Appendix L

Health Risk Assessment: Cedar Hills Regional Landfill Facility

HEALTH RISK ASSESSMENT:
FOR FINAL ENVIRONMENTAL IMPACT STATEMENT (FEIS)
CEDAR HILLS REGIONAL LANDFILL 2020 SITE DEVELOPMENT PLAN AND FACILITY RELOCATION
MAPLE VALLEY, WA

Prepared for

King County

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February 2022

EXECUTIVE SUMMARY

A health risk assessment (HRA) was conducted regarding the current operation and potential future expansion of activities of the Cedar Hills Regional Landfill (CHRLF) as part of the Final Environmental Impact Statement (FEIS) for the CHRLF 2020 Site Development Plan and Facilities Relocation project. The evaluation was organized into six potential exposure pathways, each of which is presented by chapter, along with findings and conclusions for each chapter. Where potential impacts are possible for both the CHRLF site and the Renton site under the EIS alternatives, both sites are discussed; otherwise, only the CHRLF site is evaluated.

Chapter 1.0 - Air Toxics

The purpose of the air toxics human health risk assessment for the Cedar Hills Regional Landfill was to estimate and evaluate potential risks from air toxics to the surrounding community or site visitors and address concerns expressed in the public comments on the Draft EIS about the potential for health risks. Exposure was estimated based on air dispersion modeling of Alternative 3, which represents the largest potential for exposure (HDR 2021), and compared with data collected during on-site sampling (Section 1.3). Toxicity values from authoritative sources (Section 1.4) were used to screen and characterize the risk from exposure (Section 1.5).

The potential health effects from individual chemicals and cumulative risks were evaluated. There were 118 air toxics included in the HDR numerical modeling. Presence of any of these compounds in the exposure assessment for CHRLF should not be misconstrued in assuming that a health effect will occur. An effect might only occur with exposures much greater than the toxicity guideline value which includes safety and uncertainty factors; thus, comparison to the values in the dose-response assessment is critical to evaluation of risk. None of these 118 chemicals exceeded their screening toxicity values in any of the modeled community locations (Reference, S5, S6, S7, and S10). Several of these chemicals were estimated to be slightly elevated over their screening toxicity values in modeled locations on CHRLF property. In further analyses, these chemicals nearly all had Hazard Quotient values (HQs) < 1 or cancer risk of less than 1 in a million (< 1E-6). These are categorized as negligible potential risks and are unlikely to cause any adverse health effects to visitors to CHRLF or in the surrounding neighborhoods.

There were potential risks from individual chemical exposures at several locations on CHRLF property, and cancer and noncancer cumulative risks were estimated for these sites. The most notable is the leachate lagoons source site (site S11). There may be slight acute risk of irritation with short term exposures at the leachate lagoons. For longer-duration, repeated exposures at the leachate lagoons, the chronic Hazard Index (HI) for chemicals that were estimated to exceed screening values was 3.5, which is categorized as low potential risk (Table 1-5). For carcinogenic risk, sites S1 (West fence line), S12 (active face), and S13 (top deck), had summed risks less than

1 in 100,000 (1E-5). The leachate lagoon site had a summed risk of less than 1 in 10,000 (1E-4); this level is elevated, but these exposures are typically compared with toxicity values based on repeated, daily exposure over decades (lifetime), unlikely to occur among visitors to the property or the leachate lagoons, more specifically. In addition, risk reduces as a function of distance from the source as demonstrated by the lack of elevated concentrations of these same chemicals and risks in the surrounding neighborhoods.

HQ and cancer risk values are not specific to health endpoint or cancer type and have associated uncertainties and should not be viewed as a threshold where values greater than one (HQ values) or greater than one per million excess cancer risk (1E-6) will cause a health effect. Although the values at the leachate lagoon indicate a HQ > 1, the actual exposures are of lower potential risk to health due to shorter exposure durations of site visitors and limited access to the sites. Based on both the on-site sampling data and numerical modeling results, these cumulative exposures are unlikely to cause any adverse health effects to residents in the surrounding neighborhood or site visitors.

Potential exposures to residents and on-site visitors were evaluated. Because the duration of the exposure at the site is anticipated to be far less than the surrounding community and neighborhoods, modeled ambient air concentrations from the 14 locations were compared to possible chemical exposures that an on-site visitor could experience. The assumptions built into the exposure assessment (e.g. lifetime exposure vs. short-term, acute exposure) were adequately protective given the low levels of modeled chemical concentrations.

The HDR modeling estimates of Alternative 3 support the conclusion that implementation of any of the Alternatives proposed in the CHRLF 2020 Site Development Plan is not expected to cause any TAP [toxic air pollutant] to exceed the acceptable source impact levels (ASILs) at or beyond the facility's property line (with the possible exception of dibromochloropropane (DBCP) for which all analytical results are below detection limits used). This current HRA was based on estimates for Alternative 3 which is of the longest duration and has the potential for the highest exposures. All other proposed alternatives would result in lower exposure and risk to health.

Chapter 2.0 – Odor

The purpose of the odor HRA was to address community concerns over potential health risks from odor-causing compounds from CHRLF. Odor measurements were taken on site over four sampling days using field olfactometry and grab samples that were analyzed by a trained odor panel in the laboratory. Air dispersion modeling for odor (based on dilution to threshold, or D/T) was also conducted to estimate potential high-end odor levels (HDR 2021). Since the regional requirements in King County are described in a narrative rather than quantitative maximum odor

levels, these odor measurements were compared to regulatory guidelines from other states and municipalities.

Based on monitoring over four days at locations both on site and in the surrounding neighborhoods near CHRLF, odors were generally low to nondetectable, except at source locations. The odor characteristics ranged from "floral" to "earthy" to "offensive" based on field olfactometry (Section 2.2.1), to sulfur and plastics by laboratory panel analysis (Section 2.2.2). Odor strength and characteristics were similar between on-site locations and the surrounding neighborhoods, with the exception of source locations.

While the focus was to define odors from CHRLF during the sampling, other sources of odors may have impacted field measurements and odor in the surrounding communities, such as the Cedar Grove Composting facility. Importantly, despite odor descriptions including offensive characteristics, the intensity in the surrounding neighborhoods was <4 D/T, which is below the screening criterion of 7 D/T.

Of the chemicals sampled for and detected in Chapter 1, there were three that were detected at greater than their lowest reported odor threshold: ethanol, ethylbenzene, and hydrogen sulfide. Importantly, for these chemicals both detections and odor thresholds are below their respective toxicity values. That is to say, although air concentrations may have been sufficient to produce a detectable odor, they were insufficient to cause any adverse health effect.

Air dispersion modeling was used to estimate the current 99th percentile impact of CHRLF and also evaluated two future alternatives: a West active area and a Southeast active area. The air dispersion modeling is inherently conservative as it estimates a high-end (99th percentile) odor level and likely provides an overestimate of potential odor impacts. Although values from the model peak at 100 OU, this should not be interpreted to mean that odor levels will reach this peak with any regularity or for any extended period of time. The modeling results should be considered along with the field olfactometry on which it is based. For example, modeling predicts an existing high-end estimate of 100 D/T for sites S5 and S6 (both located in the neighborhood to the west of CHRLF); however, actual sampling in these locations resulted in a maximum D/T of 4, which was below the screening criterion of 7 D/T; and most measures were non-detectable. Current odor measurements acknowledge the potential for nuisance effects, but the potential for adverse health effects is minimal (Chapter 1.0 Air Toxics).

The results of the odor HRA support that there is the potential for odors on CHRLF property and in the surrounding neighborhoods. This odor potential exists with current operations and with future alternatives. If or when community members experience bad environmental odors, multiple resources are available to aid local health officials in the investigation of odor sources

and the determination of if they may be harmful[1, 2]. Currently, landfill gas technicians conduct routine odor monitoring and respond to observations from odor complaints. Despite this potential for odor, levels of chemicals are below levels that are likely to cause a health effect.

Chapter 3.0 – Noise and Vibration

This section provides a discussion of the overall findings of this chapter and conclusions regarding the potential health risks associated with exposure to ambient noise generated by the CHRLF and Renton sites and vibration generated by the CHRLF.

CHRLF and Renton Noise Findings and Conclusions

In consideration of the recommendations provided by the U.S. Environmental Protection Agency (EPA), the World Health Organization (WHO), and relevant peer-reviewed literature, significant adverse health effects to the neighboring communities of the CHRLF discussed in Section 3.2.1 can be avoided by operating within the King County noise ordinance maximum permissible levels. Both WHO and EPA recommend an average annual outdoor noise level of 50 – 55 decibels (dBA) during daytime hours (with a 10 decibel (dBA) reduction during nighttime hours) to avoid moderate to severe irritation and protect public health and welfare with an adequate margin of safety. KCC 12.86 requires that maximum environmental noise levels not exceed 49 dBA in rural areas during daytime hours and 39 dBA during nighttime hours.

Based on QSI's findings, under all action alternatives, with the proper mitigation measures in place, noise levels originating from the CHRLF are expected to be within the maximum permissible environmental noise levels where residential receptors are located outside the property lines of the facility (QSI 2020a). It is therefore anticipated that little to no adverse health effects or unacceptable nuisance from noise should occur in association with CHRLF operations.

The exception to this general conclusion is that noise generated by BEW and landfilling and trucking activities during nighttime hours (10 pm to 7 am) may exceed 39 dBA in the neighborhood located along the southeast property line of the CHRLF. Based on a review of the noise model projections, under the action alternatives nighttime noise levels at receptor locations in the southeast neighborhood generated from the CHRLF property (including BEW noise) are likely to range between 37.1 dBA and 42.5 dBA with mitigation measures in place. While noise levels above 39 dBA during nighttime hours exceed the King County noise ordinance, annual exposure to these noise levels still falls within the WHO and EPA

[1] Visit ATSDR's Air Pollution Odor Diaries Website for more information: https://www.atsdr.cdc.gov/odors/air_pollution_odor_diaries.html

[2] Public Health – Seattle & King County respond to citizen complaints for odors associated with landfilling operations. For more information visit: https://kingcounty.gov/depts/health/environmental-health/toxins-air-quality.aspx

recommended average annual outdoor noise level (40 – 45 dBA). These levels are set to avoid moderate to severe irritation and protect public health and welfare with an adequate margin of safety, therefore no severe health impacts are expected as a result of these nighttime noise levels.

It is important to consider that nighttime noise levels projected by the noise model are highly conservative and are meant to represent worst-case conditions which are possible but unlikely to occur. It is recommended that further investigation be conducted into whether the worst-case conditions predicted by the noise model can be validated. Based on the results of that investigation, exploration of additional mitigation measures may be necessary to reduce landfilling and BEW nighttime noise to below County maximum permissible sound levels. If the worst- case conditions of the noise model do occur and no mitigation measures are taken to reduce landfilling/trucking and BEW nighttime noise, acute nuisance or irritation effects, such as difficulty falling asleep or sleep disturbance, may be expected.

Noise levels projected for the Renton site were used to assess compliance with WAC 173-60-040 maximum permissible environmental noise levels. Due to zoning of the Renton site, daytime maximum permissible environmental noise levels for the receiving nearby residential neighborhoods are set at 60 dBA (with a 10 dBA decrease for nighttime hours). While the projected noise levels indicate compliance with these noise levels, EPA, WHO, and relevant peer-reviewed literature recommend a maximum average annual outdoor noise level of 50-55 dBA during daytime hours (with a 10 dBA reduction during nighttime hours) to avoid moderate to severe irritation and protect public health and welfare with an adequate margin of safety.

Analysis of the noise projections under Alternative 3, Option 3 to relocate support facilities to the Renton site indicate daytime noise levels, after noise mitigation measures are implemented, are not likely to exceed 50 dBA in the neighboring areas where residential housing is located (refer to Section 9.2 and 9.3 in Addendum to Noise Technical Report (QSI 2021a)). Maintaining these noise levels would likely be protective of irritation or adverse health effects caused by ambient daytime noise exposure for those residing near the Renton Transfer Station.

Nighttime noise level for the nearby residential communities under Alternative 3, Option 3 to relocate support facilities to the Renton site, after mitigation measures are implemented, are projected to be between 40-60 dBA depending on the 5-day or 7-day work week scenarios (refer to Section 9.2 and 9.3 in Addendum to Noise Technical Report (QSI 2021a)). Nighttime noise levels above 40 dBA may cause acute nuisance or irritation effects, such as difficulty falling asleep or sleep disturbance. Although the projected nighttime noise levels are above the EPA and WHO recommended nighttime noise levels, the noise model indicates that noise differences in the surrounding community are generally in the 0-5 dBA range from current noise levels.

CHRLF Vibration Findings and Conclusions

QSI took vibration measurements and conducted vibration modeling, and found no evidence that any equipment or operations on the CHRLF, under any of the action alternatives, emit vibrations that exceed the FTA's 72VdB threshold for residential annoyance from frequent vibratory events outside or at the property lines. This analysis revealed that, under worst-case conditions (Hard Soil + Mode I), a receptor location (i.e., a place of residence) would need to be within 906 feet of the vibratory source for vibrations to be at the threshold of noticeability (65 VdB). Because the landfill has a 1000-foot buffer surrounding the active areas, vibrations caused by machinery operating on CHRLF are not likely to be noticeable to nearby residents living outside of the boundary. Based on these findings, no mitigation measures are necessary to reduce vibration levels associated with any of the action alternatives. It is therefore concluded that the vibrations generated by CHRLF machinery or processes pose little to no significant risk to human health.

Chapter 4.0 – Disease Vector Control and Pest Management

The HRA review and evaluation of pest management and disease vector control measures implemented at CHRLF conclude that Best Management Practices effectively control and manage bird and other pests at the facility, and do so in a manner that reduces or eliminates human risk or exposure. It is also concluded that treated biomedical waste is not a viable pathway for human exposure to infectious microorganisms, including bacteria, viruses, and other pathogens. Required measures are proactive and comprehensive to ensure that no human exposure or health effects could reasonably occur to site visitors or surrounding residents in association with the pest organisms present at the site. Home-generated medical waste is not subject to the same requirements as facility-generated medical waste, although KCSWD makes every effort to reduce or eliminate the chance that birds or other pests could transport home-generated waste off site by spot-checking and inspecting waste as it arrives and is processed. It is noted that the literature review discussed in Section 4.7.1 includes home-generated biomedical waste as well, and there is no documented evidence that home-generated waste from a solid waste landfill has led to disease or pathogenesis.

Home-generated waste is not subject to the same requirements, although KCSWD makes every effort to reduce the chance that birds or other pests could transport home-generated waste off site. Nevertheless, such home-generated waste could conceivably contribute to a risk of human exposure, although, a literature review indicated no reports throughout the US of any biomedical or related waste being transported from a solid waste landfill and causing any known disease.

