tert-Butyl Ether	204	**193**	**95**	69-120	
108-05-4	Vinyl Acetate	988	**822**	**83**	58-160	
78-93-3	2-Butanone (MEK)	212	**184**	**87**	70-127	

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.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P130530-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: NA
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	**Result µg/m³**	**% Recovery**	CAS Acceptance Limits	**Data Qualifier**
156-59-2	cis-1,2-Dichloroethene	214	**184**	**86**	70-119	
141-78-6	Ethyl Acetate	412	**329**	**80**	72-129	
110-54-3	n-Hexane	206	**166**	**81**	63-115	
67-66-3	Chloroform	222	**188**	**85**	68-110	
109-99-9	Tetrahydrofuran (THF)	208	**169**	**81**	60-126	
107-06-2	1,2-Dichloroethane	208	**186**	**89**	69-118	
71-55-6	1,1,1-Trichloroethane	204	**191**	**94**	68-120	
71-43-2	Benzene	208	**162**	**78**	69-117	
56-23-5	Carbon Tetrachloride	212	**215**	**101**	65-134	
110-82-7	Cyclohexane	402	**353**	**88**	69-114	
78-87-5	1,2-Dichloropropane	204	**174**	**85**	70-116	
75-27-4	Bromodichloromethane	204	**188**	**92**	71-126	
79-01-6	Trichloroethene	198	**199**	**101**	71-119	
123-91-1	1,4-Dioxane	206	**209**	**101**	72-126	
80-62-6	Methyl Methacrylate	414	**418**	**101**	75-136	
142-82-5	n-Heptane	202	**180**	**89**	70-117	
10061-01-5	cis-1,3-Dichloropropene	196	**202**	**103**	75-132	
108-10-1	4-Methyl-2-pentanone	210	**177**	**84**	70-133	
10061-02-6	trans-1,3-Dichloropropene	218	**209**	**96**	78-136	
79-00-5	1,1,2-Trichloroethane	202	**197**	**98**	72-119	
108-88-3	Toluene	208	**197**	**95**	65-116	
591-78-6	2-Hexanone	228	**204**	**89**	62-132	
124-48-1	Dibromochloromethane	216	**244**	**113**	66-140	
106-93-4	1,2-Dibromoethane	208	**223**	**107**	69-130	
123-86-4	n-Butyl Acetate	228	**188**	**82**	63-136	

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.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** CAS Project ID: P1302212
Client Project ID: **Bridgeton Landfill / 182608005** CAS Sample ID: P130530-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9 Date Received: NA
Analyst: John Rice Date Analyzed: 5/30/13
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	Result µg/m³	% Recovery	CAS Acceptance Limits	Data Qualifier
111-65-9	n-Octane	206	**182**	**88**	66-118	
127-18-4	Tetrachloroethene	190	**201**	**106**	63-123	
108-90-7	Chlorobenzene	208	**205**	**99**	66-118	
100-41-4	Ethylbenzene	206	**206**	**100**	66-119	
179601-23-1	m,p-Xylenes	412	**408**	**99**	64-118	
75-25-2	Bromoform	216	**246**	**114**	64-140	
100-42-5	Styrene	208	**241**	**116**	68-132	
95-47-6	o-Xylene	200	**197**	**99**	65-120	
111-84-2	n-Nonane	202	**181**	**90**	64-117	
79-34-5	1,1,2,2-Tetrachloroethane	198	**180**	**91**	63-128	
98-82-8	Cumene	196	**203**	**104**	65-121	
80-56-8	alpha-Pinene	192	**195**	**102**	66-123	
103-65-1	n-Propylbenzene	198	**199**	**101**	65-121	
622-96-8	4-Ethyltoluene	204	**219**	**107**	64-122	
108-67-8	1,3,5-Trimethylbenzene	208	**216**	**104**	64-125	
95-63-6	1,2,4-Trimethylbenzene	200	**218**	**109**	64-131	
100-44-7	Benzyl Chloride	206	**198**	**96**	67-146	
541-73-1	1,3-Dichlorobenzene	206	**232**	**113**	64-130	
106-46-7	1,4-Dichlorobenzene	212	**224**	**106**	61-124	
95-50-1	1,2-Dichlorobenzene	204	**215**	**105**	63-126	
5989-27-5	d-Limonene	206	**221**	**107**	62-133	
96-12-8	1,2-Dibromo-3-chloropropane	202	**243**	**120**	62-155	
120-82-1	1,2,4-Trichlorobenzene	200	**230**	**115**	59-146	
91-20-3	Naphthalene	178	**197**	**111**	56-143	
87-68-3	Hexachlorobutadiene	208	**235**	**113**	58-133	

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.

LABORATORY REPORT

June 3, 2013

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

RE: Bridgeton Landfill / 182608005

Dear Deborah:

Enclosed are the results of the samples submitted to our laboratory on May 24, 2013. 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.caslab.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 3:46 pm, Jun 03, 2013

Samantha Henningsen
Project Manager

Client: Stantec Consulting Services, Inc. Service Request No: P1302207
Project: Bridgeton Landfill / 182608005

CASE NARRATIVE

Samples were received intact under chain of custody at the Houston, TX facility on May 24,2013, where the samples were dispersed to the Simi Valley, CA facility.

The samples were received in Simi Valley intact under chain of custody on May 25, 2013 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). This method is not included on the laboratory's DoD-ELAP scope of accreditation.

The upper control criterion was exceeded for various analytes in both the Laboratory Control Sample (LCS) and Duplicate Laboratory Control Sample (DLCS). The analytes in question were not detected in the associated field samples. 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. No corrective action was required.

The relative percent difference (RPD) control criterion was exceeded for benzo(a)pyrene as measured in the Laboratory Control Sample (LCS) and Duplicate Laboratory Control Sample (DLCS). The corresponding laboratory data have been flagged 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.

Dioxins and Furans Analysis

The analysis for dioxins and furans by EPA method TO-9A was run at the ALS HRMS Houston, TX facility. Results were reported under separate project number P1302212, issued directly by the Houston laboratory on June 3, 2013.

Columbia Analytical Services, Inc. dba 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	L11-203
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	2012039
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	494864
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	T104704413-12-3
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA015272012-2
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.caslab.com, 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.

DETAIL SUMMARY REPORT

Client: Stantec Consulting Services, Inc.
Service Request: P1302207
Project ID: Bridgeton Landfill / 182608005

Date Received: 5/25/2013
Time Received: 10:40

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	TO-13A - PAH Scan Hi Vol	TO-9A - Dioxins and Furans
522Blank PAH	P1302207-001	Air	5/22/2013	15:15	X	
522Blank DF	P1302207-002	Air	5/22/2013	15:15		X
522LF - DF	P1302207-003	Air	5/23/2013	11:10		X
522LF - PAH	P1302207-004	Air	5/23/2013	11:11	X	
522HS - DF	P1302207-005	Air	5/23/2013	12:09		X
522HS - PAH	P1302207-006	Air	5/23/2013	12:09	X	

Columbia Analytical Services™

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

Air - 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

CAS Project No. P1302207

Company Name & Address (Reporting Information)
STANTEC CONSULTING
1500 LAKE SHORE DRIVE
COLUMBUS, OH 43204

Project Name: BRIDGETON LANDFILL

Project Number: 182608005

CAS Contact: SAMANTHA HEDRICKSEN

Project Manager: DEB GRAY

P.O. # / Billing Information: SAME

Phone: 614 486 4383 Fax: 614 486 4387

Email Address for Result Reporting: deb.gray@STANTEC.com

Sampler (Print & Sign): CHRIS LaLONDE

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Canister ID (Bar code # - AC, SC, etc.)	Flow Controller ID (Bar code # - PUMP ID)	Canister Start Pressure "Hg (METER ID)	Canister End Pressure "Hg/psig	Sample Volume L	Analysis Method	Comments e.g. Actual Preservative or specific instructions
522BLANK PAH		5/22/13	15:15	NA	NA	HX-144	FIELD	0 L	EPA TO13	
522 BLANK DF		1	15:15	1	1	110215	BLANK	1	EPA TO 9a	
522LF - DF		5/23/13	11:10	NA	1058	110-17-03	NA	362,000L	EPA TO 9a	
522LF - PAH		1	11:11	1	1057	HX-011	1	368,730L	EPA TO13	
522HS - DF		5/23/13	12:09	NA	1061	110-16-03	NA	367,455L	EPA TO9a	
522HS - PAH		1	12:09	1	1059	HX-020	1	353,535L	EPA TO13	
PLEASE NOTE: 2 PUF (DF) ARE BEING RETURNED UN-USED										
		2	PUF	(PAH)	SUSPECTED BREAKAGE ON ARRIVAL					

5 of 12

Report Tier Levels - please select
Tier I - Results (Default if not specified) ____
Tier II (Results + QC Summaries) ✓
Tier III (Results + QC & Calibration Summaries) ____ 05/24/13 1040am - Gel packs @ C
Tier IV (Data Validation Package) 10% Surcharge ____ Rec'd Kelly's Home
EDD required Yes / No (Send)
Type: ____