Control measures and BMPs implemented at the CHRLF to protect the environment and

surrounding ecosystem, including species of potentially vulnerable plants and animals, were evaluated. Measures taken to protect the ecosystem in and around the facility are systematic, carefully considered, and in compliance with regulatory requirements. It is concluded that adequate control and mitigation measures have been implemented to protect these plant and animal species, and these actions have prevented and continue to prevent any ecological risk or hazard associated with CHRLF or surrounding operations.

Chapter 5.0 – Surface water and stormwater

Multiple data sets were reviewed regarding the overall quality of the receiving waters directly and indirectly affected by stormwater and/or leachate generated from the CHRLF in order to evaluate health effects associated with these discharges.

Clean Stormwater Findings and Conclusions

Data was reviewed regarding the overall quality of the receiving surface waters located within the Issaquah Creek basin to evaluate whether clean stormwater discharged from the CHRLF may be causing any potential health effects associated with these discharges. Data sets included:

- Water quality and macroinvertebrate environmental monitoring data for the Issaquah Creek Basin;
- CHRLF quarterly environmental monitoring reports for surface water and stormwater quality; and
- CHRLF annual stormwater discharge monitoring reports (DMRs) reported to Ecology.

This review was done under the assumption that stormwater control measures, clean stormwater discharge monitoring, and BMPs will be implemented at the CHRLF so that any clean stormwater being discharged to surface waters under the Action Alternatives will meet the same benchmarks and be of similar water quality as under current operations and/or the No Action Alternative. Therefore, after review and evaluation of the available water quality data and measures taken at the CHRLF to protect water quality, it is concluded that the potential risks to receiving surface waters associated with clean stormwater runoff under the No Action Alternative and the Action Alternatives proposed are not likely to cause a significant adverse impact to human or ecological health.

Contaminated Stormwater (CSW) and Leachate Findings and Conclusions

Three potential exposure routes were identified for contaminated stormwater (CSW) and leachate generated by the CHRLF. The exposure routes identified were:

- Air;
- Groundwater; and

- Biosolids and wastewater effluent.

The potential air and groundwater exposure pathways are discussed separately in chapters 1.0 Air Toxics and 6.0 Groundwater of this HRA, respectively. CSW and leachate collected from the CHRLF, is transported to the King County Wastewater Treatment Division's South Treatment Plant in Renton, WA. Wastewater from the CHRLF is combined with other sources of wastewater at the South Treatment Plan where solids and liquids are separated. The separated solids then go through physical and chemical treatment processes to produce a semisolid, nutrient-rich product referred to as biosolids. The remaining liquid goes through final treatment processes prior to being discharged to the Puget Sound.

To evaluate the potential ecological or human health impacts of CSW and leachate produced at the CHRLF, multiple data sets were reviewed. These include:

- CHRLF wastewater discharge self-monitoring reports (SMRs);
- Biosolids (Loop) data for specific pathogens and toxic metals; and
- South Treatment Plant wastewater discharge SMRs.

Landfill leachate must meet effluent limitations and self-monitoring requirements for arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, zinc, cyanide, total soluble sulfides, pH and discharge volume prior to being transported to the South Treatment Plant. Exceedances of the arsenic loading limits specified in the Waste Discharge Permit occurred recently. KCSWD is investigating the potential sources of arsenic in the landfill, examining methods and technologies to upgrade the performance of the leachate lagoons with respect to discharge pretreatment requirements, and implementing source control measures within the landfill system as practicable.

The discharge permit loading limit set by KCIW for arsenic is in place to ensure biosolids produced by the South Treatment Plant are in compliance with all relevant standards and meet the requirements for Class B biosolids. Based on monthly testing, all concentrations of the nine metals regulated under state and federal biosolids rules (As, Cd, Cu, Pb, Hg, Mo, Ni, Se, and Zn) fell well below state and federal regulatory levels in 2019 and 2020 (King County 2020).

While leachate from the CHRLF must meet effluent limitations and self-monitoring requirements prior to being transported to the South Treatment Plant, water being discharged from the South Treatment Plant into the Puget Sound must also meet the water quality requirements in the NPDES WDP (WA0029581) issued by Ecology. The Waste Discharge Permit stipulates that the water quality of the effluent being discharged into the Puget Sound will be maintained at levels that are protective of key beneficial uses as well as human health and the environment. Results of wastewater effluent characterization, whole effluent toxicity tests, and sediment

characterization done by the County indicate effluent being discharged from the South Treatment Plant into the Puget Sound consistently meet these water quality requirements.

This review was done under the assumption that CSW and leachate control measures, effluent monitoring, and Best Management Practices will be implemented at the CHRLF so that any leachate effluent being routed to the South Treatment Plant under the Action Alternatives will meet the same effluent limitations as it is under current conditions (i.e. the No Action Alternative). Therefore, after review and evaluation of the available data and measures taken at the CHRLF and South Treatment Plant to protect water quality, it is concluded that the potential risks to receiving surface waters associated with clean stormwater runoff under the No Action Alternative and the Action Alternatives proposed are not likely to cause a significant adverse impact to human or ecological health.

Based on this review, under the current management of CSW and leachate at the CHRLF, there is no indication that CSW or leachate being generated by the CHRLF is causing significant adverse impacts to receiving surface waters. The current standards and requirements in place for biosolids and effluent leaving the South Treatment Plant are protective of human health and the environment.

Chapter 6.0 – Groundwater

This section describes findings and conclusions based on the foregoing sections. Numerous (over 50) groundwater monitoring wells have been completed in both the perched zones of the CHRLF site and the underlying regional aquifer, both upgradient and downgradient of the CHRLF site. These wells represent a wide variety of depths and spatial distribution on the CHRLF site, which serves to reduce uncertainty concerning groundwater quality related to any potential impacts from leachate and landfill gas (LFG) on the site. The monitoring well network is adequate to characterize groundwater and to detect any contamination or other anomalies that might arise.

Examination of regional aquifer groundwater quality, based on a comparison of the upgradient and downgradient monitoring wells, clearly indicates that the upgradient groundwater quality where volatile organic compounds (VOCs) and other compounds are regularly detected, is of lower quality than the downgradient groundwater. This is in part due to the regional aquifer groundwater underlying the CHRLF property serving to attenuate upgradient concentrations, improve groundwater quality, and protect beneficial uses.

Groundwater quality in downgradient regional wells has potentially been influenced by the presence of landfill gas in unsaturated soils along the flow path beneath refuse areas. Some data trends include:

- Chloride concentrations in regional aquifer groundwater samples north of the refuse areas are greater than elsewhere on site; this increase could in part be coming from underlying infrastructure in areas north (downgradient) of the landfill waste, but it is unknown whether some of the elevated chlorides originate from the CHRLF. A review of groundwater quality data from 16 regional aquifer wells for chloride showed that no maximum or mean chloride value exceed the state or federal standard of 250 mg/L as of 2019 (KCSWD 2020a), suggesting that chloride is not originating from the CHRLF.
- Groundwater quality data in the regional aquifer in 2019 was generally consistent with historical water quality data. Exceedances that have occurred include a single primary federal drinking water exceedance for arsenic and secondary standards for iron, manganese, and pH (KCSWD 2020a).
- All groundwater samples collected from regional aquifer monitoring wells downgradient of the CHRLF refuse areas met federal and state primary drinking water quality standards as of 2020 (KCSWD 2020a).
- As of 2020, the chlorinated VOCs elevated in upgradient wells were undetected and suggest the CHRLF serves as an attenuation zone for QCF impacts, promoting the reductive dechlorination of VOCs.

Overall, it is evident that comprehensive and adequate measures are in place at CHRLF to ensure that the CHRLF facility would not cause adverse exposures or health effects to neighbors or site visitors from groundwater. As described, specific actions can be and frequently are taken in the event that groundwater quality exceeds applicable state or federal guidelines in order to prevent adverse exposures to human receptors.

HRA Executive Summary
KCSWD Final Environmental Impact Statement for Cedar Hill Regional Landfill 2020 Site Development Plan and Facility Relocation
February 2022

INTRODUCTION

This document is a Health Risk Assessment (HRA) prepared for King County Solid Waste Division (KCSWD) by a team of expert toxicologists. The HRA is intended to support the Cedar Hills Regional Landfill (CHRLF) 2020 Site Development Plan and Facility Relocation Final EIS (FEIS). The HRA was prepared in response to numerous public comments on the Draft EIS (DEIS) related to specific exposure pathways for human health risk, and ecological risk where relevant.

The purpose of the document is to comprehensively review environmental data for each of the possible exposure pathways listed below, and to produce a pathway-specific HRA. In so doing, the HRA followed the US Environmental Protection Agency (EPA)-established human health risk assessment paradigm for each chapter, which includes problem formulation, data evaluation, exposure and toxicity assessment, and risk characterization.

Toxicology and risk assessment are interconnected fields of study and follow the same fundamental principles. The risk of developing an adverse effect from any stressor (e.g. chemical, pathogen, or physical effect) is the product of the chemical's hazard and the potential for exposure (Figure I-1). *Risk* is the likelihood of an adverse health effect from a chemical; *hazard* is the nature and degree of harm that the chemical may inflict; and *exposure* is the degree to and manner in which a person or organism (receptor) comes into contact with and absorbs the chemical. As illustrated by this equation, if the receptor does not come into contact with a chemical (zero exposure), then there would be no complete pathway and no potential hazard.

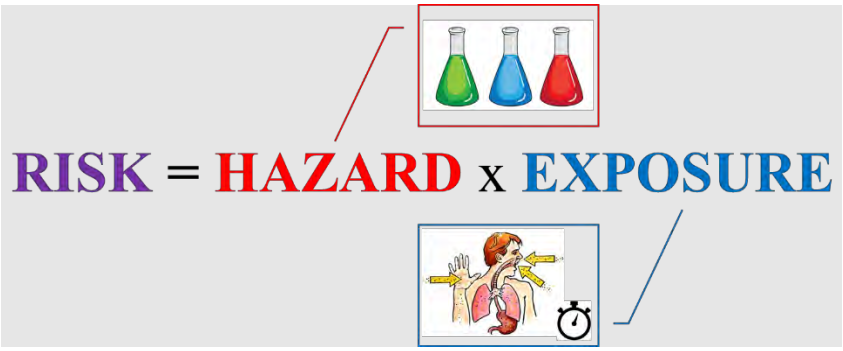

Figure I-1. Characterization of a health risk assessment

The risk assessment process provides a means for analyzing available data on exposure and estimating the potential or risk for adverse health effects to occur from the exposure. The components of each of these steps are described briefly below.

- Hazard identification: identifies all relevant chemicals of concern, exposed populations, and what scenarios would result in exposures with the potential for adverse health

effects. Data may include acute toxicity, sub-chronic/chronic toxicity, reproductive/developmental toxicity, carcinogenic/mutagenic potential, and/or effects on the endocrine system.

- Exposure assessment: describes the exposure pathway and route of entry to the body, estimates the amount, duration, and frequency of exposure; and
- Dose-response assessment: the critical and most sensitive health effects are determined and the doses that are necessary to cause those health effects and conversely, what doses would be unlikely to cause or contribute to any health effect;
- Risk characterization: estimates the potential incidence of a health effect under the various conditions of human exposure described in the exposure assessment. The potential exposure level is compared to the toxicity values of known health effects from the scientific literature.

These risk assessment elements are included in each of the HRA chapters, although quantitative EPA risk calculations were only used where applicable. The risk assessment process is intended to estimate possible health risks, but to err toward the protection of public health. An important component of both risk characterization and risk communication is a discussion and analysis of uncertainties. Uncertainties are inherent in all risk assessments, and it is important to understand the sources of these uncertainties. The uncertainties that were identified for this risk assessment are described in their respective sections.

Each of these conclusions in these chapters was carefully weighed and evaluated, and the reader can be confident that all data analysis supporting the HRA was comprehensive, science-based, and focused on the protection of public health.

In order to arrive at the conclusions described in each HRA chapter as well as the Executive Summary, available data for each of the proposed exposure pathways were comprehensively evaluated in order to support findings and conclusions.

The exposure pathways considered, in the order in which they appear in the HRA, are as follows:

- **Chapter 1.0 – Air toxics**
- **Chapter 2.0 – Odor**
- **Chapter 3.0 – Noises and vibration**
- **Chapter 4.0 – Disease vector control and pest management, including potential effects of CHRLF operations to local plant and animal species**
- **Chapter 5.0 – Surface and stormwater**
- **Chapter 6.0 – Groundwater**

Based on a review of public comments to the DEIS and discussions with KCSWD, the HRA includes a detailed evaluation of potential exposures and health effects to residents near the CHRLF and site visitors to the CHRLF related to the potential exposure pathways listed above. This HRA does not evaluate any occupational exposure or risk to employees or contractors. The evaluation specifically relates to two proposed Action Alternatives under SEPA, which are baseline (current or no-action alternative) and the maximum proposed expansion of the facility, as represented under Alternative 3. Alternative 3 was chosen as the basis for this HRA, as it has the greatest potential for exposure both in the air concentrations and duration of exposure. Thus, it represents the scenario that would have the greatest potential for health risk. Any potential difference in health risk between these two alternatives is expected to be due to the effects of the incremental increase of the proposed expansion.

As noted above, the focus of the HRA is on possible adverse human exposures and risk, but Chapter 4.0 Disease Vectors and Pest Management also briefly addresses potential effects of CHRLF operations on surrounding potentially exposed flora and fauna.

Also, while the emphasis of the HRA is on the CHRLF, the Renton landfill site is also considered where relevant risks are possible. For example, the Groundwater HRA (Chapter 6.0) briefly addresses possible exposure pathways to groundwater originated from the Renton facility. HRA Chapter 3.0 Noise and Vibration also addresses the Renton facility for noise only. Vibration is not discussed because no vibratory equipment currently operates on the Renton facility and would not operate under the proposed facilities relocation. Data for other pathways were briefly reviewed and it was not regarded as likely that any of the other pathways could be complete or viable, and no additional evaluation was conducted.

1.0 AIR TOXICS

King County Solid Waste Division (KCSWD) conducted a human health risk assessment (HRA) to determine human health risks due to exposure to air toxics that may be present at and around CHRLF. Numerical air dispersion modeling and field sampling were conducted to estimate the current chemical air exposure related to CHRLF and what impact these could have on human health, specifically to nearby residents and CHRLF site visitors.

The health-protective focus of the sampling was to characterize the nature and extent of possible health effects; provide data to other teams for numerical air modeling; attempt to associate odors with airborne chemical agents (Chapter 2.0 Odor); and provide data and information to address the public comments raised during the DEIS process. Based on the information described in this chapter, the results of this assessment support the conclusion that measured or estimated air toxics from the CHRLF are unlikely to cause adverse health effects to potentially exposed nearby residents and CHRLF site visitors.