Project Requirements (MRLs, QAPP): 8029 10088000 SM1220034(1)

Relinquished by: (Signature)	Date: 5/23/13	Time: 7:30P	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date: 5/24/13	Time: 805

Cooler / Blank Temperature 2.1 °C

Columbia Analytical Services
Now part of the ALS Group
2655 Park Center Drive, Suite A, Simi Valley, CA 93065 | 805.526.7161 | www.caslab.com

Sample Acceptance Check Form

Client: Stantec Consulting Services, Inc. Work order: P1302207

Project: Bridgeton Landfill / 182608005

Sample(s) received on: 5/24/13 Date opened: 5/24/13 by: SHENNINGSEN

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: 6° C Blank Temperature: ° C **Gel Packs**			
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
P1302207-001.01	PUF/XAD-2/Filter (High Vol)					
P1302207-002.01	PUF/Filter (High Vol)					
P1302207-003.01	PUF/Filter (High Vol)					
P1302207-004.01	PUF/XAD-2/Filter (High Vol)					outter jar lid broken
P1302207-005.01	PUF/Filter (High Vol)					
P1302207-006.01	PUF/XAD-2/Filter (High Vol)					

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

Rec'd 2 PUFs without jars and broken upon receipt by client

Rec'd 1 PUF with jar broken upon receipt at laboratory

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

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **522Blank PAH**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302207
CAS Sample ID: P1302207-001

Test Code: EPA TO-13A Modified
Instrument ID: HP 5890II+/HP5972A/MS15
Analyst: Madeleine Dangazyan
Sampling Media: PUF/XAD-2/Filter (Hi_Vol) Cartridge
Test Notes:

Date Collected: 5/22/13
Date Received: 5/25/13
Date Extracted: 5/28/13
Date Analyzed: 5/30/13
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	< 5.0	NA	NA	NA	NA	
208-96-8	Acenaphthylene	< 0.50	NA	NA	NA	NA	
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	**L**
207-08-9	Benzo(k)fluoranthene	< 0.50	NA	NA	NA	NA	**L**
50-32-8	Benzo(a)pyrene	< 0.50	NA	NA	NA	NA	**L**
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	NA	NA	NA	NA	**L**
53-70-3	Dibenz(a,h)anthracene	< 0.50	NA	NA	NA	NA	**L**
191-24-2	Benzo(g,h,i)perylene	< 0.50	NA	NA	NA	NA	**L**

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, results may be biased high.
NA = Not applicable.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **522LF - PAH**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302207
CAS Sample ID: P1302207-004

Test Code: EPA TO-13A Modified
Instrument ID: HP 5890II+/HP5972A/MS15
Analyst: Madeleine Dangazyan
Sampling Media: PUF/XAD-2/Filter (Hi_Vol) Cartridge
Test Notes:

Date Collected: 5/23/13
Date Received: 5/25/13
Date Extracted: 5/28/13
Date Analyzed: 5/30/13
Final Volume: 1.0 ml
Volume Sampled: 368730 Liter(s)

CAS #	Compound	Result µg/Cartridge	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	16	**0.043**	0.014	**0.0082**	0.0026	
208-96-8	Acenaphthylene	< 0.50	ND	0.0014	ND	0.00022	
83-32-9	Acenaphthene	0.61	**0.0017**	0.0014	**0.00026**	0.00022	
86-73-7	Fluorene	1.0	**0.0027**	0.0014	**0.00040**	0.00020	
85-01-8	Phenanthrene	3.9	**0.011**	0.0014	**0.0015**	0.00019	
120-12-7	Anthracene	< 0.50	ND	0.0014	ND	0.00019	
206-44-0	Fluoranthene	1.0	**0.0028**	0.0014	**0.00034**	0.00016	
129-00-0	Pyrene	< 0.50	ND	0.0014	ND	0.00016	
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	0.00013	**L**
207-08-9	Benzo(k)fluoranthene	< 0.50	ND	0.0014	ND	0.00013	**L**
50-32-8	Benzo(a)pyrene	< 0.50	ND	0.0014	ND	0.00013	**L**
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	ND	0.0014	ND	0.00012	**L**
53-70-3	Dibenz(a,h)anthracene	< 0.50	ND	0.0014	ND	0.00012	**L**
191-24-2	Benzo(g,h,i)perylene	< 0.50	ND	0.0014	ND	0.00012	**L**

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, results may be biased high.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **522HS - PAH**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302207
CAS Sample ID: P1302207-006

Test Code: EPA TO-13A Modified
Instrument ID: HP 5890II+/HP5972A/MS15
Analyst: Madeleine Dangazyan
Sampling Media: PUF/XAD-2/Filter (Hi_Vol) Cartridge
Test Notes:

Date Collected: 5/23/13
Date Received: 5/25/13
Date Extracted: 5/28/13
Date Analyzed: 5/30/13
Final Volume: 1.0 ml
Volume Sampled: 353535 Liter(s)

CAS #	Compound	Result µg/Cartridge	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	7.6	**0.021**	0.014	**0.0041**	0.0027	
208-96-8	Acenaphthylene	< 0.50	ND	0.0014	ND	0.00023	
83-32-9	Acenaphthene	1.3	**0.0036**	0.0014	**0.00057**	0.00022	
86-73-7	Fluorene	0.89	**0.0025**	0.0014	**0.00037**	0.00021	
85-01-8	Phenanthrene	2.3	**0.0065**	0.0014	**0.00090**	0.00019	
120-12-7	Anthracene	< 0.50	ND	0.0014	ND	0.00019	
206-44-0	Fluoranthene	0.85	**0.0024**	0.0014	**0.00029**	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	**L**
207-08-9	Benzo(k)fluoranthene	< 0.50	ND	0.0014	ND	0.00014	**L**
50-32-8	Benzo(a)pyrene	< 0.50	ND	0.0014	ND	0.00014	**L**
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	ND	0.0014	ND	0.00013	**L**
53-70-3	Dibenz(a,h)anthracene	< 0.50	ND	0.0014	ND	0.00012	**L**
191-24-2	Benzo(g,h,i)perylene	< 0.50	ND	0.0014	ND	0.00013	**L**

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, results may be biased high.

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302207
CAS Sample ID: P130528-MB

Test Code: EPA TO-13A Modified
Instrument ID: HP 5890II+/HP5972A/MS15
Analyst: Madeleine Dangazyan
Sampling Media: PUF/XAD-2/Filter (Hi_Vol) Cartridge
Test Notes:

Date Collected: NA
Date Received: NA
Date Extracted: 5/28/13
Date Analyzed: 5/30/13
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	< 5.0	NA	NA	NA	NA	
208-96-8	Acenaphthylene	< 0.50	NA	NA	NA	NA	
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	**L**
207-08-9	Benzo(k)fluoranthene	< 0.50	NA	NA	NA	NA	**L**
50-32-8	Benzo(a)pyrene	< 0.50	NA	NA	NA	NA	**L**
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	NA	NA	NA	NA	**L**
53-70-3	Dibenz(a,h)anthracene	< 0.50	NA	NA	NA	NA	**L**
191-24-2	Benzo(g,h,i)perylene	< 0.50	NA	NA	NA	NA	**L**

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, results may be biased high.
NA = Not applicable.

SURROGATE SPIKE RECOVERY RESULTS

Client: **Stantec Consulting Services, Inc.**
Client Project ID: **Bridgeton Landfill / 182608005** CAS Project ID: P1302207

Test Code: EPA TO-13A Modified
Instrument ID: HP 5890II+/HP5972A/MS15
Analyst: Madeleine Dangazyan
Sampling Media: PUF/XAD-2/Filter (Hi_Vol) Cartridge(s)
Test Notes:

Date(s) Collected: 5/22 - 5/23/13
Date(s) Received: 5/25/13
Date(s) Extracted: 5/28/13
Date(s) Analyzed: 5/30/13

Client Sample ID	CAS Sample ID	Fluorene-d10 % Recovered	Fluorene-d10 Acceptance Limits	Pyrene-d10 % Recovered	Pyrene-d10 Acceptance Limits	Data Qualifier
Method Blank	P130528-MB	**86**	60-120	**109**	60-120	
Lab Control Sample	P130528-LCS	**78**	60-120	**116**	60-120	
Duplicate Lab Control Sample	P130528-DLCS	**82**	60-120	**108**	60-120	
522Blank PAH	P1302207-001	**84**	60-120	**102**	60-120	
522LF - PAH	P1302207-004	**72**	60-120	**106**	60-120	
522HS - PAH	P1302207-006	**76**	60-120	**120**	60-120	

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **Bridgeton Landfill / 182608005**

CAS Project ID: P1302207
CAS Sample ID: P130528-DLCS

Test Code: EPA TO-13A Modified
Instrument ID: HP 5890II+/HP5972A/MS15
Analyst: Madeleine Dangazyan
Sampling Media: PUF/XAD-2/Filter (Hi_Vol) Cartridge
Test Notes:

Date Collected: NA
Date Received: NA
Date Extracted: 5/28/13
Date Analyzed: 5/30/13
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	CAS Acceptance Limits	RPD	RPD Limit	Data Qualifier
91-20-3	Naphthalene	5.00	4.17	4.27	**83**	**85**	60-120	2	20	
208-96-8	Acenaphthylene	5.00	4.36	4.02	**87**	**80**	60-120	8	23	
83-32-9	Acenaphthene	5.00	4.92	4.41	**98**	**88**	60-120	11	30	
86-73-7	Fluorene	5.00	4.45	4.12	**89**	**82**	60-120	8	21	
85-01-8	Phenanthrene	5.00	5.45	4.97	**109**	**99**	60-120	10	18	
120-12-7	Anthracene	5.00	5.32	4.70	**106**	**94**	60-120	12	17	
206-44-0	Fluoranthene	5.00	5.92	5.31	**118**	**106**	60-120	11	13	
129-00-0	Pyrene	5.00	6.01	5.47	**120**	**109**	60-120	10	13	
56-55-3	Benz(a)anthracene	5.00	5.38	5.15	**108**	**103**	60-120	5	9	
218-01-9	Chrysene	5.00	5.65	5.31	**113**	**106**	60-120	6	10	
205-99-2	Benzo(b)fluoranthene	5.00	7.18	6.60	**144**	**132**	60-120	9	24	**L**
207-08-9	Benzo(k)fluoranthene	5.00	7.43	7.20	**149**	**144**	60-120	3	18	**L**
50-32-8	Benzo(a)pyrene	5.00	7.83	6.87	**157**	**137**	60-120	14	12	**L, R**
193-39-5	Indeno(1,2,3-cd)pyrene	5.00	7.85	6.42	**157**	**128**	60-120	20	28	**L**
53-70-3	Dibenz(a,h)anthracene	5.00	8.00	7.71	**160**	**154**	60-120	4	17	**L**
191-24-2	Benzo(g,h,i)perylene	5.00	8.07	7.63	**161**	**153**	60-120	5	16	**L**

L = Laboratory control sample recovery outside the specified limits, results may be biased high.
R = Duplicate precision not met.

June 3, 2013 Service Request No: P1302207

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

Laboratory Results for: Landfill Odor Investigation

Dear Deb,

Enclosed are the results of the sample(s) submitted to our laboratory on May 24, 2013. For your reference, these analyses have been assigned our service request number P1302207.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided.
All results are intended to be considered in their entirety, and ALS Environmental (ALS) 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 2009 TNI 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 line is 281-994-2970. You may also contact me via email at Nicole.Brown@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Nicole Brown
Project Manager

For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com.

Certificate of Analysis

ALS Environmental - Houston HRMS
19408 Park Row, Suite 320, Houston, TX 77084
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Environmental

Client:	Stantec Consulting Services, Inc.	**Service Request No.:**	P1302207
Project:	Landfill Odor Investigation	**Date Received:**	05/24/13
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 II. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Three air samples were received for analysis at ALS Environmental on 05/24/13.

The samples were received at 2°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

B flags – Method Blanks

The Method Blank EQ1300300-01 contained low levels of 1234678-HpCDD, OCDD, 23478-PeCDF and 1234678-HpCDF below the Method Reporting Limit (MRL). The associated compounds in the samples are flagged with 'B' flags.

MS/MSD

EQ1300300: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported for this extraction batch. The batch quality control criteria were met.

C flags – 2378-TCDF Confirmation

Sample 522HS – DF / P1302207-005 had a detection for 2,3,7,8-TCDF below the MRL on the initial analysis on the DB-5 column. This result is J-qualified, indicating that the result is an estimated value, and not subject to confirmation. The valid result is reported from the initial analysis and was used in the final TEQ calculation

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.

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'

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: Stantec Consulting Services, Inc. **Service Request:** P1302207
Project: Bridgeton Landfill/182608005

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
P1302207-001	522Blank PAH	5/22/13	15:15
P1302207-002	522Blank DF	5/22/13	15:15
P1302207-003	522LF - DF	5/23/13	11:10
P1302207-004	522LF - PAH	5/23/13	11:11
P1302207-005	522HS - DF	5/23/13	12:09
P1302207-006	522HS - PAH	5/23/13	12:09

Laboratory Certifications
2013-2014

STATE/PROGRAM	AGENCY	CERT#	EXP DATE	CERTIFIED?
ARIZONA	AZ-DHS	AZ0725	05/27/14	Yes
ARKANSAS	ADEQ	12-035-0	06/16/13	Yes
CALIFORNIA	CA-ELAP	2452	02/28/15	Yes
DOD ELAP	A2LA	2897.01	11/30/13	Yes
FLORIDA/NELAP	FL-DOHS	E87611	06/30/13	Yes
HAWAII	HI-DOH	N/A	06/30/13	Yes
ILLINOIS/NELAP	IL-EPA	003004	10/06/13	Yes
ISO 17025	A2LA	2897.01	11/30/13	Yes
KANSAS	KS-DHE	E-10406	01/31/14	Yes
LOUISIANA/NELAP	LELAP	03048	06/30/13	Yes
LOUISIANA/NELAP	LDHH	LA120014	12/31/13	Yes
MAINE	ME-DOHS	2012017	06/05/14	Yes
MARYLAND	MDE	343	06/30/13	Yes
MICHIGAN	MIDEQ	9971	06/30/13	Yes
MINNESOTA	MDH	048-999-427	12/31/13	Yes
NEVADA	NDEP	TX014112013A	07/31/13	Yes
NEW JERSEY	NJDEP	TX008	06/30/13	Yes
NEW MEXICO	NMED-DWB	N/A	06/30/13	Yes
NEW YORK/NELAP	NY-DOH	11707	04/01/14	Yes
OKLAHOMA	OKDEQ	2012-133	08/31/13	Yes
OREGON/NELAP	ORELAP	TX200002-009	03/24/14	Yes
PENNSYLVANIA/NELAP	PLAP	004	06/30/13	Yes
SOIL IMPORT PERMIT	USDA	P330-12-00002	01/13/15	Yes
TENNESSEE	TNDEC	TN04016	06/30/13	Yes
TEXAS/NELAP	TCEQ	T104704216-12-3	06/30/13	Yes
UTAH/NELAP	UTELCP	TX014112013-2	06/30/13	Yes
WASHINGTON/NELAP	WA-Ecology	C819-12	11/14/13	Yes
WEST VIRGINIA	WVDEP	347	06/30/13	Yes

Abbreviations, Acronyms & Definitions

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

Data Qualifier Flags – Dioxin/Furans

- **B** Indicates the associated analyte is found in the method blank, as well as in the sample.

- **C** Confirmation of the TCDF compound: When 2378-TCDF is detected on the DB-5 column, confirmation analyses are performed on a second column (DB-225). The results from both the DB-5 column and the DB-225 column are included in this data package. The results from the DB-225 analyses should be used to evaluate the 2378-TCDF in the samples. The confirmed result should be used in determining the TEQ value for TCDF.

- **E** Indicates an estimated value – used when the analyte concentration exceeds the upper end of the linear calibration range.

- **J** Indicates an estimated value – used when the analyte concentration is below the method reporting limit (MRL) and above the estimated detection limit (EDL).

- **K** 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.

- **U** Indicates the compound was analyzed and not detected

- **Y** Samples that had recoveries of labeled standards outside the acceptance limits are flagged with 'Y'. In all cases, the signal-to-noise ratios are greater than 10:1, making these data acceptable.

- **ND** Indicates concentration is reported as 'Not Detected.'

- **S** Peak is saturated; data not reportable.

- **Q** Lock-mass interference by ether compounds.