This chapter is structured as follows: Section 1.1 provides an overview of toxicology and risk assessment that is useful in understanding the scientific process; Section 1.2 (Hazard Identification) discusses general health hazards associated with exposure to chemicals that may be found in air on and near landfills that have been reported in the literature; Section 1.3 (Exposure Assessment) presents the results from collection and laboratory analysis of grab samples, and air dispersion modeling conducted for CHRLF; Section 1.4 (Dose-Response) describes the toxicity guidelines that are used to understand levels at which health effects might occur; Section 1.5 (Risk Characterization) compares the exposure estimates with regulatory guidance and data from authoritative bodies; a summary of the potential impacts from Landfill Gas (LFG) is in Section 1.7; limitations are discussed in Section 1.8; and Section 1.9 provides conclusions for the HRA.

1.1 Hazard Identification

In response to concerns raised in the DEIS regarding health risk due to air toxics, a sampling and analysis plan was created to measure and evaluate a large number of chemicals that are likely constituents in air in and around the CHRLF. Effort was made to sample during varying days and meteorological conditions. The sampling was used to support the odor HRA and to provide empirical data to use in concert with chemical air concentrations estimated using quantitative air dispersion modeling. The air dispersion modeling is able to estimate potential exposures based on current and future emission rates and is the basis of the exposures assumed in this risk assessment. More information on the sampling and modeling is described in Section 1.2 Exposure Assessment.

The first step in chemical risk assessment is hazard identification (or hazard analysis). In hazard identification, the chemicals of interest are listed, potentially exposed populations are identified, and exposure scenarios are characterized.

1.1.1 Chemicals of interest

A large number of chemicals (218 as described below) were identified for inclusion in air modeling and on-site sampling at and around CHRLF. These are the TO-15, AP-42, and Washington Air Toxics (WAT) chemical lists. The TO-15 ("TO" signifies toxic organics list) is based on an EPA testing method detailed by the EPA (EPA 1999) and includes information on sampling and analytical procedures for the measurement of volatile organic compounds (VOCs) that are included in the Clean Air Act Amendments of 1990. There are 187 hazardous air pollutants listed in the Clean Air Act Amendments, 97 of which are VOCs. These hazardous air pollutants were added to the list based on health effects that, assuming sufficient dose and exposure, "can include damage to the immune system, as well as neurological, reproductive (e.g., reduced fertility), developmental, respiratory and other health problems" (EPA 1999).

The EPA AP-42 list ("AP" signifies air pollutant) is based on EPA's *AP-42, Compilation of Air Pollutant Emissions Factors,* first published in 1972. It contains emissions factors for over 200 air pollution source categories including municipal solid waste facilities (EPA 2021a) and included chemicals that can be measured in landfill gas. In addition to these chemicals, King County Solid Waste Division requested collection of arsenic and antimony particulates and arsine gas samples in the on-site sampling supporting this study.

All chemicals listed in the TO-15, AP-42, and WAT were included for air modeling. From this list of 218, chemicals that were not detected or analyzed for in LFG or leachate testing and therefore had no emissions data were excluded. If the chemicals had also been sampled for in the field sampling, these were included, regardless of whether or not they were detected during sampling. This resulted in a final list of 118 chemicals. Arsenic, antimony, and arsine gas are also included in the air sampling, but these were not modeled as there were no emissions data for modeling. The chemicals evaluated are listed in Table 1-1.

Table 1-1. Final list of 118 chemicals of interest (COIs)

Compound Name	CAS #
1,1,1,2-Tetrachloroethane	630-20-6
1,1,1-Trichloroethane	71-55-6
1,1,2,2-Tetrachloroethane	79-34-5
1,1,2-Trichloroethane (vinyl trichloride)	79-00-5
1,1-Dichloroethane	75-34-3
1,1-Dichloroethene	75-35-4
1,2,3-Trichloropropane	96-18-4
1,2,3-Trimethylbenzene	526-73-8
1,2,4-Trimethylbenzene	95-63-6

Compound Name	CAS #
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8
1,2-Dibromoethane	106-93-4
1,2-Dichlorobenzene	95-50-1
1,2-Dichloroethane	107-06-2
1,2-Dichloropropane	78-87-5
1,3,5-Trimethylbenzene	108-67-8
1,3-Butadiene	106-99-0
1,3-Dichlorobenzene	541-73-1
1,3-Dichloropropene (trans-1,3-Dichloropropene)	542-75-6
1,4-Dichlorobenzene	106-46-7
1,4-Dioxane	123-91-1
2,2,4-Trimethylpentane	540-84-1
2,4-D	94-75-7
2-Butanone (MEK)	78-93-3
2-Hexanone	591-78-6
2-Methyl1-Propanol	78-83-1
2-Methylthiophene	554-14-3
2-Propanol (Isopropyl Alcohol)	67-63-0
3-Methylthiophene	616-44-4
4-Ethyltoluene	622-96-8
4-Methyl-2-pentanone	108-10-1
Acetaldehyde	75-07-0
Acetone	67-64-1
Acetonitrile	75-05-8
Acrolein	107-02-8
Acrylonitrile	107-13-1
Aldrin	309-00-2
Allyl chloride (3-Chloropropene)	107-05-1
alpha-Hexachlorocyclohexane	319-84-6

Compound Name	CAS #
Ammonia	7664-41-7
Aroclor 1242	53469-21-9
Aroclor 1248	12672-29-6
Aroclor 1254	11097-69-1
Benzene	71-43-2
Benzyl chloride (alpha-Chlorotoluene)	100-44-7
beta-Hexachlorocyclohexane	319-85-7
Bromodichloromethane	75-27-4
Bromoform	75-25-2
Bromomethane (methyl bromide)	74-83-9
Carbon Disulfide	75-15-0
Carbon Monoxide	630-08-0
Carbon Tetrachloride	56-23-5
Carbonyl Sulfide	463-58-1
Chlordane	57-74-9
Chlorobenzene	108-90-7
Chlorodifluoromethane (CFC 22)	75-45-6
Chloroethane	75-00-3
Chloroform	67-66-3
Chloromethane	74-87-3
Chloroprene	126-99-8
cis-1,2-Dichloroethene	156-59-2
Cumene	98-82-8
Cyclohexane	110-82-7
DDD (dichlorodiphenyldichloroethane) [4,4'-DDD]	72-54-8
DDE (dichlorodiphenyldichloroethylene) [4,4'-DDE]	72-55-9
DDT(dichlorodiphenyltrichloroethane) [4,4'-DDT]	50-29-3
Delta BHC	319-86-8
Dichlorodifluoromethane (CFC 12)	75-71-8

Compound Name	CAS #
Dichlorofluoromethane (CFC 21)	75-43-4
Dichloromethane (Methylene Chloride)	75-09-2
Dieldrin	60-57-1
Diethyl mercury	627-44-1
Dimethyl Disulfide	624-92-0
Dimethyl Sulfide	75-18-3
Ethane	74-84-0
Ethanol	64-17-5
Ethyl Mercaptan	75-08-1
Ethylbenzene	100-41-4
Formaldehyde	50-00-0
gamma-Hexachlorocyclohexane (lindane)	58-89-9
Heptachlor	76-44-8
Heptachlor Epoxide	1024-57-3
Heptane	142-82-5
Hexachlorobutadiene	87-68-3
Hexachloroethane	67-72-1
Hexane	110-54-3
Hydrogen chloride 1	7647-01-0
Hydrogen Sulfide	7883-06-4
Isobutyl Mercaptan	513-44-0
Isopropyl Mercaptan	75-33-2
m,p-Xylenes	179601-23-1
Mercury, elemental	7439-97-6
Methyl Iodide	74-88-4
Methyl Mercaptan	74-93-1
Methyl Methacrylate	80-62-6
Methyl tert-butyl ether	1634-04-4
Naphthalene	91-20-3

Compound Name	CAS #
n-Butane	106-97-8
n-Pentane	109-66-0
o-Xylene	95-47-6
p-Cymene	99-87-6
Propane	74-98-6
Propene (Propylene)	115-07-1
Propionitrile	107-12-0
Propylbenzene	103-65-1
Styrene	100-42-5
Sulfur dioxide	7446-09-5
tert-Butyl Mercaptan	75-66-1
Tetrachloroethene	127-18-4
Tetrahydrofuran	109-99-9
Thiophene	110-02-1
Toluene	108-88-3
Toxaphene	8001-35-2
trans-1,2-Dichloroethene	156-60-5
trans-Chlordane	5103-74-2
Trichloroethene	79-01-6
Trichlorofluoromethane	75-69-4
Vinyl acetate	108-05-4
Vinyl Chloride	75-01-4
Arsenic (particulate)	7440-38-2
Antimony (particulate)	7440-36-0
Arsine gas	7784-42-1

1.1.2 Potentially exposed populations

The populations of concern are residents inhabiting the neighborhoods surrounding the CHRLF. This could also include students at Maple Hills Elementary School to the west of CHRLF, visitors to the nearby facilities located to the east of CHRLF, and recreational users on nearby walking or

biking trails. This assessment also addresses potentially exposed visitors to the CHRLF facilities but does not evaluate exposures or risk to occupationally exposed site workers.

1.2 Exposure Assessment

For the air toxics COIs, the relevant route of exposure is inhalation. The purpose of the air toxics exposure assessment is to estimate potential inhalation exposures to the public surrounding the CHRLF, and visitors.

There are two parts to the exposure assessment. The numerical air dispersion modeling was conducted by HDR and includes data on an extensive list of toxic air pollutants (TAPs), including TO-15 and AP-42 chemicals (Table 1-1). The sampling program outlined in this report, along with air dispersion modeling (HDR 2021), was designed to obtain data to allow the team to evaluate whether the chemicals found are present at concentrations sufficient to cause short- and long-term adverse health effects or foul odors (Chapter 2.0 Odor). The air modeling was conducted for current and alternative use scenarios and was also conducted to determine concentrations at the on-site sampling locations.

The modeled air concentrations provided by HDR were based on Alternative 3 per HDR (2021). The increases in the landfill gas TAP emissions and the leachate lagoon emissions were summed to determine the facility-wide increase in TAP emissions associated with Alternative 3. The purpose of on-site sampling was to support the odor assessment (Chapter 2.0 Odor), as well as to compare empirically derived analytical data from repeated sampling dates and locations on and around CHRLF to the modeled air concentrations. To provide the most accurate data to address the concerns of nearby residents, air grab samples were collected from 14 locations on and around the CHRLF (Figure 1-1). Because the dispersion modeling estimates concentrations of ambient air toxics and fugitive dusts over the longer term, grab samples were taken to measure episodic, detectable concentrations of air toxics and odors. Collection of air in this manner can help establish a correlation of odor sampling results with concurrent chemical analyses. The sampling data collected from this investigation was compared with the dispersion modeling results conducted by HDR and served as field validation of modeling results (Section 1.3.2 and Appendix E).

1.2.1 Sampling and analysis of air quality samples at CHRLF

On-site air sampling was conducted at locations around and adjacent to CHRLF over a four-day period: June 22, June 23, July 7, and July 8, 2021. The selection of sampling days was based on the weather conditions, staff availability, and availability of the laboratories to conduct analyses. Local meteorological conditions can affect the detection of chemicals or odor. Hence, a concerted effort was made to obtain samples in the closest neighborhood when local conditions were optimal for the detection of odor (Chapter 2.0 Odor for the assessment of odor). There was also a delay in sampling due to an adjacent wildfire close to the air sampling locations that could have generated smoke that would interfere with air quality sampling and analysis.

CHRLF is not the only possible source of airborne chemicals of interest (COIs) to nearby receptors. The Cedar Grove composting facility[3] and Queen City Farms[4] are located near the landfill and were considered as potential sources of COIs and odors.

1.2.1.1 Sampling locations

Sampling was conducted at 14 locations on and around the CHRLF property. These locations included:

- Three source locations (leachate lagoons, the active area in Area 8, and a higher elevation point in Area 7).
- Seven locations distributed near the fence line of the CHRLF property (south and west sides).
- Four sites in the surrounding neighborhoods (three to the west and one to the east),
- A reference site located several miles away.

The reference site was located upwind from both CHRLF and the Cedar Grove composting facility. The remaining seven locations were distributed near the fence line of the CHRLF property. Samples were taken at locations around the landfill, the fence line (the location that borders the landfill and the closest neighbors), and in the closest neighborhood that has a meteorological history of prevailing wind direction. Given that exposure to COIs decreases with distance, the closest neighborhood provides the highest exposure to any resident living near the CHRLF. The sampling locations are described in Table 1-2, and a map is provided in Figure 1-1. A full description is included in the approved Sampling and Analysis Plan as Appendix A.

[3] 17825 Cedar Grove Rd SE, Maple Valley, WA 98038 See https://cedar-grove.com/; The facility recycles 350,000 tons of residential and commercial yard and food waste; Access 19 November 2021.
[4] 17825 Cedar Grove Rd SE, Maple Valley, WA 98038; https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=1000835 The 324-acre: Queen City Farms site is located 2.5 miles north of Maple Valley, Washington adjacent to the Cedar Hills Regional Landfill. The area surrounding the site is semi-rural. From 1955 to 1964 a three-acre area of the site was used for the disposal of industrial hazardous waste. Local industries transported the liquid waste in drums and tanker trucks and discharged them into three onsite ponds. When full, the wastes in the ponds were burned off to create additional capacity. Access 19 November 2021.

Table 1-2. Summary of locations and number of samples per sampling day

Sample Location Name	*Description*	*Lat/Long Coordinates*
S1	West fence line, on CHRLF property	47.4556, -122.05842
S2	West fence line, on CHRLF property	47.46527, -122.05832
S3	West fence line, on CHRLF property	47.46326, -122.05826
S4	Southwest corner, on CHRLF property	47.45164, -122.05838
S5	West neighborhood	47.46612, -122.06039
S6	West neighborhood	47.46416, -122.06039
S7	West neighborhood	47.45966, -122.06071
S8	South fence line; near Cedar Grove, on CHRLF property	47.45164, -122.05128
S9	Southeast corner, on CHRLF property; just outside gates	47.45292, -122.03951
S10	East neighborhood	47.45941, -122.03888
S11	Leachate lagoons, on CHRLF property; source sample	47.453825, -122.054411
S12	Site 8, in use, upwind, on CHRLF property; source sample	47.455715, -122.054032
S13	Area 5/6/7 top deck intersection (along access road) upwind, on CHRLF property; source sample	47.462961, -122.047857
Ref1	Reference site Southeast neighborhood	47.44311, -122.02867

Site ID	Site Description
S1	West fence line, on CHRLF property
S2	West fence line, on CHRLF property
S3	West fence line, on CHRLF property
S4	Southwest corner, on CHRLF property
S5	West neighborhood
S6	West neighborhood
S7	West neighborhood
S8	South fence line; near Cedar Grove, on CHRLF property
S9	Southeast corner, on CHRLF property; just outside gates
S10	East neighborhood
S11	Leachate ponds, on CHRLF property; source sample
S12	Site 8, in use, upwind, on CHRLF property; source sample
S13	Area 5/6/7 top deck intersection (along access road) upwind, on CHRLF property; source sample
Ref1	Reference site Southeast neighborhood

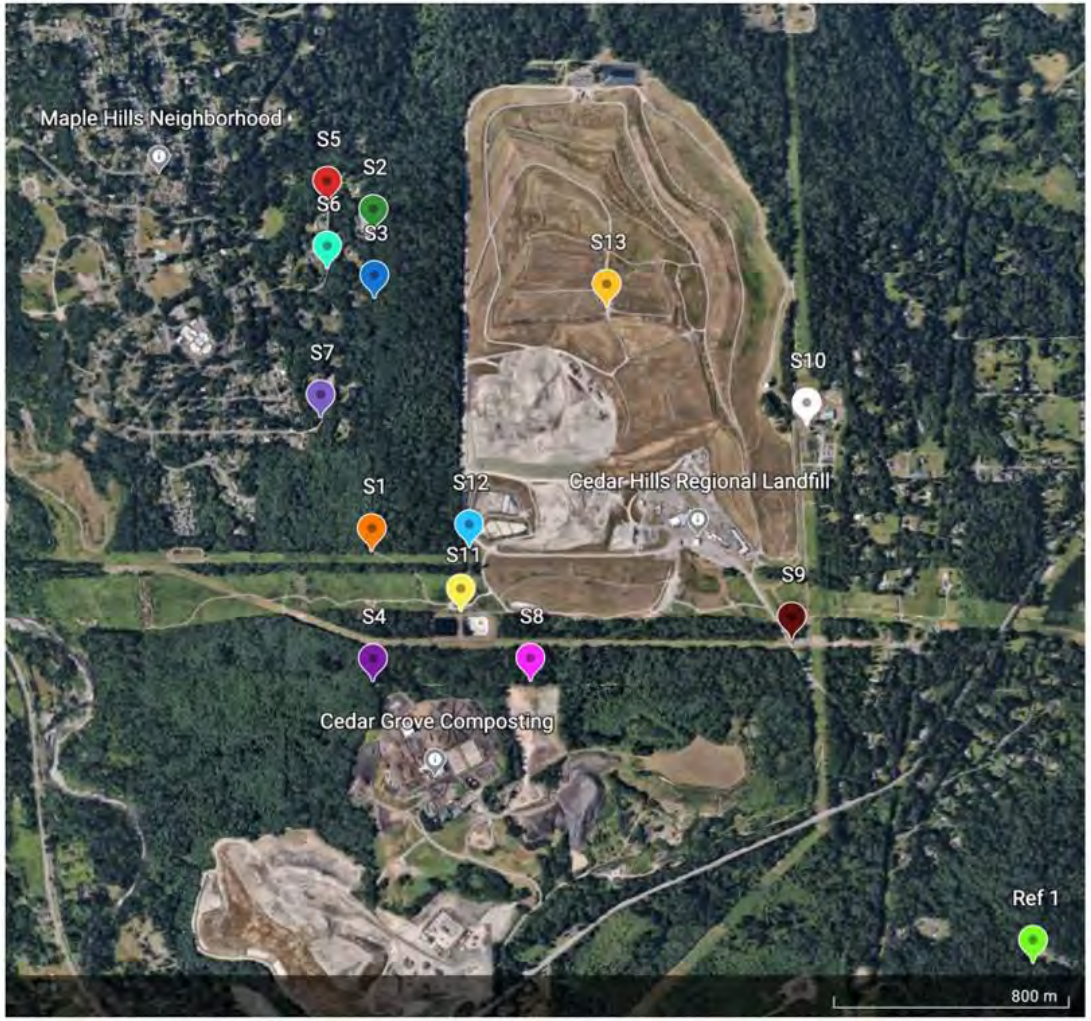

Figure 1-1. Map of sampling locations

1.2.1.2 Sampling and analytical methods

The methodology for sampling and analytical methods is detailed in the Sampling and Analysis Plan (Appendix A). Sampling was conducted by a team from Intertox and Chartrand Environmental over four days (June 22, June 23, July 7, and July 8, 2021). Meteorological data were collected and are included as Appendix B. Sampling began early in the morning, normally between 7:00 and 9:00 a.m., except on July 8 when it began at 5:00 a.m. The purpose of the 5:00 a.m. start time was to capture potential contributors to odor and to capture atmospheric inversion events which can occur during periods of high barometric pressure. The team was accompanied by and transported to all locations by KCSWD staff.

1.2.1.2.1 Volatile Organic Compounds

ALS Global performed the analyses for VOCs. The method for collection and analysis of samples for VOCs followed Modified EPA Method TO-15 as published by the EPA (EPA 1999). This method is based on collection of whole air samples in SUMMA® passivated stainless-steel canisters. The VOCs are subsequently separated by gas chromatography and measured by mass-selective detector or multidetector techniques. The analytical results are provided in Appendix C.

1.2.1.2.2 Arsenic and Antimony Particulate

ALS Global performed the analyses for arsenic (As) and antimony (Sb) particulates. The method for collection and analysis of samples for As and Sb was NIOSH manual of analytical methods (NMAM) 7300 (NIOSH, 2003). This method is based on collection of whole air samples onto filters. The filters are subsequently separated by gas chromatography and measured by inductively coupled plasma atomic emission spectroscopy (ICP-AES) techniques. The analytical results are provided in Appendix C.

1.2.1.2.3 Arsine Gas

ALS Global also performed the analyses for arsine gas. The method for collection and analysis of samples for arsine gas was NIOSH 6001. This method is based on collection of gases into charcoal sorbent tubes. The chemical is subsequently measured by atomic absorption and graphite furnace. This is intended to provide a toxicity-based perspective on any arsenic species that could be measured from leachate or landfill gases at the CHRLF facility. However, in this study, arsine gas is used as surrogate for organic arsenics. The analytical results are provided in Appendix C.

1.2.1.3 Results

There were no detections of As or Sb particulate or of arsine gas in any sample. The VOCs that were detected, the frequency of detection, and their range of detected concentration are presented in Table 1-3. Detailed concentrations measures by sampling day for each chemical are in Appendix D.

Table 1-3. Detected VOCs, number of detections, and range of measured concentrations (grab samples)

Toxic Air Pollutant	*CAS #*	*Total number of detections **	*Number of sites with at least one day of detection***	*Min concentration ($\mu g/m^3$)*	*Max concentration ($\mu g/m^3$)*
Dichlorodifluoromethane (CFC 12)	75-71-8	56	14	1.4	2.9
Ethanol	64-17-5	56	14	1.4	320
Trichlorofluoromethane	75-69-4	56	14	1	2.6
Dichloromethane (Methylene Chloride)	75-09-2	56	14	0.25	2.6
Carbon Tetrachloride	56-23-5	56	14	0.37	0.54
Toluene	108-88-3	56	14	0.25	9
Acetone	67-64-1	55	14	3.2	41
Chloromethane	74-87-3	50	14	0.13	0.22
2-Butanone (MEK)	78-93-3	44	14	0.22	33
2-Propanol (Isopropyl Alcohol)	67-63-0	43	14	0.38	44
Benzene	71-43-2	39	14	0.1	4.3
m,p-Xylenes	179601-23-1	28	13	0.2	4.5
Chloroform	67-66-3	18	14	0.1	0.6
Ethylbenzene	100-41-4	16	9	0.11	1.3
o-Xylene	95-47-6	16	8	0.1	1.7
Hexane	110-54-3	14	10	0.16	1
Tetrachloroethene	127-18-4	11	8	0.12	0.69
Chlorodifluoromethane (CFC 22)	75-45-6	10	9	0.36	0.55
4-Methyl-2-pentanone	108-10-1	7	5	0.13	3.4
Bromodichloromethane	75-27-4	6	6	0.11	0.21
1,2-Dichloroethane	107-06-2	5	4	0.094	0.18
Hydrogen Sulfide	778-06-4	3	3	6	24

Toxic Air Pollutant	***CAS #***	***Total number of detections****	***Number of sites with at least one day of detection****	***Min concentration (µg/m³)***	***Max concentration (µg/m³)***
Trichloroethene	79-01-6	3	2	0.17	0.19
Carbon Disulfide	75-15-0	1	1	10	10
1,1,1-Trichloroethane	71-55-6	1	1	2	2

CAS: Chemical Abstracts Service
* Location 11 was a field duplicate and two sets of samples were collected. This total includes these duplicates as one sample since they were taken at the same location.
** There were 14 sampling locations total.

Notably, many of these chemicals: dichlorodifluoromethane, ethanol, trichlorofluoromethane, dichloromethane (methylene chloride), carbon tetrachloride, toluene, acetone, chloromethane, 2-butanone (MEK), 2-propanol (isopropyl alcohol), benzene, and chloroform were detected consistently on and near CHRLF and detected at the upwind Reference site. This suggests that the source of these chemicals from the sampling is not emissions from CHRLF, but rather from other upwind sources or atmospheric deposition. The comparison ranges for these twelve chemicals at the Reference site compared to all other sites is presented in Table 1-4. These different sampling locations were not intended to be replicates, but rather to capture variability. The purpose in showing this comparison is to demonstrate that these chemicals are likely to have a source other than CHRLF, as the Ref1 site was not impacted by CHRLF.

Table 1-4. Comparison of grab sample air concentrations (µg/m³)

Chemical	*Reference Site (Ref1)*	*All Other Sites (S1-S13)*	*All Other Sites Excluding Source Sites (S1-S10)*
2-Butanone (MEK)	ND-0.39	ND-33	ND-6.4
2-Propanol (Isopropyl Alcohol)	ND-29	ND-44	ND-44
Acetone	5-8.2	ND-41	3.2-22
Benzene	ND-0.21	ND-4.3	ND-0.72
Carbon Tetrachloride	0.42-0.5	0.37-0.54	0.37-0.54
Chloromethane	0.14-0.19	ND-0.22	ND-0.22
Dichlorodifluoromethane (CFC 12)	1.6-2.8	1.4-2.9	1.4-2.9
Dichloromethane (Methylene Chloride)	0.23-0.46	0.25-2.6	0.25-2.6
Ethanol	1.8-11	1.4-320	1.4-160
Toluene	0.27-0.69	0.25-9	0.25-9
Trichlorofluoromethane	1.1-1.6	1-2.6	1-1.5

ND: non detect

The concentrations of the COIs, taken by grab sample, were generally in the low- or sub-microgram per cubic meter (µg/m^3) concentrations. The exception to this was ethanol, which was 320 µg/m^3.

All chemicals detected and their concentrations for each sampling date are included in Appendix D.

1.2.2 Air dispersion modeling

Numerical air dispersion modeling was conducted by HDR (2021). The HDR technical memorandum (see FEIS Appendix D) details the purpose, assumptions, methods, and results of their modeling activities. Briefly, HDR used landfill gas emissions data provided by KCSWD to conduct air dispersion modeling to estimate impacts of the possible alternatives, focusing on Alternative 3 as it would generate the most landfill gas.

The model estimates air concentrations with averaging times of 1 hour, 24 hour, or 1 year based on emissions and five years of recent meteorological data. HDR (2021) compares estimated air

concentrations at the CHRLF fence line and compares these with evaluation criteria contained in the Washington Administrative Code (WAC) 173-460-150. Chemical air concentrations decrease as distance from the source increases. Fence line measures would represent the highest off site potential exposure concentration. Ecology has set Acceptable Source Impact Levels (ASILs) in $\mu g/m^3$ for a number of air toxics. These levels are defined as "a screening concentration of a toxic air pollutant in the ambient air" (WAC 173-460-020). Each ASIL has a 24-hour or yearly averaging period. HDR reports on AP-42 listed-chemicals and other chemicals that were detected in the increase in emissions associated with the implementation of Alternative 3, which includes the sum of the uncollected fugitive landfill gas emissions, the collected landfill gas that is not destroyed in a flare or engine, and the leachate lagoon emissions.

Based on estimates along the fence line (property line of CHRLF), only the annual 1,2-dibromo-3-chloropropane (DBCP) was above the ASIL. However, HDR states, "Review of the information used to estimate emissions of DBCP indicates that each analytical result was below the detection limit used (in the raw landfill gas, the flare outlet, and the leachate). As such, the compound may or may not be present at measurable levels." Thus, HDR concludes "implementation of any of the Alternatives proposed in the CHRLF 2020 Site Development Plan is not expected to cause any TAP [toxic air pollutant] (with the possible exception of DBCP for which all analytical results are below detection limits used), …to exceed the ASIL at or beyond the facility's property line."

In addition to the ASIL assessment required by Puget Sound Clean Air Agency (PSCAA) and Washington State Department of Ecology (Ecology), HDR also modeled air concentrations at the sampling locations using the same methodology as the fence line estimates. This was to allow for comparison between modeled results and empirical results (Appendix E). The modeled results based on Alternative 3 also form the basis of the human health risk exposure assessment, as these are the exposure values that will be compared to toxicity values to support the risk characterization.

1.2.3 Comparison of field sampling results to air dispersion modeling estimates

One of the goals of field sampling was to compare results to modeling estimates. In general, there was excellent agreement between modeled values and the chemicals detected that had detections during sampling (Appendix E). Most empirical data falls within one order of magnitude of the model, with no consistency on whether the modeled or sampled data results in higher concentrations. The exceptions that fell outside of one order of magnitude were as follows:

- acetone was measured in all grab samples at concentrations greater than modeling, including at the reference location (14 locations);
- ethanol was also frequently detected at higher concentrations in grab sampling versus modeling (7 locations: S2, S3, S5, S8, S9, S10, S13); and

- chloromethane was lower in grab sampling than in air modeling (5 locations: S1, S4, S8, S11, S12).

A few others also fell outside that range, but these were not frequently or regularly inconsistent by more than one order of magnitude (e.g., toluene).

The modeling estimates at each sampling location for one-hour, 24-hour, and annual concentrations can be found in Appendix F. For each chemical, the highest value was at a source location, either the leachate lagoons (S11) or Area 5/6/7 (S13). These concentrations at source locations are important for evaluating on-site concentrations, although the focus of the risk characterization is on locations in the surrounding neighborhoods and at the fence line locations surrounding the facility.

1.3 Dose-Response Assessment

The purpose of the dose-response assessment is to identify the key toxicity values that are used to compare to exposure estimates. In dose-response assessments, the full literature is evaluated, the critical effect(s) identified, and an acceptable toxicity value (e.g., Acceptable Daily Intake, Tolerable Daily Intake) is derived. This assessment relies upon acute and chronic inhalation toxicity values that have already been derived and published by authoritative sources for all COIs. These are presented as air concentrations which can be compared directly to the exposure levels presented in Section 1.2. Acute (short-term) and chronic (long-term) exposure values are presented for both nearby residents, site visitors, and other members of the public who may be exposed to chemicals in the air from CHRLF. Chronic exposure scenarios are more relevant for residents who may be exposed for long durations of time; acute exposures may be more relevant for site visitors who might have brief or intermittent visits to CHRLF.