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID: P1302207 | (DB-5) | DB-225 | SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date:	Analyst:	Samples:
06/03/13	JC	-002, -003, -005

Second Level - Data Review – to be filled by person doing peer review

Date:	Analyst:	Samples:
06/03/13	MM	002, 003, 005

Analytical Results

ALS Environmental - Houston HRMS
19408 Park Row, Suite 320, Houston, TX 77084
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1302207
Project:	Bridgeton Landfill/182608005	**Date Collected:**	5/22/13 1515
Sample Matrix:	Air	**Date Received:**	5/24/13
Sample Name:	522Blank DF	**Units:**	pg
Lab Code:	P1302207-002	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analytical Method:	TO-9A	**Date Analyzed:**	6/1/13 1816
Prep Method:	Method	**Date Extracted:**	5/28/13
Sample Amount:	1.0000	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5
Data File Name:	P164237	**Blank File Name:**	P164230
ICAL Date:	10/29/13	**Cal Ver. File Name:**	P164228

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	1.27	10.0			1
1,2,3,7,8-PeCDD	**1.42**	JK	0.441	50.0	2.16	1.000	1
1,2,3,4,7,8-HxCDD	ND	U	0.396	50.0			1
1,2,3,6,7,8-HxCDD	ND	U	0.336	50.0			1
1,2,3,7,8,9-HxCDD	ND	U	0.344	50.0			1
1,2,3,4,6,7,8-HpCDD	**2.96**	BJK	0.547	50.0	0.83	1.000	1
OCDD	**7.79**	BJ	0.488	100	0.85	1.001	1
2,3,7,8-TCDF	ND	U	0.374	10.0			1
1,2,3,7,8-PeCDF	ND	U	0.183	50.0			1
2,3,4,7,8-PeCDF	ND	U	0.196	50.0			1
1,2,3,4,7,8-HxCDF	ND	U	0.350	50.0			1
1,2,3,6,7,8-HxCDF	**1.16**	J	0.291	50.0	1.42	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.402	50.0			1
2,3,4,6,7,8-HxCDF	ND	U	0.341	50.0			1
1,2,3,4,6,7,8-HpCDF	ND	U	0.440	50.0			1
1,2,3,4,7,8,9-HpCDF	ND	U	0.594	50.0			1
OCDF	ND	U	1.11	100			1
Total Tetra-Dioxins	ND	U	1.27	10.0			1
Total Penta-Dioxins	ND	U	0.441	50.0			1
Total Hexa-Dioxins	ND	U	0.357	50.0			1
Total Hepta-Dioxins	ND	U	0.547	50.0			1
Total Tetra-Furans	ND	U	0.374	10.0			1
Total Penta-Furans	ND	U	0.189	50.0			1
Total Hexa-Furans	**1.16**	J	0.342	50.0	1.42		1
Total Hepta-Furans	ND	U	0.505	50.0			1

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1302207
Project:	Bridgeton Landfill/182608005	**Date Collected:**	5/22/13 1515
Sample Matrix:	Air	**Date Received:**	5/24/13
Sample Name:	522Blank DF	**Units:**	Percent
Lab Code:	P1302207-002	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analytical Method:	TO-9A	**Date Analyzed:**	6/1/13 1816
Prep Method:	Method	**Date Extracted:**	5/28/13
Sample Amount:	1.0000	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5
Data File Name:	P164237	**Blank File Name:**	P164230
ICAL Date:	10/29/13	**Cal Ver. File Name:**	P164228

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	4000	2920.540	73		50-120	0.79	1.007
13C-1,2,3,7,8-PeCDD	4000	3324.995	83		50-120	1.51	1.157
13C-1,2,3,6,7,8-HxCDD	4000	3193.437	80		50-120	1.21	0.993
13C-1,2,3,4,6,7,8-HpCDD	4000	3010.439	75		40-120	1.05	1.068
13C-OCDD	8000	5773.983	72		40-120	0.88	1.150
13C-2,3,7,8-TCDF	4000	2582.772	65		50-120	0.73	0.980
13C-1,2,3,7,8-PeCDF	4000	3027.593	76		50-120	1.51	1.122
13C-1,2,3,6,7,8-HxCDF	4000	2989.162	75		50-120	0.51	0.975
13C-1,2,3,4,6,7,8-HpCDF	4000	2611.402	65		40-120	0.43	1.044
37Cl-2,3,7,8-TCDD	4000	4336.277	108		50-120	NA	1.000
13C-1,2,3,4,7,8-HxCDD	4000	4013.999	100		50-120	1.21	0.998
13C-2,3,4,7,8-PeCDF	4000	4016.148	100		50-120	1.50	1.021
13C-1,2,3,4,7,8-HxCDF	4000	4005.684	100		50-120	0.50	0.998
13C-1,2,3,4,7,8,9-HpCDF	4000	4478.669	112		40-120	0.42	1.034
13C-1,2,3,7,8,9-HxCDF	4000	3073.764	77		50-120	0.51	1.006

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1302207
Project:	Bridgeton Landfill/182608005	**Date Collected:**	5/22/13 1515
Sample Matrix:	Air	**Date Received:**	5/24/13
Sample Name:	522Blank DF	**Units:**	pg
Lab Code:	P1302207-002	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analytical 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	1.27	10.0	1	1	
1,2,3,7,8-PeCDD	**1.42**	0.441	50.0	1	1	1.42
1,2,3,4,7,8-HxCDD	ND	0.396	50.0	1	0.1	
1,2,3,6,7,8-HxCDD	ND	0.336	50.0	1	0.1	
1,2,3,7,8,9-HxCDD	ND	0.344	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDD	**2.96**	0.547	50.0	1	0.01	0.0296
OCDD	**7.79**	0.488	100	1	0.0003	0.00234
2,3,7,8-TCDF	ND	0.374	10.0	1	0.1	
1,2,3,7,8-PeCDF	ND	0.183	50.0	1	0.03	
2,3,4,7,8-PeCDF	ND	0.196	50.0	1	0.3	
1,2,3,4,7,8-HxCDF	ND	0.350	50.0	1	0.1	
1,2,3,6,7,8-HxCDF	**1.16**	0.291	50.0	1	0.1	0.116
1,2,3,7,8,9-HxCDF	ND	0.402	50.0	1	0.1	
2,3,4,6,7,8-HxCDF	ND	0.341	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDF	ND	0.440	50.0	1	0.01	
1,2,3,4,7,8,9-HpCDF	ND	0.594	50.0	1	0.01	
OCDF	ND	1.11	100	1	0.0003	
		Total TEQ				1.57

2005 WHO TEFs, ND = 0

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1302207
Project:	Bridgeton Landfill/182608005	**Date Collected:**	5/23/13 1110
Sample Matrix:	Air	**Date Received:**	5/24/13
Sample Name:	522LF - DF	**Units:**	pg
Lab Code:	P1302207-003	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analytical Method:	TO-9A	**Date Analyzed:**	6/1/13 1904
Prep Method:	Method	**Date Extracted:**	5/28/13
Sample Amount:	1.0000	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5
Data File Name:	P164238	**Blank File Name:**	P164230
ICAL Date:	10/29/13	**Cal Ver. File Name:**	P164228

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	1.49	10.0			1
1,2,3,7,8-PeCDD	**2.51**	J	0.774	50.0	1.67	1.000	1
1,2,3,4,7,8-HxCDD	ND	U	0.757	50.0			1
1,2,3,6,7,8-HxCDD	ND	U	0.642	50.0			1
1,2,3,7,8,9-HxCDD	ND	U	0.656	50.0			1
1,2,3,4,6,7,8-HpCDD	**12.0**	BJK	0.795	50.0	0.84	1.000	1
OCDD	**47.6**	BJ	0.508	100	0.92	1.000	1
2,3,7,8-TCDF	ND	U	0.571	10.0			1
1,2,3,7,8-PeCDF	ND	U	0.730	50.0			1
2,3,4,7,8-PeCDF	ND	U	0.779	50.0			1
1,2,3,4,7,8-HxCDF	ND	U	0.799	50.0			1
1,2,3,6,7,8-HxCDF	**1.66**	JK	0.665	50.0	0.99	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.918	50.0			1
2,3,4,6,7,8-HxCDF	ND	U	0.779	50.0			1
1,2,3,4,6,7,8-HpCDF	**8.21**	BJK	0.927	50.0	0.79	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	1.26	50.0			1
OCDF	**5.55**	JK	1.23	100	0.56	1.004	1
Total Tetra-Dioxins	ND	U	1.49	10.0			1
Total Penta-Dioxins	**2.51**	J	0.774	50.0	1.67		1
Total Hexa-Dioxins	**5.49**	J	0.681	50.0	1.08		1
Total Hepta-Dioxins	ND	U	0.795	50.0			1
Total Tetra-Furans	ND	U	0.571	10.0			1
Total Penta-Furans	**15.0**	J	0.754	50.0	1.67		1
Total Hexa-Furans	**12.2**	J	0.781	50.0	1.13		1
Total Hepta-Furans	**3.02**	J	1.07	50.0	1.05		1

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1302207
Project:	Bridgeton Landfill/182608005	**Date Collected:**	5/23/13 1110
Sample Matrix:	Air	**Date Received:**	5/24/13
Sample Name:	522LF - DF	**Units:**	Percent
Lab Code:	P1302207-003	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analytical Method:	TO-9A	**Date Analyzed:**	6/1/13 1904
Prep Method:	Method	**Date Extracted:**	5/28/13
Sample Amount:	1.0000	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5
Data File Name:	P164238	**Blank File Name:**	P164230
ICAL Date:	10/29/13	**Cal Ver. File Name:**	P164228