1.3.1 Basis of toxicity values

A hierarchy of toxicity values was employed to compare with exposure concentrations. First, ASILs were used to screen and compare to one-hour, 24-hour, and annual modeling results. For chemicals where ASILs are not available, values from the Agency for Toxic Substances and Disease Registry (ATSDR) Minimal Risk Levels (MRLs) for either acute or chronic exposures were used. These are presented in Table 1-5. For chronic exposures where there was no ASIL or MRL values available, the California Office of Environmental Health Hazard Assessment (OEHHA) established Reference Exposure Levels (RELs) or EPA Reference Concentration (RfCs) were used.

There were chemicals for which no guidance on toxicity values was available. For many of these chemicals, community exposures are uncommon; that is, exposures are generally occupational. For these chemicals, no toxicity values for community or public exposures have been derived by authoritative bodies. These chemicals were evaluated independently to determine whether exposures were relevant. In each case, the chemical was not detected in field sampling or in emissions data used in the air dispersion modeling, thus the estimated potential for exposure was low, based on air dispersion modeling. These are included in Table 1-5.

The WAC (173-460-020) has set ASILs for a number of air toxics. These levels are defined as "a screening concentration of a toxic air pollutant in the ambient air" (WAC 173-460-020). The WAC establishes averaging periods for an ASIL as either one hour, 24 hours, or one year. For TAPs that cause acute effects over a shorter time period the one-hour, or 24-hour averaging times would be appropriate. An annual averaging time would be most appropriate for chemicals that are carcinogenic or cause other longer-term chronic effects or exposures. Following the release of its 2018 air quality data summary, Ecology released an updated list of cancer risk factors and ASILs (PSCAA 2020). Unit risk factors are used to estimate cancer or non-cancer risk of TAPs and are derived based on toxicological animal studies. Cancer risk from these compounds is often estimated based on unit risk factors from the Washington State ASIL tables. The two key sources from which ASIL values are derived are the national EPA Integrated Risk Information System (IRIS) and the California Office of Environmental and Human Health Assessment (OEHHA). If chemicals exceeded the screening levels, a further analysis was conducted using acute or chronic toxicity values for non-carcinogens and inhalation unit risks for carcinogens.

MRLs are health-based guidelines set forth by the ATSDR to protect the health of the general population. An inhalation MRL is an estimate of the amount of a hazardous substance a person breathes each day without an appreciable risk of health effects (non-cancer) over a specified duration of exposure (ATSDR 2018). MRLs are derived for acute (one to 14 days), intermediate (15 to 364 days), and chronic (one year or longer) exposure durations. ATSDR uses the no observed adverse effect level (NOAEL) from animal or human studies combined with uncertainty factors (UF) to derive MRLs for hazardous substances. They are set below levels that, based on current information, might cause adverse health effects in the people most sensitive to such substance-induced effects.

Like ATSDR, OEHHA has established Reference Exposure Levels (RELs). RELs are defined as the concentration of a chemical in air that is not anticipated to present a significant risk of an adverse non-cancer health effect (OEHHA 2008). Exposure averaging time for acute RELs is one hour (OEHHA 2019). Exposure averaging time for chronic RELs is one year and is designed to address continuous exposures for up to a lifetime. RELs are derived from a NOAEL, lowest observed adverse effect level (LOAEL), or benchmark concentration (concentration that produces a defined response in a certain percentage of the population), in animal or epidemiological studies (OEHHA 2008). Extrapolation from the NOAEL/LOAEL to a REL is typically achieved by applying uncertainty factors, however, benchmark dose method and physiologically based pharmacokinetic may be used when possible.

EPA has derived Reference Concentrations (RfCs) for a variety of compounds. The RfC is the concentration of a compound in air that humans, including sensitive groups, can be exposed to on a continuous basis without an appreciable risk of deleterious effects during a lifetime (EPA 2021b). It can be derived from a NOAEL, LOAEL, or benchmark concentration, in animal or human studies. Uncertainty factors are generally applied to reflect limitations of the data used.

For cancer risks, slope factors can be derived which are expressed as proportion of a population affected per dose unit (e.g., mg/kg-d). Similarly, inhalation unit risk (IUR) is the excess cancer risk from continuous exposure over a lifetime to a chemical at 1 µg/m^3. Both represent upper-bound risks in a population.

1.3.2 Toxicity values

The final toxicity values used in this assessment are listed in Table 1-5. These are the 118 chemicals that were estimated using the air dispersion modeling.

Table 1-5. Acute and chronic toxicity screening values

Toxic Air Pollutant	*CAS #*	*Acute*			*Chronic*			
		ASIL (µg/m³ 1 -hr avg. time)	***MRL (µg/m³ acute)***	***CAL REL (µg/m³ 1-hour)***	***ASIL (µg/m³ yearly avg. time)***	***MRL (µg/m³ chronic)***	***CAL REL (µg/m3 chronic)***	***EPA RfC (µg/m³ chronic)***
1,1,1,2-Tetrachloroethane	630-20-6	NA	NA	NA	0.140	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	NA	11280	NA	NA	NA	1000	NA
1,1,2,2-Tetrachloroethane	79-34-5	NA	NA	NA	0.017	NA	NA	NA
1,1,2-Trichloroethane (vinyl trichloride)	79-00-5	NA	170	NA	0.063	NA	NA	NA
1,1-Dichloroethane	75-34-3	NA	NA	NA	0.630	NA	NA	NA
1,1-Dichloroethene	75-35-4	NA	NA	NA	NA	2.460	NA	NA
1,2,3-Trichloropropane	96-18-4	NA	6.23	NA	NA	NA	NA	0.3
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	NA	NA	NA	0.00032	NA	NA	NA
1,2-Dibromoethane	106-93-4	NA	NA	NA	0.002	NA	NA	NA
1,2-Dichlorobenzene	95-50-1	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	107-06-2	NA	NA	NA	0.038	2510	NA	NA
1,2-Dichloropropane	78-87-5	NA	100	NA	0.1	NA	NA	NA
1,3-Dichlorobenzene	541-73-1	NA	NA	NA	NA	NA	NA	NA

Toxic Air Pollutant	***CAS #***	*Acute*			*Chronic*			
		ASIL (µg/m³ 1 -hr avg. time)	***MRL (µg/m³ acute)***	***CAL REL (µg/m³ 1-hour)***	***ASIL (µg/m³ yearly avg. time)***	***MRL (µg/m³ chronic)***	***CAL REL (µg/m3 chronic)***	***EPA RfC (µg/m³ chronic)***
1,4-Dichlorobenzene	106-46-7	NA	12430	NA	0.091	60	NA	NA
2-Butanone (MEK)	78-93-3	NA	3050	NA	NA	NA	NA	5000
2-Hexanone	591-78-6	NA	NA	NA	NA	NA	NA	30
4-Methyl-2-pentanone	108-10-1	NA	NA	NA	NA	NA	NA	3000
Acetone	67-64-1	NA	19650	NA	NA	NA	NA	NA
Acetonitrile	75-05-8	NA	NA	NA	NA	NA	NA	60
Acrylonitrile	107-13-1	NA	220	NA	0.003	NA	NA	NA
Allyl chloride (3-Chloropropene)	107-05-1	NA	NA	NA	0.170	NA	NA	NA
Benzene	71-43-2	NA	30	NA	0.130	10	NA	NA
Bromodichloromethane	75-27-4	NA	NA	NA	0.027	NA	NA	NA
Bromoform	75-25-2	NA	NA	NA	0.910	NA	NA	NA
Bromomethane (methyl bromide)	74-83-9	NA	NA	3900	NA	4.010	NA	NA
Carbon Disulfide	75-15-0	NA	NA	6200	NA	970	NA	NA
Carbon Tetrachloride	56-23-5	NA	NA	1900	0.170	200	NA	NA
Chlorobenzene	108-90-7	NA	NA	NA	NA	NA	1000	NA
Chloroethane	75-00-3	NA	40920	NA	NA	NA	30000	NA

Toxic Air Pollutant	***CAS #***	*Acute*			*Chronic*			
		ASIL ($\mu g/m^3$ 1 -hr avg. time)	***MRL ($\mu g/m^3$ acute)***	***CAL REL ($\mu g/m^3$ 1-hour)***	***ASIL ($\mu g/m^3$ yearly avg. time)***	***MRL ($\mu g/m^3$ chronic)***	***CAL REL ($\mu g/m3$ chronic)***	***EPA RfC ($\mu g/m^3$ chronic)***
Chloroform	67-66-3	NA	500	NA	0.043	100	NA	NA
Chloromethane	74-87-3	NA	1070	NA	NA	110	NA	NA
Chloroprene	126-99-8	NA	NA	NA	0.002	NA	NA	NA
cis-1,2-Dichloroethene	156-59-2	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (CFC 12)	75-71-8	NA	NA	NA	NA	NA	NA	NA
Dichloromethane (Methylene Chloride)	75-09-2	NA	2150	NA	60.000	300	NA	NA
Ethylbenzene	100-41-4	NA	22450	NA	0.400	270	NA	NA
Mercury, elemental	7439-97-6	NA	NA	0.60	NA	0.2	NA	NA
m,p-Xylenes	179601-23-1	NA	8980	NA	NA	220	NA	NA
o-Xylene	95-47-6	NA	8980	NA	NA	220	NA	NA
Styrene	100-42-5	NA	22020	NA	NA	880	NA	NA
Tetrachloroethene	127-18-4	NA	40	NA	0.160	40	NA	NA
Toluene	108-88-3	NA	7790	NA	NA	3900	NA	NA
trans-1,2-Dichloroethene	156-60-5	NA	820	NA	NA	NA	NA	NA

Toxic Air Pollutant	***CAS #***	*Acute*			*Chronic*			
		ASIL (µg/m³ 1 -hr avg. time)	***MRL (µg/m³ acute)***	***CAL REL (µg/m³ 1-hour)***	***ASIL (µg/m³ yearly avg. time)***	***MRL (µg/m³ chronic)***	***CAL REL (µg/m3 chronic)***	***EPA RfC (µg/m³ chronic)***
Trichloroethene	79-01-6	NA	NA	NA	0.210	2	NA	NA
Trichlorofluoromethane	75-69-4	NA	NA	NA	NA	NA	NA	NA
Vinyl Acetate	108-05-4	NA	NA	NA	NA	NA	200	NA
Vinyl Chloride	75-01-4	NA	1320	NA	0.110	NA	NA	NA
1,2,3-Trimethylbenzene	526-73-8	NA	NA	NA	NA	NA	NA	60
1,2,4-Trimethylbenzene	95-63-6	NA	NA	NA	NA	NA	NA	60
1,3,5-Trimethylbenzene	108-67-8	NA	NA	NA	NA	NA	NA	60
1,3-Butadiene	106-99-0	NA	NA	660	0.033	NA	NA	NA
1,3-Dichloropropene (trans-1,3-Dichloropropene)	542-75-6	NA	NA	NA	0.250	30	NA	NA
1,4-Dioxane	123-91-1	NA	7450	NA	0.200	110	NA	NA
2,2,4-Trimethylpentane	540-84-1	NA	NA	NA	NA	NA	NA	NA
2-Methylthiophene	554-14-3	NA	NA	NA	NA	NA	NA	NA
2-Propanol (Isopropyl Alcohol)	67-63-0	3200	NA	NA	NA	NA	7000	NA
3-Methylthiophene	616-44-4	NA	NA	NA	NA	NA	NA	NA
4-Ethyltoluene	622-96-8	NA	NA	NA	NA	NA	NA	NA

Toxic Air Pollutant	***CAS #***	*Acute*			*Chronic*			
		ASIL (µg/m³ 1 -hr avg. time)	***MRL (µg/m³ acute)***	***CAL REL (µg/m³ 1-hour)***	***ASIL (µg/m³ yearly avg. time)***	***MRL (µg/m³ chronic)***	***CAL REL (µg/m3 chronic)***	***EPA RfC (µg/m³ chronic)***
Acetaldehyde	75-07-0	NA	NA	470	0.370	NA	NA	NA
Benzyl chloride (alpha-Chlorotoluene)	100-44-7	NA	NA	240	0.020	NA	NA	NA
Carbonyl Sulfide	463-58-1	NA	NA	660	NA	NA	10	NA
Chlorodifluoromethane (CFC 22)	75-45-6	NA	NA	NA	NA	NA	NA	50000
Cumene	98-82-8	NA	NA	NA	NA	NA	NA	400
Cyclohexane	110-82-7	NA	NA	NA	NA	NA	NA	6000
Dichlorofluoromethane (CFC 21)	75-43-4	NA	NA	NA	NA	NA	NA	NA
Dimethyl Disulfide	624-92-0	NA	NA	NA	NA	NA	NA	NA
Dimethyl Mercury	627-44-1	NA	NA	NA	NA	NA	NA	NA
Dimethyl Sulfide	75-18-3	NA	NA	NA	NA	NA	NA	NA
Ethane	74-84-0	NA	NA	NA	NA	NA	NA	NA
Ethanol	64-17-5	NA	NA	NA	NA	NA	NA	NA
Ethyl Mercaptan	75-08-1	NA	NA	NA	NA	NA	NA	NA
Formaldehyde	50-00-0	NA	50	NA	0.170	10	NA	NA
Heptane	142-82-5	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	87-68-3	NA	NA	NA	0.045	NA	NA	NA

Toxic Air Pollutant	***CAS #***	*Acute*			*Chronic*			
		ASIL (µg/m³ 1 -hr avg. time)	***MRL (µg/m³ acute)***	***CAL REL (µg/m³ 1-hour)***	***ASIL (µg/m³ yearly avg. time)***	***MRL (µg/m³ chronic)***	***CAL REL (µg/m3 chronic)***	***EPA RfC (µg/m³ chronic)***
Hexachloroethane	67-72-1	NA	60060	NA	0.091	NA	NA	NA
Hexane	110-54-3	NA	NA	NA	NA	2190	NA	NA
Hydrogen Sulfide	7783-06-4	NA	100	NA	NA	NA	10	NA
Isobutyl Mercaptan	513-44-0	NA	NA	NA	NA	NA	NA	NA
Isopropyl Mercaptan	75-33-2	NA	NA	NA	NA	NA	NA	NA
Methyl Mercaptan	74-93-1	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	1634-04-4	NA	7460	NA	3.8	2610	NA	NA
Naphthalene	91-20-3	NA	NA	NA	0.029	3.79	NA	NA
n-Butane	106-97-8	NA	NA	NA	NA	NA	NA	NA
n-Pentane	109-66-0	NA	NA	NA	NA	NA	NA	NA
p-Cymene	99-87-6	NA	NA	NA	NA	NA	NA	NA
Propane	74-98-6	NA	NA	NA	NA	NA	NA	NA
Propene (Propylene)	115-07-1	NA	NA	NA	NA	NA	3000	NA
Propylbenzene	103-65-1	NA	NA	NA	NA	NA	NA	NA
tert-Butyl Mercaptan	75-66-1	NA	NA	NA	NA	NA	NA	NA
Tetrahydrofuran	109-99-9	NA	NA	NA	NA	NA	NA	2000