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	4000	2706.378	68		50-120	0.78	1.007
13C-1,2,3,7,8-PeCDD	4000	3008.108	75		50-120	1.52	1.157
13C-1,2,3,6,7,8-HxCDD	4000	2860.345	72		50-120	1.21	0.993
13C-1,2,3,4,6,7,8-HpCDD	4000	2781.184	70		40-120	1.06	1.069
13C-OCDD	8000	5414.447	68		40-120	0.86	1.151
13C-2,3,7,8-TCDF	4000	2465.266	62		50-120	0.74	0.980
13C-1,2,3,7,8-PeCDF	4000	2755.170	69		50-120	1.50	1.121
13C-1,2,3,6,7,8-HxCDF	4000	3026.790	76		50-120	0.51	0.975
13C-1,2,3,4,6,7,8-HpCDF	4000	2428.914	61		40-120	0.43	1.044
37Cl-2,3,7,8-TCDD	4000	4200.582	105		50-120	NA	1.001
13C-1,2,3,4,7,8-HxCDD	4000	4090.343	102		50-120	1.21	0.998
13C-2,3,4,7,8-PeCDF	4000	3855.760	96		50-120	1.50	1.021
13C-1,2,3,4,7,8-HxCDF	4000	3541.787	89		50-120	0.50	0.998
13C-1,2,3,4,7,8,9-HpCDF	4000	3000.058	75		40-120	0.41	1.034
13C-1,2,3,7,8,9-HxCDF	4000	2897.488	72		50-120	0.50	1.006

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1302207
Project:	Bridgeton Landfill/182608005	**Date Collected:**	5/23/13 1110
Sample Matrix:	Air	**Date Received:**	5/24/13
Sample Name:	522LF - DF	**Units:**	pg
Lab Code:	P1302207-003	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analytical 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	1.49	10.0	1	1	
1,2,3,7,8-PeCDD	**2.51**	0.774	50.0	1	1	2.51
1,2,3,4,7,8-HxCDD	ND	0.757	50.0	1	0.1	
1,2,3,6,7,8-HxCDD	ND	0.642	50.0	1	0.1	
1,2,3,7,8,9-HxCDD	ND	0.656	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDD	**12.0**	0.795	50.0	1	0.01	0.120
OCDD	**47.6**	0.508	100	1	0.0003	0.0143
2,3,7,8-TCDF	ND	0.571	10.0	1	0.1	
1,2,3,7,8-PeCDF	ND	0.730	50.0	1	0.03	
2,3,4,7,8-PeCDF	ND	0.779	50.0	1	0.3	
1,2,3,4,7,8-HxCDF	ND	0.799	50.0	1	0.1	
1,2,3,6,7,8-HxCDF	**1.66**	0.665	50.0	1	0.1	0.166
1,2,3,7,8,9-HxCDF	ND	0.918	50.0	1	0.1	
2,3,4,6,7,8-HxCDF	ND	0.779	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDF	**8.21**	0.927	50.0	1	0.01	0.0821
1,2,3,4,7,8,9-HpCDF	ND	1.26	50.0	1	0.01	
OCDF	**5.55**	1.23	100	1	0.0003	0.00167
		Total TEQ				2.89

2005 WHO TEFs, ND = 0

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1302207
Project:	Bridgeton Landfill/182608005	**Date Collected:**	5/23/13 1209
Sample Matrix:	Air	**Date Received:**	5/24/13
Sample Name:	522HS - DF	**Units:**	pg
Lab Code:	P1302207-005	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analytical Method:	TO-9A	**Date Analyzed:**	6/1/13 1952
Prep Method:	Method	**Date Extracted:**	5/28/13
Sample Amount:	1.0000	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5
Data File Name:	P164239	**Blank File Name:**	P164230
ICAL Date:	10/29/13	**Cal Ver. File Name:**	P164228

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	1.27	10.0			1
1,2,3,7,8-PeCDD	ND	U	0.699	50.0			1
1,2,3,4,7,8-HxCDD	**1.65**	JK	0.830	50.0	0.75	0.998	1
1,2,3,6,7,8-HxCDD	**1.70**	J	0.702	50.0	1.31	1.000	1
1,2,3,7,8,9-HxCDD	ND	U	0.719	50.0			1
1,2,3,4,6,7,8-HpCDD	**9.53**	BJ	0.310	50.0	0.99	1.000	1
OCDD	**32.3**	BJ	0.708	100	0.95	1.000	1
2,3,7,8-TCDF	**3.68**	J	0.686	10.0	0.70	1.002	1
1,2,3,7,8-PeCDF	ND	U	0.540	50.0			1
2,3,4,7,8-PeCDF	ND	U	0.577	50.0			1
1,2,3,4,7,8-HxCDF	**1.99**	JK	0.213	50.0	0.78	0.998	1
1,2,3,6,7,8-HxCDF	**2.15**	J	0.177	50.0	1.33	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.244	50.0			1
2,3,4,6,7,8-HxCDF	**0.728**	J	0.207	50.0	1.26	1.013	1
1,2,3,4,6,7,8-HpCDF	**7.12**	BJ	0.894	50.0	0.91	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	1.21	50.0			1
OCDF	**6.40**	J	1.41	100	0.95	1.004	1
Total Tetra-Dioxins	ND	U	1.27	10.0			1
Total Penta-Dioxins	**4.85**	J	0.699	50.0	1.62		1
Total Hexa-Dioxins	**5.16**	J	0.746	50.0	1.24		1
Total Hepta-Dioxins	**19.8**	J	0.310	50.0	0.90		1
Total Tetra-Furans	**7.79**	J	0.686	10.0	0.73		1
Total Penta-Furans	**19.0**	J	0.557	50.0	1.49		1
Total Hexa-Furans	**15.8**	J	0.208	50.0	1.05		1
Total Hepta-Furans	**7.12**	J	1.03	50.0	0.91		1

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1302207
Project:	Bridgeton Landfill/182608005	**Date Collected:**	5/23/13 1209
Sample Matrix:	Air	**Date Received:**	5/24/13
Sample Name:	522HS - DF	**Units:**	Percent
Lab Code:	P1302207-005	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analytical Method:	TO-9A	**Date Analyzed:**	6/1/13 1952
Prep Method:	Method	**Date Extracted:**	5/28/13
Sample Amount:	1.0000	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5
Data File Name:	P164239	**Blank File Name:**	P164230
ICAL Date:	10/29/13	**Cal Ver. File Name:**	P164228

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	4000	2774.329	69		50-120	0.77	1.007
13C-1,2,3,7,8-PeCDD	4000	3122.209	78		50-120	1.53	1.157
13C-1,2,3,6,7,8-HxCDD	4000	3044.814	76		50-120	1.21	0.993
13C-1,2,3,4,6,7,8-HpCDD	4000	2713.849	68		40-120	1.04	1.068
13C-OCDD	8000	4779.002	60		40-120	0.87	1.151
13C-2,3,7,8-TCDF	4000	2575.915	64		50-120	0.73	0.980
13C-1,2,3,7,8-PeCDF	4000	2896.726	72		50-120	1.49	1.122
13C-1,2,3,6,7,8-HxCDF	4000	3205.815	80		50-120	0.51	0.975
13C-1,2,3,4,6,7,8-HpCDF	4000	2343.901	59		40-120	0.44	1.044
37Cl-2,3,7,8-TCDD	4000	4388.059	110		50-120	NA	1.001
13C-1,2,3,4,7,8-HxCDD	4000	4017.643	100		50-120	1.20	0.998
13C-2,3,4,7,8-PeCDF	4000	3822.639	96		50-120	1.50	1.021
13C-1,2,3,4,7,8-HxCDF	4000	3518.012	88		50-120	0.50	0.997
13C-1,2,3,4,7,8,9-HpCDF	4000	2824.235	71		40-120	0.42	1.034
13C-1,2,3,7,8,9-HxCDF	4000	3072.848	77		50-120	0.51	1.006

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1302207
Project:	Bridgeton Landfill/182608005	**Date Collected:**	5/23/13 1209
Sample Matrix:	Air	**Date Received:**	5/24/13
Sample Name:	522HS - DF	**Units:**	pg
Lab Code:	P1302207-005	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analytical 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	1.27	10.0	1	1	
1,2,3,7,8-PeCDD	ND	0.699	50.0	1	1	
1,2,3,4,7,8-HxCDD	**1.65**	0.830	50.0	1	0.1	0.165
1,2,3,6,7,8-HxCDD	**1.70**	0.702	50.0	1	0.1	0.170
1,2,3,7,8,9-HxCDD	ND	0.719	50.0	1	0.1	
1,2,3,4,6,7,8-HpCDD	**9.53**	0.310	50.0	1	0.01	0.0953
OCDD	**32.3**	0.708	100	1	0.0003	0.00969
2,3,7,8-TCDF	**3.68**	0.686	10.0	1	0.1	0.368
1,2,3,7,8-PeCDF	ND	0.540	50.0	1	0.03	
2,3,4,7,8-PeCDF	ND	0.577	50.0	1	0.3	
1,2,3,4,7,8-HxCDF	**1.99**	0.213	50.0	1	0.1	0.199
1,2,3,6,7,8-HxCDF	**2.15**	0.177	50.0	1	0.1	0.215
1,2,3,7,8,9-HxCDF	ND	0.244	50.0	1	0.1	
2,3,4,6,7,8-HxCDF	**0.728**	0.207	50.0	1	0.1	0.0728
1,2,3,4,6,7,8-HpCDF	**7.12**	0.894	50.0	1	0.01	0.0712
1,2,3,4,7,8,9-HpCDF	ND	1.21	50.0	1	0.01	
OCDF	**6.40**	1.41	100	1	0.0003	0.00192
		Total TEQ				1.37