Toxic Air Pollutant	***CAS #***	*Acute*			*Chronic*			
		ASIL (µg/m³ 1 -hr avg. time)	***MRL (µg/m³ acute)***	***CAL REL (µg/m³ 1-hour)***	***ASIL (µg/m³ yearly avg. time)***	***MRL (µg/m³ chronic)***	***CAL REL (µg/m3 chronic)***	***EPA RfC (µg/m³ chronic)***
Thiophene	110-02-1	NA	NA	NA	NA	NA	NA	NA
2,4-D	94-75-7	NA	NA	NA	NA	NA	NA	NA
2-Methyl1-Propanol	78-83-1	NA	NA	NA	NA	NA	NA	NA
Acrolein	107-02-8	NA	10	NA	NA	NA	0.350	NA
Aldrin	309-00-2	NA	NA	NA	0.0002	NA	NA	NA
alpha-Hexachlorocyclohexane	319-84-6	NA	NA	NA	0.001	NA	NA	NA
Ammonia	7664-41-7	NA	1220	NA	NA	70	NA	NA
Aroclor 1242	53469-21-9	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248	12672-29-6	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254	11097-69-1	NA	NA	NA	NA	NA	NA	NA
beta-Hexachlorocyclohexane	319-85-7	NA	NA	NA	0.002	NA	NA	NA
Chlordane	57-74-9	NA	NA	NA	0.010	NA	NA	NA
DDD [4,4'-DDD]	72-54-8	NA	NA	NA	0.014	NA	NA	NA
DDE [4,4'-DDE]	72-55-9	NA	NA	NA	0.010	NA	NA	NA

Toxic Air Pollutant	***CAS #***	*Acute*			*Chronic*			
		ASIL (µg/m³ 1 -hr avg. time)	***MRL (µg/m³ acute)***	***CAL REL (µg/m³ 1-hour)***	***ASIL (µg/m³ yearly avg. time)***	***MRL (µg/m³ chronic)***	***CAL REL (µg/m3 chronic)***	***EPA RfC (µg/m³ chronic)***
DDT [4,4'-DDT]	50-29-3	NA	NA	NA	0.010	NA	NA	NA
Delta BHC	319-86-8	NA	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	NA	NA	NA	0.00022	NA	NA	NA
gamma-Hexachlorocyclohexane (lindane)	58-89-9	NA	NA	NA	0.003	NA	NA	NA
Heptachlor	76-44-8	NA	NA	NA	0.001	NA	NA	NA
Heptachlor Epoxide	1024-57-3	NA	NA	NA	0.00038	NA	NA	NA
Methyl Iodide	74-88-4	NA	NA	NA	NA	NA	NA	NA
Methyl Methacrylate	80-62-6	NA	NA	NA	NA	NA	NA	700
Propionitrile	107-12-0	NA	NA	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	NA	NA	NA	0.0032	NA	NA	NA
trans-Chlordane	5103-74-2	NA	NA	NA	NA	NA	NA	NA
Carbon Monoxide	630-08-0	23000	NA	NA	NA	NA	NA	NA
Sulfur dioxide	7446-09-5	660	30	NA	NA	NA	NA	NA
Hydrogen chloride	7647-01-0	NA	NA	2100	NA	NA	9	NA

NA: Not available or not necessary based on search hierarchy.

1.4 Risk Characterization

Risk characterization represents the final step in the risk assessment process. In this step, data on the dose-response relationship of a chemical compound are integrated with estimates of the degree of exposure in a population to characterize the likelihood and severity of health risk. Risk characterizations include both quantitative estimates and qualitative descriptors of risk, as well as discussions about key model assumptions and data uncertainties. The most relevant findings and conclusions about risk are summarized in the risk characterization, which in turn is used to inform risk managers and decision makers (Paustenbach 2002).

This section will detail the results of a screening assessment using the ASILs presented in Section 1.3 compared to exposure estimates for Alternative 3 presented in Section 1.2 at each of the sampling sites (Table 1-2; Figure 1-1). A screening level, or Tier 1, risk assessment uses readily available data and conservative (health protective) assumptions to avoid underestimating risk. In this assessment, chemicals that exceed screening level guidelines will be prioritized for further evaluation.

For chemical exposures that exceed these levels, non-cancer and cancer risk estimates will be calculated for individual chemical exposures presented as a Hazard Quotient (HQ) and Inhalation Unit Risks (IUR), respectively. Summed risks at locations will be presented as a Hazard Index (HI) or summed cancer risk.

1.4.1 Screening Risk Assessment

Numerical air modeling estimated exposures for 118 chemicals (HDR, 2021; Section 1.2). All but 25 of the exposure estimates for chemicals were below their toxicity values (Section 1.3). Locations on the CHRLF property were evaluated and are expected to be very conservative in evaluating community and site visitor risk. The source locations on the CHRLF property are the locations of the highest concentrations and the evaluation of risks at these sites is a highly conservative approach. Only the Reference Site, S5, S6, S7, and S10 are off site and accessible to the public. Sites S5, S6, and S7 are located in the neighborhoods to the west of CHRLF.

For modeled acute exposures (one-hour and 24-hour averages), the only chemicals above their toxicity guideline values were sulfur dioxide, 2-butanone, bromomethane, and acrolein.

For chronic exposures (annual average), most exceedances occurred at one of the three source locations: S11 leachate lagoons, S12 active face, and S13 top deck. The chemicals that exceeded the screening values at these locations will be evaluated further; however, as noted above, these locations are not publicly accessible and site visitors would be expected to have limited durations of exposure at these locations.

Other than the source locations, there were five chemicals that exceeded their toxicity values at only two locations: S1 and S8. These two locations are on CHRLF property and not accessible to the general public. The chemicals were 1,2-dichloroethane, acrylonitrile, chloroform, toxaphene and dibromochloropropane (DBCP). DBCP was estimated above the toxicity value at all locations, including the reference location, although it was not tested for in the onsite sampling. As noted in HDR (2021), DBCP was not detected in any source measurements. Its exceedance in the model output is due to the use of half the detection limit as input values to the model when there are nondetects. This is a common practice to prevent underestimation of exposure and risk. The half the detection value used in the source emissions data results in a modeled air concentration that exceeds its toxicity value, but there is nothing to suggest the chemical is present and that any exposures could occur. Based on this additional information, DBCP will not be further evaluated in the risk assessment. A more detailed summary of the chronic toxicity guidelines for 1,2-dichloroethane, acrylonitrile, chloroform, and toxaphene is provided in Appendix G.

The chemicals that exceeded the screening guideline value are listed in Table 1-6. These are all based on annual averaging times except where noted.

Table 1-6. Chemicals that exceeded screening guideline, location, estimated air concentration, and ASIL

Chemical	*Site (description)*	*Annual modeled air concentration, except where noted (µg/m³)*	*ASIL (µg/m³)*
1,1-dichloroethane	S11 (Leachate lagoon)	1.24E+00	6.30E-01
1,1,2,2-tetrachloroethane	S11 (Leachate lagoon)	2.30E-02	1.70E-02
1,2-dibromoethane	S11 (Leachate lagoon)	2.30E-02	1.70E-03
	S12 (Active face)	3.71E-03	
	S13 (top deck)	5.26E-03	
1,2-dichloroethane	S1 (West fence line CHRLF)	5.92E-02	3.80E-02
	S8 (South fence line CHRLF, near Cedar Grove)	3.85E-02	
	S11 (Leachate lagoon)	9.35E-01	
	S12 (Active face)	4.31E-02	
1,4-dichlorobenzene	S11 (Leachate lagoon)	1.05E+00	9.10E-02

Chemical	***Site (description)***	***Annual modeled air concentration, except where noted (µg/m³)***	***ASIL (µg/m³)***
2-butanone	S11 (Leachate lagoon)	1.51E+04[1]	3.05E+03
	S11 (Leachate lagoon)	5.21E+03[2]	5.00E+03
Acrolein	S11 (Leachate lagoon)	5.73E-01	3.50E-01
	S11 (Leachate lagoon)	2.19E+00[2]	
	S12 (Active face)	1.49E-01[2]	
Acrylonitrile	S1 (West fence line CHRLF)	5.97E-03	3.40E-03
	S8 (South fence line CHRLF, near Cedar Grove)	3.93E-03	
	S11 (Leachate lagoon)	9.40E-02	
	S12 (Active face)	5.66E-03	
	S13 (Top deck)	5.98E-03	
Aldrin	S11 (Leachate lagoon)	5.73E-04	2.00E-04
Allyl chloride	S11 (Leachate lagoon)	1.28E+00	1.70E-01
Ammonia	S11 (Leachate lagoon)	9.15E+01	7.00E+01
Benzene	S11 (Leachate lagoon)	1.15E+00	1.30E-01
	S13 (Top deck)	1.50E-01	
beta-Hexachlorocyclohexane	S11 (Leachate lagoon)	1.60E-02	2.30E-03
Bromodichloromethane	S11 (Leachate lagoon)	5.73E-02	2.70E-02
Bromomethane,	S11 (Leachate lagoon)	6.14E+00[2]	5.00E+00
Chloroform	S1 (West fence line CHRLF)	7.23E-02	4.30E-02
	S8 (South fence line CHRLF, near Cedar Grove)	4.60E-02	
	S11 (Leachate lagoon)	1.15E+00	

Chemical	*Site (description)*	*Annual modeled air concentration, except where noted (µg/m³)*	*ASIL (µg/m³)*
Chloroprene	S11 (Leachate lagoon)	2.31E-02	2.00E-03
	S12 (Active face)	6.49E-03	
	S13 (Top deck)	9.80E-03	
Dieldrin	S11 (Leachate lagoon)	5.73E-04	2.20E-04
Ethylbenzene	S11 (Leachate lagoon)	1.73E+00	4.00E-01
gamma-Hexachlorocyclohexane	S11 (Leachate lagoon)	1.70E-02	3.20E-03
Tetrachloroethene,	S11 (Leachate lagoon)	9.63E-01	1.60E-01
Toxaphene	S1 (West fence line CHRLF)	3.61E-03	2.90E-03
	S11 (Leachate lagoon)	5.73E-02	
Trichloroethene	S11 (Leachate lagoon)	1.06E+00	2.1E-01
Vinyl chloride	S11 (Leachate lagoon)	1.14E+00	1.10E-01

[1] 1-hr modeled results
[2] 24-hr modeled results

1.4.2 Non-Cancer Risks

Non-cancer risks due to the chemicals that exceeded the screening toxicity guideline values are assessed using hazard quotients (HQ).

Non-cancer health hazards from chemical exposures are estimated by calculating a hazard quotient (HQ) for each pathway of exposure. The HQ is equal to the exposure concentration divided by the toxicity value defined in Section 1.3.1:

$$HQ = \frac{Exposure\ Air\ Concentration}{ToxicityValue}$$

Several simultaneous exposures to subthreshold levels could result in an adverse health effect. Therefore, the risk associated with multiple exposure pathways must also be estimated. This risk assessment evaluates combined risks by calculating the hazard index (HI), which is the sum of hazard quotients for each chemical with the same exposure pathway assuming additive toxicity.

$$HI = HQ1 + HQ2 + \ldots HQX$$

Hazard quotient and hazard index values of one or less are typically considered to be of no concern. Values slightly larger than one are of limited concern, considering that the hazard

quotient is inherently conservative in that it is calculated by comparing an average, single-day dose to a value based on a subchronic or chronic exposure and uncertainty factors.

Table 1-7. Hazard risk categories

Hazard Quotient	***Risk Category***
≤1	Negligible potential risk
>1 to ≤10	Low potential risk
>10 to ≤100	Moderate potential risk
>100	High potential risk

Source: Paustenbach 2002

The designations of "low," "moderate," and "high" risks (Table 1-7) should not be interpreted as describing the actual or likely health risks in a population (Paustenbach 2002). Instead, this designation characterizes a level of priority for risk management decisions. Further, because of the conservative assumptions that we have relied upon in this risk assessment, especially under the conditions of maximum exposure, risk management can be conducted with reasonable confidence that the risks described as "negligible" are not of concern to human health. When risk estimates are greater than levels considered negligible, risk management decisions may be prioritized to reduce these risks, such that greater risks are given higher priority.

1.4.2.1 Acute Exposures

Acute exposure estimates for all chemicals were below screening criteria at all locations (off site in the surrounding neighborhoods and on CHRLF property) except for S11 (leachate lagoon). The noncarcinogenic chemicals that exceeded screening criteria for acute exposures were 2-butanone, acrolein, and bromomethane. These all occurred at S11, the leachate lagoon. When compared with OEHHA acute RELs, the only chemical that had a HQ > 1 was 2-butanone at 1.2. Given that the highest air concentration values that would result from the modeling were used, the calculated HQs are overly conservative. Notably, the HQ has inherent uncertainty and is not a threshold; thus, there is not precision to 1.2, but it is presented to demonstrate that the modeled exposure estimate is approximately the same as the toxicity value and is considered low potential risk. A more detailed summary of the acute toxicity guideline for 2-butanone is provided in Appendix G.

Table 1-8. Acute HQs for chemicals that exceeded short term screening levels

Chemical	*Location*	*Modeled air concentration (µg/m³)*	*RfC or Acute REL (µg/m³)*	*HQ*
2-butanone	S11 (1-hr average)	15,100	13,000	1.2
	S11 (24-hr average)	5,210		0.4
Acrolein	S11 (24-hr average)	2.19	2.5	0.9
	S12 (24-hr average)	0.149		0.06
Bromomethane	S11 (24-hr average)	6.14	3900	0.002

1.4.2.2 Chronic Exposures

Chronic exposure estimates for all chemicals were below screening criteria at all locations off site in the surrounding neighborhoods. The noncarcinogenic chemicals that exceeded screening criteria for chronic exposures were 1,4-dichlorobenzene, allyl chloride, ammonia, and ethylbenzene. There were also chemicals which have both a cancer and noncancer risk. These include 1,2-dibromomethane, acrylonitrile, benzene, chloroform, chloroprene, dieldrin, tetrachloroethene, trichloroethene, and vinyl chloride. Only the noncancer risk are assessed in this section; cancer risks are assessed in Section 1.4.4. Similar to acute risks, most of these occurred at S11, at the leachate lagoon. When compared with EPA RfCs, only 1,4-dichlorobenzene and allyl chloride had HQs > 1. Both 1,4-dichlorobenzene and ally chloride had an HQ of 1.3 at S11 only, which would be characterized as low potential risk. These are risks for chronic exposures. Given that these levels are estimated only at the leachate lagoons, the potential for chronic lifetime exposures is unlikely. The HQs for these chemicals were < 1 at all locations except S11, including the fence line locations (S1 and S8).

Table 1-9. Chronic HQs for chemicals that exceeded annual screening levels

Chemical	*Site*	*Annual modeled air concentration (µg/m³)*	*EPA RfC (µg/m³)*	*HQ*
1,4-dichlorobenzene	S11 (Leachate lagoon)	1.05	800	1.3
1,2-dibromoethane	S11 (Leachate lagoon)	0.023	9	0.002
	S12 (Active face)	0.00371		0.0004
	S13 (Top deck)	0.00526		0.0005
Acrylonitrile	S1 (West fence line)	0.00597	2	0.003
	S8 (South fence line)	0.00393		0.002
	S11 (Leachate lagoon)	0.0940		0.05
	S12 (Active face)	0.00566		0.003
	S13 (Top deck)	0.00598		0.003
Allyl chloride	S11 (Leachate lagoon)	1.28	1	128
Ammonia	S11 (Leachate lagoon)	91.5	500	0.05
Benzene	S11 (Leachate lagoon)	1.15	30	0.04
	S13 (Top deck)	0.15		0.005
Chloroform	S1 (West fence line)	0.0723	5	0.01
	S8 (South fence line)	0.0460		0.009
	S11 (Leachate lagoon)	1.15		0.23
Chloroprene	S11 (Leachate lagoon)	0.0231	10	0.002
	S12 (Active face)	0.00649		0.0006
	S13 (Top deck)	0.00980		0.001
Dieldrin	S11 (Leachate lagoon)	0.000573	20	0.00003
Ethylbenzene	S11 (Leachate lagoon)	1.73	1000	0.002
Tetrachloroethene	S11 (Leachate lagoon)	0.963	40	0.02
Trichloroethene	S11 (Leachate lagoon)	1.06	2	0.53
Vinyl chloride	S11 (Leachate lagoon)	1.14	100	0.01

1.4.3 Hazard indices for sampling locations

To develop Hazard Indices (HIs) for each sampling location, chemical mixtures are evaluated by combining all the chemicals; that is, summing the individual HQs for each location. There are three common possible interactions with chemical mixtures: additive, synergistic, and antagonistic (Klaassen 2008). An additive interaction occurs when the combined effect of two or more chemicals is equal to the sum of the effect of each chemical, which is the standard assumption in risk assessment unless there is evidence of other types of chemical interaction. The HI values estimate the cumulative risk from all the chemicals that exceeded the screening criteria. For the locations that had values that exceeded screening levels, the HQs are summed to derive a combined risk from exposure to multiple chemicals. The HIs for locations are listed in Table 1-10. All sampling locations have negligible risk, including those at the fence line. S11 has low potential risk (Paustenbach 2002; Table 1-5). Site S11 is on the CHRLF property and not accessible to the public. Additionally, the potential for long-term daily exposure at this location is unlikely. Any locations not listed were below screening levels for all chemicals.

Table 1-10. Hazard indices by individual location

Location	*HI*
S1	0.01
S8	0.01
S11 (source location)	3.5
S12 (source location)	0.004
S13 (source location)	0.01

"Source location" is a source of air toxics from landfill sources and includes the leachate lagoons (S11), active working face (S12), and the top-deck (highest point; S13).

1.4.4 Carcinogen Risks

The chemicals with carcinogenic potential that exceeded the screening values were 1,1-dichloroethane, 1,1,2,2-tetrachloroethane, 1,2-dibromomethane, 1,2-dichloroethane, acrylonitrile, aldrin, benzene, beta-hexachlorocyclohexane, bromodichloromethane, chloroform, chloroprene, dieldrin, gamma-hexachlorocyclohexane, tetrachloroethene, toxaphene, trichloroethene, and vinyl chloride. None of these estimates that exceeded screening values were from locations off CHRLF property, including in the surrounding neighborhoods. The excess cancer risks from these exposures were calculated as follows:

$$\text{Excess Risk} = \text{IUR} \times \text{EC}$$

Where:

- EC is the exposure concentration

For carcinogens, the exposure concentration is time-weighted over the duration of exposure to determine the EC, thus it is not a direct model output.[5] The EC is calculated as follows:

$$\text{EC} = (\text{AC} * \text{ET} * \text{EF} * \text{ED}) / \text{AT}$$

Where:

- AC is modeled air concentration
- ET is exposure time (24 h/d)
- EF is exposure frequency (365 d/y)
- ED is exposure duration (30 years, the duration of alternative 3 which is the longest option)
- AT is averaging time (lifetime in y * 365 d/y * 24 h/d)
- The default for lifetime is 70 years.

The assumption that a person is exposed for 24 h/d and 365 d/y is conservative as each of the locations where these chemicals were measured are on CHRLF property where concentrations are highest, and it is highly unlikely that a visitor to the facility would have continued exposure.

[5] This weighting of exposure concentration for noncarcinogens was not necessary in this assessment. For acute exposures, EPA (2009) recommends using the modeled air concentration to directly estimate exposure concentration (i.e., modeled air concentration = exposure concentration. For chronic exposures, EPA recommends calculating an exposure concentration using the equation exposure concentration = (air concentration * exposure time * exposure frequency * exposure duration) / averaging time. In this scenario, the assumed exposure is for 24 h/d, 365 d/y, for 30 y, the duration on alternative 3. The averaging time in this scenario also equals 24 h/d, 365 d/y, for 30 y, resulting in an effective modeled air concentration = exposure concentration.

Lifetime excess cancer risk represents the probability of cancer occurring as the result of exposure at some point during an individual's lifetime (U.S. EPA 1989). That is, it is the excess cancer risk incurred over the lifetime of an individual as a result of exposure to a toxic substance. For perspective, the average male has an approximately 2 in 5 chance (0.405000) of being diagnosed with cancer at some point in his lifetime, and a female has a slightly lower chance (0.389000) of the same (ACA 2021). If the result of this cancer risk analysis estimated a 1 in a million excess cancer risk (0.000001, also written as 1E-06 or 1×10-6), the total lifetime cancer risk to an exposed man or woman would be 0.405001 or 0.389001, respectively.

Although there is no universally accepted acceptable risk standard, the EPA Superfund program established under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) generally considers excess cancer risks above 1×10^{-6} (1 in 1,000,000, also known as the de minimis risk level) to be acceptable in nearly all circumstances and risks within the range of 1×10^{-4} to 1×10^{-6} (1 in 10,000 to 1 in 1,000,000) to be acceptable depending on specific site and exposure characteristics (U.S. EPA 1989; U.S. EPA 1991b). Excess cancer risks of 1 in 10,000 are more commonly used in industrial settings where contamination tends to be higher.

The majority of the exceedances of screening criteria are at the source locations (i.e., S11 leachate lagoons, S12 active face, S13 top deck). The only other locations to exceed screening criteria were S1 (West fence line) and S8 (South fence line). None of the excess risks exceeds 1 in 100,000 (10^{-5}). Several of the chemicals exceed 1 in a 1,000,000 excess risk (10^{-6}). However, all of these locations are on the CHRLF property and continuous lifetime exposure over decades is highly unlikely to occur. Notably, the risks at both fence line locations (S1 and S8) are less than 1 in 1,000,000.

For the chemicals that exceeded the screening criteria, the IUR, location, EC, and excess risk are presented in Table 1-11.

Table 1-11. Excess risk due to carcinogens that exceeded the screening criteria

Chemical	***Location***	***IUR*** $((\mu g/m^3)^{-1})$	***EC*** $(\mu g/m^3)$	***Excess Risk (unitless)***
1,1-dichloroethane	S11 (Leachate lagoon)	1.60E-06	5.24E-01	8.4E-07
1,1,2,2-tetrachloroethane	S11 (Leachate lagoon)	5.80E-05	9.72E-03	5.6E-07
1,2-dibromoethane	S11 (Leachate lagoon)	6.00E-04	9.72E-03	5.8E-06
	S12 (Active face)		1.57E-03	9.4E-07
	S13 (top deck)		2.22E-03	1.3E-06

Chemical	***Location***	***IUR*** $((\mu g/m^3)^{-1})$	***EC*** $(\mu g/m^3)$	***Excess Risk (unitless)***
1,2-dichloroethane	S1 (West fence line CHRLF)	2.60E-05	2.50E-02	6.5E-07
	S8 (South fence line CHRLF)		1.63E-02	4.2E-07
	S11 (Leachate lagoon)		3.95E-01	1.0E-05
	S12 (Active face)		1.82E-02	4.7E-07
Acrylonitrile	S1 (West fence line CHRLF)	6.80E-05	2.52E-03	1.7E-07
	S8 (South fence line CHRLF)		1.66E-03	1.1E-07
	S11 (Leachate lagoon)		3.97E-02	2.7E-06
	S12 (Active face)		2.39E-03	1.6E-07
	S13 (Top deck)		2.53E-03	1.7E-07
Aldrin	S11 (Leachate lagoon)	4.80E-03	2.42E-04	1.2E-06
Benzene	S11 (Leachate lagoon)	7.80E-06	4.86E-01	3.8E-06
	S13 (Top deck)		6.34E-02	4.9E-07
beta-Hexachlorocyclohexane	S11 (Leachate lagoon)	5.30E-04	6.76E-03	3.6E-06
Bromodichloromethane	S11 (Leachate lagoon)	3.70E-05	2.42E-02	9.0E-07
Chloroform	S1 (West fence line CHRLF)	2.30E-05	3.06E-02	7.0E-07
	S8 (South fence line CHRLF, near Cedar Grove)		1.94E-02	4.5E-07
	S11 (Leachate lagoon)		4.86E-01	1.1E-05
Chloroprene	S11 (Leachate lagoon)	3.00E-04	9.76E-03	2.9E-06
	S12 (Active face)		2.74E-03	8.2E-07
	S13 (Top deck)		4.14E-03	1.2E-06
Dieldrin	S11 (Leachate lagoon)	4.60E-03	2.42E-04	1.1E-06
gamma-Hexachlorocyclohexane	S11 (Leachate lagoon)	3.10E-04	7.19E-03	2.2E-06
Tetrachloroethene,	S11 (Leachate lagoon)	2.60E-07	4.07E-01	1.1E-07
Toxaphene	S1 (West fence line CHRLF)	2.00E-04	1.53E-03	3.1E-07
	S11 (Leachate lagoon)		2.42E-02	4.8E-06

Chemical	*Location*	*IUR ((µg/m³)⁻¹)*	*EC (µg/m³)*	*Excess Risk (unitless)*
Trichloroethene	S11 (Leachate lagoon)	4.10E-06	4.48E-01	1.8E-06
Vinyl chloride	S11 (Leachate lagoon)	8.80E-06	4.82E-01	4.2E-06

IUR: Inhalation Unit Risk
EC: Exposure Concentration

The total excess cancer risk can also be summed by location. This allows further review of the cumulative cancer risks at a location given an exposure scenario. These are presented in Table 1-12.

Table 1-12. Cancer risk for site locations

Locations	*Total Excess Cancer Risk*
S1* (West fence line CHRLF)	1.8E-06
S8 (South fence line CHRLF, near Cedar Grove)	9.8E-07
S11 (Leachate lagoon)	5.8E-05
S12 (Active face)	2.4E-06
S13 (Top deck)	3.2E-06

*See Figure 1-2 for a map of sampling locations.

1.5 Landfill Gas

LFG was assessed in a different manner than other air toxics. LFG is a mixture of approximately 50 percent methane and 50 percent carbon dioxide/water vapor mixture. LFG can also contain small amounts of nitrogen, oxygen, hydrogen, and non-methane organic compounds (e.g., hexane), as well as trace amounts of inorganic compounds. Management, monitoring, and control of LFG systems is detailed in Appendix H. Briefly, LFG is monitored by KCSWD, and extensive control and management measures for LFG are maintained. The LFG management system consists of landfill gas extraction wells in waste that prevent gas from leaving the site, conveyance, and treatment facilities, and including monitoring probes, and extraction wells within soils outside the waste footprint. HDPE piping, flares, and a gas-to-energy conversion facility are also part of the system. LFG contains some chemicals which were estimated using air modeling (e.g., methane) that were assessed as described above. Chemicals found in LFG have exposure potential through inhalation or groundwater. A discussion related to LFG in groundwater is presented in Chapter 6.0 Groundwater.

To assess the potential for exposure via inhalation of air, monitoring results from KCSWD were reviewed. The following discussion is based on the monitoring results obtained in 2019 and reported in Attachment G of the 2019 Annual Report for CHRLF (KCSWD 2020a). This data supports and is consistent with LFG data collected from 2011 to 2020, the data collected since the last Site Development Plan. For LFG migration probes monitored in 2019, methane was detected in only one of the 36 migration probes, which is Probe No. ATC-3D. This single detection of methane was reported to be 0.2 percent, well below the 5 percent (50,000 ppm) lower explosive limit. This detection was from a single day in June, and no subsequent results from this individual probe detected methane.

For the interior LFG probes, methane was found in 13 of 25 probes. Seven interior probes showed methane, but each were below the 5 percent by volume, or the lower explosive limit. However, methane was found in six interior probes 5 percent.by volume. Adjustments were made in more than 300 LFG wells inside the landfill footprint upgradient of the interior probes (KCSWD 2020a, Attachment G) to minimize the methane migration. These modifications were made twice a month to ensure the containment of LFG within the landfill footprint. These actions were successful in preventing migration of LFG outside the landfill refuse footprint, as demonstrated by methane readings in the LFG 36 migration probes cited above. Moreover, no methane was detected in any of the CHRLF facilities or offsite facilities at concentrations greater than 100 ppm. All LFG data are provided in Attachment G of KCSWD (2020a).

Specific modifications and preventive measures can be and have been made in areas where methane exceeds these limits (Appendix H). It is therefore concluded that when these mitigation measures are employed, especially in lined areas, methane will be adequately contained, not migrate or be transported beyond the CHRLF boundary, and thus will not present any possible exposures or health effects to neighboring communities or other populations.

1.6 Limitations

There are several limitations to this HRA. The basis of the exposure assessment is air dispersion modeling (HDR 2021). Although based on the best available empirical evidence, modeling is an inherently uncertain estimate and actual concentrations may vary from predictions. Importantly, modeled concentrations are not underestimated, as that could result in higher levels of risk. All appropriate measures were taken to ensure that concentrations were not underestimated. For example, if emissions measurements from source locations were below the limit of detection, the input to the model assumed an emission concentration of half the detection limit, a standard approach in risk assessment. Similarly, for emissions from the leachate lagoons, 100% of each chemical is assumed to be the ambient air concentration. Modeling of specific locations was chosen to demonstrate varied levels of exposure and to estimate air concentrations at key locations on- and off-CHRLF such as nearby neighborhoods. There were 118 chemicals modeled

on the basis that they are known to be from municipal solid waste facilities and have physicochemical characteristics that could potentially allow their transport to surrounding areas. Finally, Alternative 3, which proposes the highest emissions over the longest duration, was modeled. These conservative assumptions serve to ensure the model results are health protective.

The onsite sampling serves as the basis of the odor HRA (Chapter 2.0 Odor), but it is used to compare to the numerical air dispersion modeling in the air toxics HRA. It is possible that sampling missed higher-odor conditions (e.g., due to different weather or wind patterns). Field sampling was conducted over four days (two in June and two in August) during the early- to late-morning with a focus on capturing varied weather conditions.