2005 WHO TEFs, ND = 0

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1302207
Project:	Bridgeton Landfill/182608005	**Date Collected:**	NA
Sample Matrix:	Air	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	pg
Lab Code:	EQ1300300-01	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analytical Method:	TO-9A	**Date Analyzed:**	6/1/13 1243
Prep Method:	Method	**Date Extracted:**	5/28/13
Sample Amount:	1.0000	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5
Data File Name:	P164230	**Blank File Name:**	P164230
ICAL Date:	10/29/13	**Cal Ver. File Name:**	P164228

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	1.48	10.0			1
1,2,3,7,8-PeCDD	ND	U	0.687	50.0			1
1,2,3,4,7,8-HxCDD	ND	U	0.836	50.0			1
1,2,3,6,7,8-HxCDD	ND	U	0.707	50.0			1
1,2,3,7,8,9-HxCDD	ND	U	0.725	50.0			1
1,2,3,4,6,7,8-HpCDD	**3.69**	J	0.746	50.0	0.89	1.000	1
OCDD	**11.7**	J	0.681	100	0.93	1.000	1
2,3,7,8-TCDF	ND	U	0.572	10.0			1
1,2,3,7,8-PeCDF	ND	U	0.414	50.0			1
2,3,4,7,8-PeCDF	**1.01**	JK	0.442	50.0	0.76	1.022	1
1,2,3,4,7,8-HxCDF	ND	U	0.347	50.0			1
1,2,3,6,7,8-HxCDF	ND	U	0.289	50.0			1
1,2,3,7,8,9-HxCDF	ND	U	0.398	50.0			1
2,3,4,6,7,8-HxCDF	ND	U	0.338	50.0			1
1,2,3,4,6,7,8-HpCDF	**1.68**	JK	0.550	50.0	2.08	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.744	50.0			1
OCDF	ND	U	1.56	100			1
Total Tetra-Dioxins	ND	U	1.48	10.0			1
Total Penta-Dioxins	ND	U	0.687	50.0			1
Total Hexa-Dioxins	ND	U	0.751	50.0			1
Total Hepta-Dioxins	**7.42**	J	0.746	50.0	1.10		1
Total Tetra-Furans	ND	U	0.572	10.0			1
Total Penta-Furans	ND	U	0.428	50.0			1
Total Hexa-Furans	ND	U	0.338	50.0			1
Total Hepta-Furans	ND	U	0.632	50.0			1

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1302207
Project:	Bridgeton Landfill/182608005	**Date Collected:**	NA
Sample Matrix:	Air	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ1300300-01	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analytical Method:	TO-9A	**Date Analyzed:**	6/1/13 1243
Prep Method:	Method	**Date Extracted:**	5/28/13
Sample Amount:	1.0000	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5
Data File Name:	P164230	**Blank File Name:**	P164230
ICAL Date:	10/29/13	**Cal Ver. File Name:**	P164228

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	4000	2764.289	69		50-120	0.78	1.007
13C-1,2,3,7,8-PeCDD	4000	3205.509	80		50-120	1.51	1.157
13C-1,2,3,6,7,8-HxCDD	4000	2928.000	73		50-120	1.21	0.993
13C-1,2,3,4,6,7,8-HpCDD	4000	2811.603	70		40-120	1.05	1.068
13C-OCDD	8000	5578.401	70		40-120	0.87	1.151
13C-2,3,7,8-TCDF	4000	2499.197	62		50-120	0.73	0.980
13C-1,2,3,7,8-PeCDF	4000	2901.714	73		50-120	1.52	1.122
13C-1,2,3,6,7,8-HxCDF	4000	2898.081	72		50-120	0.51	0.975
13C-1,2,3,4,6,7,8-HpCDF	4000	2442.374	61		40-120	0.44	1.044
37Cl-2,3,7,8-TCDD	4000	4540.511	114		50-120	NA	1.001
13C-1,2,3,4,7,8-HxCDD	4000	4521.847	113		50-120	1.21	0.998
13C-2,3,4,7,8-PeCDF	4000	4136.850	103		50-120	1.49	1.021
13C-1,2,3,4,7,8-HxCDF	4000	3922.507	98		50-120	0.51	0.997
13C-1,2,3,4,7,8,9-HpCDF	4000	4766.545	119		40-120	0.43	1.034
13C-1,2,3,7,8,9-HxCDF	4000	3079.940	77		50-120	0.51	1.006

Accuracy and Precision

ALS Environmental - Houston HRMS
19408 Park Row, Suite 320, Houston, TX 77084
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Client: Stantec Consulting Group, Inc. **Service Request:** P1302207
Project: Bridgeton Landfill/182608005 **Date Analyzed:** 6/ 1/13
Sample Matrix: Air

Lab Control Sample Summary
Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analytical Method: TO-9A **Units:** pg
Prep Method: Method **Basis:** NA

Extraction Lot: 183767

	Lab Control Sample EQ1300300-02			Duplicate Lab Control Sample EQ1300300-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2,3,7,8-TCDD	196	200	98	195	200	98	70 - 130	<1	30
1,2,3,7,8-PeCDD	986	1000	99	967	1000	97	70 - 130	2	30
1,2,3,4,7,8-HxCDD	943	1000	94	945	1000	94	70 - 130	<1	30
1,2,3,6,7,8-HxCDD	978	1000	98	970	1000	97	70 - 130	1	30
1,2,3,7,8,9-HxCDD	910	1000	91	891	1000	89	70 - 130	2	30
1,2,3,4,6,7,8-HpCDD	888	1000	89	908	1000	91	70 - 130	2	30
OCDD	1840	2000	92	1870	2000	93	70 - 130	1	30
2,3,7,8-TCDF	180	200	90	188	200	94	70 - 130	4	30
1,2,3,7,8-PeCDF	917	1000	92	930	1000	93	70 - 130	1	30
2,3,4,7,8-PeCDF	915	1000	91	911	1000	91	70 - 130	<1	30
1,2,3,4,7,8-HxCDF	925	1000	92	884	1000	88	70 - 130	4	30
1,2,3,6,7,8-HxCDF	883	1000	88	875	1000	87	70 - 130	1	30
1,2,3,7,8,9-HxCDF	926	1000	93	904	1000	90	70 - 130	3	30
2,3,4,6,7,8-HxCDF	867	1000	87	881	1000	88	70 - 130	1	30
1,2,3,4,6,7,8-HpCDF	875	1000	88	858	1000	86	70 - 130	2	30
1,2,3,4,7,8,9-HpCDF	991	1000	99	1020	1000	102	70 - 130	3	30
OCDF	1770	2000	89	1790	2000	90	70 - 130	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1302207
Project:	Bridgeton Landfill/182608005	**Date Collected:**	NA
Sample Matrix:	Air	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	pg
Lab Code:	EQ1300300-02	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analytical Method:	TO-9A	**Date Analyzed:**	6/1/13 2039
Prep Method:	Method	**Date Extracted:**	5/28/13
Sample Amount:	1.0000	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5
Data File Name:	P164240	**Blank File Name:**	P164230
ICAL Date:	10/29/13	**Cal Ver. File Name:**	P164228

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	**196**		0.822	10.0	0.77	1.001	1
1,2,3,7,8-PeCDD	**986**		0.234	50.0	1.60	1.000	1
1,2,3,4,7,8-HxCDD	**943**		0.401	50.0	1.25	0.998	1
1,2,3,6,7,8-HxCDD	**978**		0.340	50.0	1.25	1.000	1
1,2,3,7,8,9-HxCDD	**910**		0.348	50.0	1.24	1.008	1
1,2,3,4,6,7,8-HpCDD	**888**		0.114	50.0	1.02	1.000	1
OCDD	**1840**		0.303	100	0.87	1.000	1
2,3,7,8-TCDF	**180**		0.117	10.0	0.76	1.001	1
1,2,3,7,8-PeCDF	**917**		0.335	50.0	1.58	1.000	1
2,3,4,7,8-PeCDF	**915**		0.357	50.0	1.54	1.022	1
1,2,3,4,7,8-HxCDF	**925**		0.266	50.0	1.22	0.998	1
1,2,3,6,7,8-HxCDF	**883**		0.220	50.0	1.24	1.000	1
1,2,3,7,8,9-HxCDF	**926**		0.304	50.0	1.23	1.032	1
2,3,4,6,7,8-HxCDF	**867**		0.259	50.0	1.22	1.013	1
1,2,3,4,6,7,8-HpCDF	**875**		1.20	50.0	1.05	1.000	1
1,2,3,4,7,8,9-HpCDF	**991**		1.62	50.0	1.07	1.034	1
OCDF	**1770**		0.580	100	0.89	1.004	1
Total Tetra-Dioxins	**196**		0.822	10.0	0.77		1
Total Penta-Dioxins	**991**		0.234	50.0	1.60		1
Total Hexa-Dioxins	**2830**		0.361	50.0	1.25		1
Total Hepta-Dioxins	**888**		0.114	50.0	1.02		1
Total Tetra-Furans	**180**		0.117	10.0	0.76		1
Total Penta-Furans	**1850**		0.347	50.0	1.51		1
Total Hexa-Furans	**3600**		0.259	50.0	1.22		1
Total Hepta-Furans	**1870**		1.38	50.0	1.05		1

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1302207
Project:	Bridgeton Landfill/182608005	**Date Collected:**	NA
Sample Matrix:	Air	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1300300-02	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analytical Method:	TO-9A	**Date Analyzed:**	6/1/13 2039
Prep Method:	Method	**Date Extracted:**	5/28/13
Sample Amount:	1.0000	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5
Data File Name:	P164240	**Blank File Name:**	P164230
ICAL Date:	10/29/13	**Cal Ver. File Name:**	P164228

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	4000	2889.406	72		50-120	0.78	1.007
13C-1,2,3,7,8-PeCDD	4000	3234.105	81		50-120	1.51	1.157
13C-1,2,3,6,7,8-HxCDD	4000	3046.415	76		50-120	1.21	0.993
13C-1,2,3,4,6,7,8-HpCDD	4000	2787.693	70		40-120	1.03	1.068
13C-OCDD	8000	5412.047	68		40-120	0.87	1.151
13C-2,3,7,8-TCDF	4000	2574.754	64		50-120	0.73	0.980
13C-1,2,3,7,8-PeCDF	4000	2988.116	75		50-120	1.51	1.122
13C-1,2,3,6,7,8-HxCDF	4000	2843.877	71		50-120	0.50	0.975
13C-1,2,3,4,6,7,8-HpCDF	4000	2484.649	62		40-120	0.43	1.044
37Cl-2,3,7,8-TCDD	4000	4323.969	108		50-120	NA	1.000
13C-1,2,3,4,7,8-HxCDD	4000	4147.900	104		50-120	1.20	0.998
13C-2,3,4,7,8-PeCDF	4000	3917.165	98		50-120	1.50	1.021
13C-1,2,3,4,7,8-HxCDF	4000	4108.517	103		50-120	0.50	0.997
13C-1,2,3,4,7,8,9-HpCDF	4000	4231.301	106		40-120	0.43	1.034
13C-1,2,3,7,8,9-HxCDF	4000	3003.632	75		50-120	0.50	1.006

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1302207
Project:	Bridgeton Landfill/182608005	**Date Collected:**	NA
Sample Matrix:	Air	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	pg
Lab Code:	EQ1300300-03	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analytical Method:	TO-9A	**Date Analyzed:**	6/1/13 2127
Prep Method:	Method	**Date Extracted:**	5/28/13
Sample Amount:	1.0000	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5
Data File Name:	P164241	**Blank File Name:**	P164230
ICAL Date:	10/29/13	**Cal Ver. File Name:**	P164228

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	**195**		0.943	10.0	0.75	1.001	1
1,2,3,7,8-PeCDD	**967**		0.177	50.0	1.53	1.001	1
1,2,3,4,7,8-HxCDD	**945**		0.904	50.0	1.22	0.998	1
1,2,3,6,7,8-HxCDD	**970**		0.765	50.0	1.28	1.000	1
1,2,3,7,8,9-HxCDD	**891**		0.783	50.0	1.18	1.008	1
1,2,3,4,6,7,8-HpCDD	**908**		0.400	50.0	1.01	1.000	1
OCDD	**1870**		0.797	100	0.88	1.000	1
2,3,7,8-TCDF	**188**		0.528	10.0	0.77	1.000	1
1,2,3,7,8-PeCDF	**930**		0.540	50.0	1.53	1.000	1
2,3,4,7,8-PeCDF	**911**		0.577	50.0	1.54	1.021	1
1,2,3,4,7,8-HxCDF	**884**		0.577	50.0	1.24	0.998	1
1,2,3,6,7,8-HxCDF	**875**		0.479	50.0	1.24	1.000	1
1,2,3,7,8,9-HxCDF	**904**		0.661	50.0	1.29	1.031	1
2,3,4,6,7,8-HxCDF	**881**		0.561	50.0	1.22	1.013	1
1,2,3,4,6,7,8-HpCDF	**858**		1.99	50.0	1.04	1.000	1
1,2,3,4,7,8,9-HpCDF	**1020**		2.69	50.0	1.01	1.034	1
OCDF	**1790**		1.29	100	0.89	1.004	1
Total Tetra-Dioxins	**196**		0.943	10.0	0.75		1
Total Penta-Dioxins	**967**		0.177	50.0	1.53		1
Total Hexa-Dioxins	**2810**		0.813	50.0	1.22		1
Total Hepta-Dioxins	**916**		0.400	50.0	0.94		1
Total Tetra-Furans	**188**		0.528	10.0	0.77		1
Total Penta-Furans	**1870**		0.558	50.0	1.61		1
Total Hexa-Furans	**3540**		0.562	50.0	1.24		1
Total Hepta-Furans	**1890**		2.29	50.0	1.04		1

Client:	Stantec Consulting Group, Inc.	**Service Request:**	P1302207
Project:	Bridgeton Landfill/182608005	**Date Collected:**	NA
Sample Matrix:	Air	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1300300-03	**Basis:**	NA

Polychlorinated, Polybrominated, Brominated/Chlorinated Dibenzo-p-Dioxins, Dibenzofurans in Amb. Air

Analytical Method:	TO-9A	**Date Analyzed:**	6/1/13 2127
Prep Method:	Method	**Date Extracted:**	5/28/13
Sample Amount:	1.0000	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5
Data File Name:	P164241	**Blank File Name:**	P164230
ICAL Date:	10/29/13	**Cal Ver. File Name:**	P164228

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	4000	3166.701	79		50-120	0.77	1.007
13C-1,2,3,7,8-PeCDD	4000	3720.440	93		50-120	1.53	1.157
13C-1,2,3,6,7,8-HxCDD	4000	3426.896	86		50-120	1.23	0.993
13C-1,2,3,4,6,7,8-HpCDD	4000	3183.043	80		40-120	1.04	1.068
13C-OCDD	8000	5888.616	74		40-120	0.88	1.150
13C-2,3,7,8-TCDF	4000	2823.616	71		50-120	0.73	0.980
13C-1,2,3,7,8-PeCDF	4000	3317.430	83		50-120	1.51	1.122
13C-1,2,3,6,7,8-HxCDF	4000	3191.208	80		50-120	0.51	0.975
13C-1,2,3,4,6,7,8-HpCDF	4000	2730.384	68		40-120	0.44	1.044
37Cl-2,3,7,8-TCDD	4000	4288.188	107		50-120	NA	1.001
13C-1,2,3,4,7,8-HxCDD	4000	4057.382	101		50-120	1.20	0.998
13C-2,3,4,7,8-PeCDF	4000	3941.539	99		50-120	1.50	1.021
13C-1,2,3,4,7,8-HxCDF	4000	3986.428	100		50-120	0.51	0.997
13C-1,2,3,4,7,8,9-HpCDF	4000	4508.872	113		40-120	0.43	1.034
13C-1,2,3,7,8,9-HxCDF	4000	3384.611	85		50-120	0.50	1.006

Chain of Custody

ALS Environmental - Houston HRMS
19408 Park Row, Suite 320, Houston, TX 77084
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: Landfill Odor Investigation
Project Number:
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
P1302207-002	522Blank DF		Air	5/22/13	1515	5/24/13	HOUSTON	II
P1302207-003	522LF - DF		Air	5/23/13	1110	5/24/13	HOUSTON	II
P1302207-005	522HS - DF		Air	5/23/13	1209	5/24/13	HOUSTON	II

Test Comments
Dioxins and Furans - TO-9A P1302207-002,3,5 17 Dioxin/Furans

1 seal
2/1
S/N: 1220034491

Sp

Please Address Report to:
Deborah L. Gray
Stantec Consulting Services, Inc.
1500 Lake Shore Drive Suite 100
Columbus OH 43204

Issue Report directly to client:
Deb.Gray@stantec.com; johnreiter@reiterih.com;
samantha.henningsen@alsglobal.com

Invoice: samantha.henningsen@alsglobal.com

Turnaround Requirements
X **RUSH** (Surcharges Apply)
PLEASE CIRCLE WORK DAYS
1 2 3 4 (5)
____ **STANDARD**
Requested FAX Date: _____
Requested Report Date: 06/03/13

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# P1302207
Bill to

Relinquished By: _____ Received By: 5/24/13 805 Airbill Number: 862910080660

Columbia Analytical Services™

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

Air - 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

CAS Project No.

Company Name & Address (Reporting Information)
STANTEC CONSULTING
1500 LAKE SHORE DRIVE
COLUMBUS, OH 43204

Project Name: BRIDGETON LANDFILL

Project Number: 182608005

CAS Contact: SAMANTHA HENRIKSEN

Project Manager: DEB GRAY

P.O. # / Billing Information: SAME

Phone: 614 486 4383

Fax: 614 486 4387

Email Address for Result Reporting: deb.gray@STANTEC.com

Sampler (Print & Sign): CHRIS LaLONDE

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Canister ID (Bar code # - AC, SC, etc.)	Flow Controller ID (Bar code # - PUMP ID)	Canister Start Pressure MEDIA ID	Canister End Pressure "Hg/psig	Sample Volume L	Analysis Method	Comments e.g. Actual Preservative or specific instructions
522BLANK PAH		5/22/13	15:15	NA	NA	HX-144	FIELD	0 L	EPA TO13	
522BLANK DF		〃	15:15	〃	〃	110215	BLANK	〃	EPA TO9a	
522LF - DF		5/23/13	11:10	NA	1058	110-17-03	NA	362,000L	EPA TO9a	
522LF - PAH		〃	11:11	〃	1057	HX-011	〃	368,730L	EPA TO13	
522HS - DF		5/23/13	12:09	NA	1061	110-16-03	NA	367,455L	EPA TO9a	
522HS - PAH		〃	12:09	〃	1059	HX-020	〃	353,535L	EPA TO13	
PLEASE NOTE: 2 PUF (DF) ARE BEING RETURNED UN-USED										
		2	PUF	(PAH)	SUSPECTED BREAKAGE ON ARRIVAL					

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

EDD required Yes / No (1 seal)
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:	
	5/23/13	7:30P				8029 1008 0600 S/N: 122405441
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:	Cooler / Blank Temperature 21° °C
				5/24/13	805	

P1302207

Cooler Receipt Form

Project Chemist: NB

Client/Project: Stantec Consulting Services; Landfill Odor Investigation

Service Request: P1302207

Date/Time Received: 05/24/13 08:05:00

Date/Time Logged in: 05/28/13 103

Technician: AL

Technician: AL

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 ○ N/A

Were they intact? ◉ Yes ○ No ○ N/A

Were they signed and dated? ◉ Yes ○ No ○ N/A

If yes, how many and where?

4. Method of delivery: ○ 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?	Filed
862910686660		May 24, 2013	0805	AL	2/1	☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ◉ Yes ○ No ○ N/A

7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ◉ Yes ○ No ○ N/A

8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ◉ Yes ○ No ○ N/A

9. Were appropriate bottles/containers and volumes received for the requested tests? ◉ Yes ○ No ○ N/A

10. Did sample labels and tags agree with custody documents? ◉ Yes ○ No ○ N/A

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Broken	Date	Technician
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		

Notes, Discrepancies, & Resolutions:

Print Form

Reset Form

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 sample
- ✓ The 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.

Service Request Summary

Folder #: **P1302207**
Client Name: Stantec Consulting Group, Inc.
Project Name: Bridgeton Landfill
Project Number: 182608005

Report To: Deborah Gray
Stantec Consulting Services, Inc.
1500 Lake Shore Drive Suite 100
Columbus, OH 43204
Phone Number: 614-486-4383
Cell Number: 614-738-0791
Fax Number:
E-mail: deb.gray@stantec.com

Project Chemist: Nicole Brown
Originating Lab: SIMIVALLEY
Logged By: SHENNINGSEN
Date Received: 5/24 - 5/25/13
Internal Due Date: 6/3/13
QAP: LAB QAP
Qualifier Set: CAS Standard
Formset: CAS Standard
Merged?: Y
Report to MDL?: N
P.O. Number:
EDD: No EDD Specified

3 - 1 each-Cartridge PUF/Filter (High Volume)
3 - 1 each-Cartridge PUF/XAD-2/Filter (Hi_Vol)

Location: E-Disposed, Shasta Lab

RUSH

CAS Samp No	Client Samp No.	Matrix	Collected		SIMIVALLEY TO-13A/ PAH Scan Hi Vol	SVM TO-9A/ Dioxins and Furans
P1302207-001	522Blank PAH	Air	5/22/13	1515	II	
P1302207-002	522Blank DF	Air	5/22/13	1515		II
P1302207-003	522LF - DF	Air	5/23/13	1110		II
P1302207-004	522LF - PAH	Air	5/23/13	1111	II	
P1302207-005	522HS - DF	Air	5/23/13	1209		II
P1302207-006	522HS - PAH	Air	5/23/13	1209	II	

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	Dioxins and Furans/TO-9A	2-3, 5	17 Dioxin/Furans
Semivoa GCMS	PAH Scan Hi Vol/TO-13A	1, 4, 6	all PAHs

Preparation Information Benchsheet

Prep Run#: 183767 **Prep WorkFlow:** OrgExtDioxA(7) **Status:** Prepped
Team: Semivoa GCMS/HLEUNG **Prep Method:** Method **Prep Date/Time:** 5/28/13 03:00 PM

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Sample Description
1	EQ1300300-01	MB		TO-9A/Dioxins and Furans		Air	1.0000	
2	EQ1300300-02	LCS		TO-9A/Dioxins and Furans		Air	1.0000	
3	EQ1300300-03	DLCS		TO-9A/Dioxins and Furans		Air	1.0000	
4	P1302207-002	522Blank DF	.01	TO-9A/Dioxins and Furans		Air	1.0000	PUF
5	P1302207-003	522LF - DF	.01	TO-9A/Dioxins and Furans		Air	1.0000	PUF
6	P1302207-005	522HS - DF	.01	TO-9A/Dioxins and Furans		Air	1.0000	PUF

Spiking Solutions

Name: 23/TO-9A Alternate Working Solution Inventory ID 53663 Logbook Ref: 53663 HLEUNG 1/15/13 Expires On: 01/15/2014

EQ1300300-01 40.00µL EQ1300300-02 40.00µL EQ1300300-03 40.00µL P1302207-002 40.00µL P1302207-003 40.00µL P1302207-005 40.00µL

Name: 23/TO-9A Surrogate Working Solution Inventory ID 57330 Logbook Ref: 57330 HLEUNG 5/1/13 WT WM Expires On: 05/01/2014

EQ1300300-01 40.00µL EQ1300300-02 40.00µL EQ1300300-03 40.00µL P1302207-002 40.00µL P1302207-003 40.00µL P1302207-005 40.00µL

Name: 23/TO-9A Internal Working Solution Inventory ID 58177 Logbook Ref: 58177 HLEUNG 5/21/13 WT AK Expires On: 05/21/2014

EQ1300300-01 40.00µL EQ1300300-02 40.00µL EQ1300300-03 40.00µL P1302207-002 40.00µL P1302207-003 40.00µL P1302207-005 40.00µL

Name: 1613B Matrix Working Standard Inventory ID 58235 Logbook Ref: 58235 WM 5/23/13 WT TL Expires On: 05/23/2014

EQ1300300-02 100.00µL EQ1300300-03 100.00µL

Preparation Materials

Carbon, High Purity	AL 4/30/13 (57260)	Ethyl Acetate 99.9% Minimum EtOAc	MR 4/15/13 (56708)	Glass Wool	AL 1/17/13 (53816)
Hexanes 95%	MR 5/13/13 (57848)	Dichloromethane (Methylene Chloride) 99.9% MeCl2	MR5/13/13 (57889)	Sodium Chloride Reagent Grade NaCl	C2-65-5 (38670)
Sodium Hydroxide Reagent Grade NaOH	C2-73-7 (53023)	Sodium Sulfate Anhydrous Reagent Grade Na2SO4	MR 4/15/13 (56710)	Tridecane (n-Tridecane)	MR 4/15/13 (56663)
Silica Gel Reagent Grade	AL 02/12/13 (54685)	sulfuric acid	MR 4/10/13 (56549)	Toluene 99.9% Minimum	MR 5/13/13 (57888)

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	5/28/13 15:00	Started:	5/30/13 08:00	Started:	5/31/13 07:00	Started:	6/1/13 10:30
Finished:	5/29/13 07:30	Finished:	5/30/13 08:10	Finished:	5/31/13 09:00	Finished:	6/1/13 11:20
By:	WMCDONOUGH	By:	CDIAZ	By:	CDIAZ	By:	CDIAZ
Comments		Comments		Comments		Comments	

Preparation Information Benchsheet

Prep Run#: 183767
Team: Semivoa GCMS/HLEUNG

Prep WorkFlow: OrgExtDioxA(7)
Prep Method: Method

Status: Prepped
Prep Date/Time: 5/28/13 03:00 PM

Comments:

Reviewed By: TL Date: 6/3/13

Chain of Custody

Relinquished By: Date:

Received By: Date:

Extracts Examined
Yes No