Although toxicity values were taken from authoritative sources, there may be limitations or uncertainty in the underlying assessment or derivation. However, these values are routinely reevaluated and updated as needed by EPA, ATSDR, California OEHHA, and other related agencies. Toxicity values were not available for all chemicals modeled. Many of these chemicals are unlikely to be present in air or emissions from the CHRLF. Adequate safety factors are incorporated into these values and it is unlikely that these benchmarks would underestimate toxicity.

Finally, only sources at the CHRLF facility were modeled and evaluated. The surrounding area includes other potential sources of air toxics to the community around CHRLF that were not accounted for in this assessment.

1.7 Findings and Conclusions

The purpose of this air toxics human health risk assessment for the CHRLF was to estimate and evaluate potential risks from air toxics to the surrounding community or site visitors and address concerns expressed in the public comments on the DEIS about the potential for health risks. Exposure was estimated based on air dispersion modeling of Alternative 3, which represents the largest potential for exposure (HDR 2021) and compared with data collected during on-site sampling (Section 1.2). Toxicity values from authoritative sources (Section 1.3) were used to screen and characterize the risk from exposure (Section 1.4).

There were several goals of the assessment. First, the potential health effects from individual chemicals and cumulative risks were evaluated. There were 118 air toxics included in the HDR numerical modeling. Presence of any of these compounds in the exposure assessment for CHRLF should not be misconstrued in assuming that a health effect will occur. The effect might only occur with exposures much greater than the toxicity guideline value which includes safety and uncertainty factors; thus, comparison to the values in the dose-response assessment is critical to evaluation of risk. None of these 118 chemicals exceeded their screening toxicity

values in any of the modeled community locations (Reference, S5, S6, S7, and S10). Several of these chemicals were estimated to be slightly elevated over their screening toxicity values in modeled locations on CHRLF property. In further analyses, these chemicals nearly all had HQs < 1 or cancer risk of less than 1 in a million (< 1E-6). These are categorized as negligible potential risk and are unlikely to cause any adverse health effects to visitors to CHRLF or in the surrounding neighborhoods.

There were potential risks from individual chemical exposures at several locations on CHRLF property, and cancer and noncancer cumulative risks were estimated for these sites. The most notable is the leachate lagoons source site (site S11). There may be slight acute risk of irritation with short term exposures at the leachate lagoons. For longer-duration, repeated exposures at the leachate lagoons, the chronic HI for chemicals that were estimated to exceed screening values was 3.5, which is categorized as low potential risk (Table 1-5). For carcinogenic risk, sites S1 (West fence line), S12 (active face), and S13 (top deck), had summed risks less than 1 in 100,000 (1E-5). The leachate lagoon site had a summed risk of less than 1 in 10,000 (1E-4); this level is elevated, but these exposures are typically compared with toxicity values based on repeated, daily exposure over decades (lifetime), unlikely to occur among visitors to the property or the leachate lagoons, more specifically. In addition, risk reduces as a function of distance from the source as demonstrated by the lack of elevated concentrations of these same chemicals and risks in the surrounding neighborhoods.

HQ and cancer risk values have associated uncertainties and should not be viewed as a threshold and that values greater than one will cause any health effect. The HI and summed cancer risk are informative but are not specific to health endpoint or cancer type. Although the location at the leachate lagoon has a HQ > 1, the actual exposures are of lower potential risk to health due to shorter exposure durations of site visitors and limited access to the sites. Based on both the on-site sampling data and numerical modeling results, these cumulative exposures are unlikely to cause any adverse health effects to residents in the surrounding neighborhood or site visitors.

Second, potential exposures to residents and on-site visitors were evaluated. Because the duration of the exposure at the site is anticipated to be far less than the surrounding community and neighborhoods, modeled ambient air concentrations from the 14 locations were compared to possible chemical exposures that an on-site visitor could experience. The assumptions built into the exposure assessment (e.g. lifetime exposure vs. short-term, acute exposure) were adequately protective given the low levels of modeled chemical concentrations.

Third, the HDR modeling estimates of Alternative 3 support the conclusion that "implementation of any of the Alternatives proposed in the CHRLF 2020 Site Development Plan is not expected to cause any TAP [toxic air pollutant] (with the possible exception of DBCP for which all analytical

results are below detection limits used), …to exceed the ASIL at or beyond the facility's property line." This current HRA was based on estimates for Alternative 3 which is of the longest duration and has the potential for the highest exposures. All other proposed alternatives would result in lower exposure and risk to health.

Fourth, regarding LFG, when these mitigation measures are employed, especially in lined areas, methane will be adequately contained, will not migrate or be transported beyond the CHRLF boundary, and thus will not present any possible exposures or health effects to neighboring communities or other populations.

Based on the information and data provided in this chapter, the results of this HRA support the conclusion that health effects due to CHRLF air toxics, whether estimated or measured, are unlikely to cause adverse health effects to site visitors or to populations in the surrounding community.

2.0 ODOR

KCSWD conducted an odor health risk assessment (HRA) which evaluates odor intensity and the relationship between odor threshold and toxicity of chemicals modeled in Chapter 1.0 Air Toxics for which data were available. In general, odor is not indicative of toxicity; however, unpleasant odors are sometimes misconstrued to be warning signs of potential health risks. For this reason, an odor HRA aims to determine if any of the chemicals causing unpleasant odors also might produce toxicity. It is also important to determine if there are odorless chemicals present that may produce toxicity at sufficient levels (Chapter 1.0 Air Toxics).

Odor risk assessments are performed using the same process used to evaluate the health risks associated with chemical exposures detailed in the Introduction of this HRA (Suffet and Braithwaite 2019). This includes the following four topics: Hazard Identification; Exposure Assessment; Dose-Response; and Risk Characterization.

This chapter is structured as follows: Section 2.1 provides an introduction to the olfactory system that will be useful in understanding key concepts in this chapter; Section 2.2 (Hazard Identification) discusses general health and nuisance effects associated with exposure to odors that have been reported in the literature; Section 2.3 (Exposure Assessment) presents the results from collection and laboratory analysis of grab samples, and air dispersion modeling conducted for CHRLF; Section 2.4 (Dose-Response) provides an overview of the regulatory guidance used to assess odor levels associated with nuisance or health effects; Section 2.5 (Risk Characterization) compares the exposure estimates with regulatory guidance and data from authoritative bodies; limitations are discussed in Section 2.6; and Section 2.7 provides conclusions for the odor HRA.

2.1 Overview of the Olfactory System

Humans have approximately 5 million olfactory sensory neurons that connect the upper portion of the nasal cavity to the brain. Sensory neurons provide one of the following senses, depending on their type; olfaction, irritation, pain, or pressure. Generally, sensory neurons are located in the nose for the sense of smell and in the mouth, pharynx, and eyes for pressure, pain, and irritation. Sensory neurons for taste can also be stimulated from time to time but are not key to the airborne chemicals in this assessment. The major nerve pathways for sensory innervation are the Olfactory nerve and branches of the Trigeminal and Vagus nerves (Cranial Nerves I, V, and X).

Olfaction relies on two routes of entry to the nasal cavity--through the nose or mouth--and two neural systems. The two neural systems that bind volatile chemicals in the air (odorants) to the neuron receptors are responsible for the different sensations humans have in response to the odorant. The olfactory neuron receptors send signals for the brain to interpret the smell of the odorant, while trigeminal neuron receptors send a signal for the brain to interpret the sense of

temperature, pressure, pain, and irritation caused by the odorant (EPA 1992b).

There are a variety of physiological responses to foul or noxious odors. The degree of negative perception of foul odors is characterized individually by the perceived intensity, pungency, and acceptability of the odor. Foul odors, via the chemical eliciting the odor, can directly stimulate sensory neurons, producing an irritating, but not toxic, effect. Unpleasant odors directly stimulating the sensory neurons can be interpreted as causing toxicity. However, the detection of odor is not a reliable indicator of toxicity. For a number of chemicals, odors can be detected at concentrations that are lower than levels associated with toxicity; for some chemicals toxicity may occur before an odor can be detected or the chemical may be odorless. For example, hydrogen sulfide can be detected at very low levels in the air, in the parts per billion range, while toxic effects occur at about 600 to 1,000 times higher concentrations (Schiffman and Williams 2005). The more unpleasant an odor, the stronger the negative reaction and the greater the likely perception of adverse health effects associated with the odor (Dravnieks et al. 1984; Schiffman and Williams 2005, Bell et al. 1993; Heaney et al. 2011; Greenberg et al. 2013).

Two possible mechanisms are thought to explain how unpleasant odors can be misinterpreted as warning signs of toxicity (Schiffman and Williams 2005):

- First, depending on the air concentration, the chemical with the unpleasant odor may directly stimulate sensory neurons in the nose, mouth, pharynx, or eyes. The direct stimulation of these sensory nerve endings causes pain or irritation, depending on the stimulated nerve ending, and the signal is sent to the brain which interprets the signal. This effect occurs, for example, with formaldehyde.
- Second, the chemical with the unpleasant odor stimulates nerve endings in the nose. Those neurons then transmit a signal to the part of the brain that interprets it as aversive. This occurs, for example, with hydrogen sulfide (Henkin and Levy 2001).

Human sensitivity to odorants range across several orders of magnitude and can be affected by multiple factors and biases. Differentiating individual environmental odors can complicate odor detection and perception as well. Mixtures of multiple odorants can cause certain odorants to be masked or change the character of the odor altogether. Other factors, such as concentration, temperature, and humidity, can also change how odors are perceived. Odors are also linked to memories which can affect a person's interpretation of the odor. A person's previous history with a source can increase their fear that an odor is harmful or causes irritation (EPA 1970; EPA 1978a; EPA 1992b).

2.2 Hazard Identification

The potentially exposed populations and the alternatives analysis are the same for this odor HRA as those for the Air Toxics HRA (Chapter 1.0 Air Toxics).

Due to the factors involved in olfaction and linking odorants to specific health impacts, identification of specific offending chemicals can be difficult and highly uncertain (Suffet and Braithwaite 2019), yet odors are one of the leading causes of complaints to environmental agencies in the United States (TCEQ 2015). Frequent exposure to noxious, unpleasant odors that are present at typically three to five times greater than the odor detection threshold may cause indirect effects (EPA 1992b; TCEQ 2015; ATSDR 2017; Suffet and Braithwate 2019). Examples include:

- General irritation to the respiratory tract
- Headache
- Nausea
- Anorexia
- Vomiting
- Dizziness
- Shortness of breath
- Mental stress
- Decreased welfare or quality of life

Odors occurring in ambient air generally are not at levels that can cause serious injury or long-term health effects but, as illustrated in the symptoms listed above, can still affect quality of life and/or act as a nuisance when present at "irritation levels" (ATSDR 2017). Environmental odors are typically episodic and occur based on wind patterns, atmospheric pressure, temperature, and other environmental factors. These episodes can trigger the onset of odor-related symptoms, but those symptoms typically disappear when the odor is no longer present (ATSDR 2017).

Landfills can be the source of numerous chemical compounds that are known to produce objectionable odors. Ammonia and sulfur compounds (e.g. hydrogen sulfide, dimethyl sulfide, and mercaptans) are known to be responsible for most odors produced by landfills (ATSDR 2001a). These gases are produced by the degradation of waste material. The smell of hydrogen sulfide is often associated with the foul smell of rotting eggs, and ammonia has a strong, pungent odor. Although humans can sometimes detect hydrogen sulfide and ammonia at very low concentrations in the air, it is generally detected below levels that would cause health effects (WHO 2000; State of New York Department of Health 2010).

2.3 Exposure Assessment

The exposure assessment is based on field sampling conducted by Intertox and Chartrand Environmental and odor modeling conducted by HDR. There were two types of field sampling conducted: field olfactometry to measure odor strength and character, and grab samples that were analyzed in laboratories for chemical composition (described in Chapter 1.0 Air Toxics) and odor strength, intensity, and character (section 2.2.3). Grab samples were taken to measure

episodic, detectable concentrations of odors. Collection of air in this manner can correlate odor sampling results with concurrent chemical analyses. Based on observations at the landfill, the primary odor sources were the active area working face, where municipal solid waste (MSW) is actively disposed of and covered daily with either soil or tarps, and the two leachate lagoons located near the southwest corner of the landfill.

2.3.1 Sampling and Analysis

To provide accurate data and best address the concerns of nearby residents, grab samples (short collection duration of about 5 minutes) of ambient air were collected from locations on and around CHRLF. Sampling was conducted concurrently with the sampling described in Section 1.2.1. Air sampling was conducted over a four-day period: June 22, June 23, July 7, and July 8, 2021. Odor samples were taken and collected at the same locations listed in Table 1-2 and shown in Figure 1-1. All information on locations, meteorological conditions, times of collection, are presented in Chapter 1.0 Air Toxics and the approved Sampling and Analysis Plan (Appendix A).

A Nasal Ranger Field Olfactometer was used to measure and quantify odor strength. In addition, air grab samples at 14 locations were taken each sampling day, plus a replicate (to compare in field measures) and a trip blank (to evaluate potential contamination in the field and in transit). These samples were collected by the sampling team and analyzed for odors by the laboratory, St. Croix Sensory. Measurements and results for individual chemicals that are described in Chapter 1.0 Air Toxics are compared with the odor sampling results in this chapter.

2.3.2 Field Olfactometer

The Nasal Ranger Field Olfactometer creates a calibrated series of discrete dilutions by mixing the odorous ambient air with odor-free, carbon-filtered air. Field olfactometry defines each discrete dilution level as a dilution to threshold (D/T) ratio. The dilution to threshold ratio is a measure of the number of dilutions needed to make the odorous ambient air non-detectable.

Field olfactometry calculates the dilution to threshold (D/T) ratio as:

$$\text{D/T} = \frac{Volume\ of\ Carbon\ Filtered\ Air}{Volume\ of\ Odorous\ Air}$$

The Nasal Ranger Field Olfactometer directly measures and quantifies odor strength in the ambient air using the operating principle of mixing odorous ambient air with odor-free, carbon-filtered air in discrete volume ratios.

The trained user's nose is placed firmly inside the Nasal Mask against the replaceable Comfort Seal. The user inhales through the Nasal Mask at a comfortable breathing rate while standing at rest. The Nasal Mask has an outlet for exhaled air to exhaust downward, allowing the user to

inhale through the device and exhale through the outlet check valve.

To quantify odor in the field at each sample location, the user of the Nasal Ranger drew in ambient air samples into the nose through the olfactometer, diluting them at various multiples. The user started at the highest dilution and gradually reduced the number of dilutions until the user could just detect the odor. This level is then recorded as the number of dilutions required to reach the odor threshold (D/T value). If an odor was detectable (≥2 D/T), a description of the odor and odor character using odor descriptors provided in the odor wheel (Figure 2-1) were also recorded.

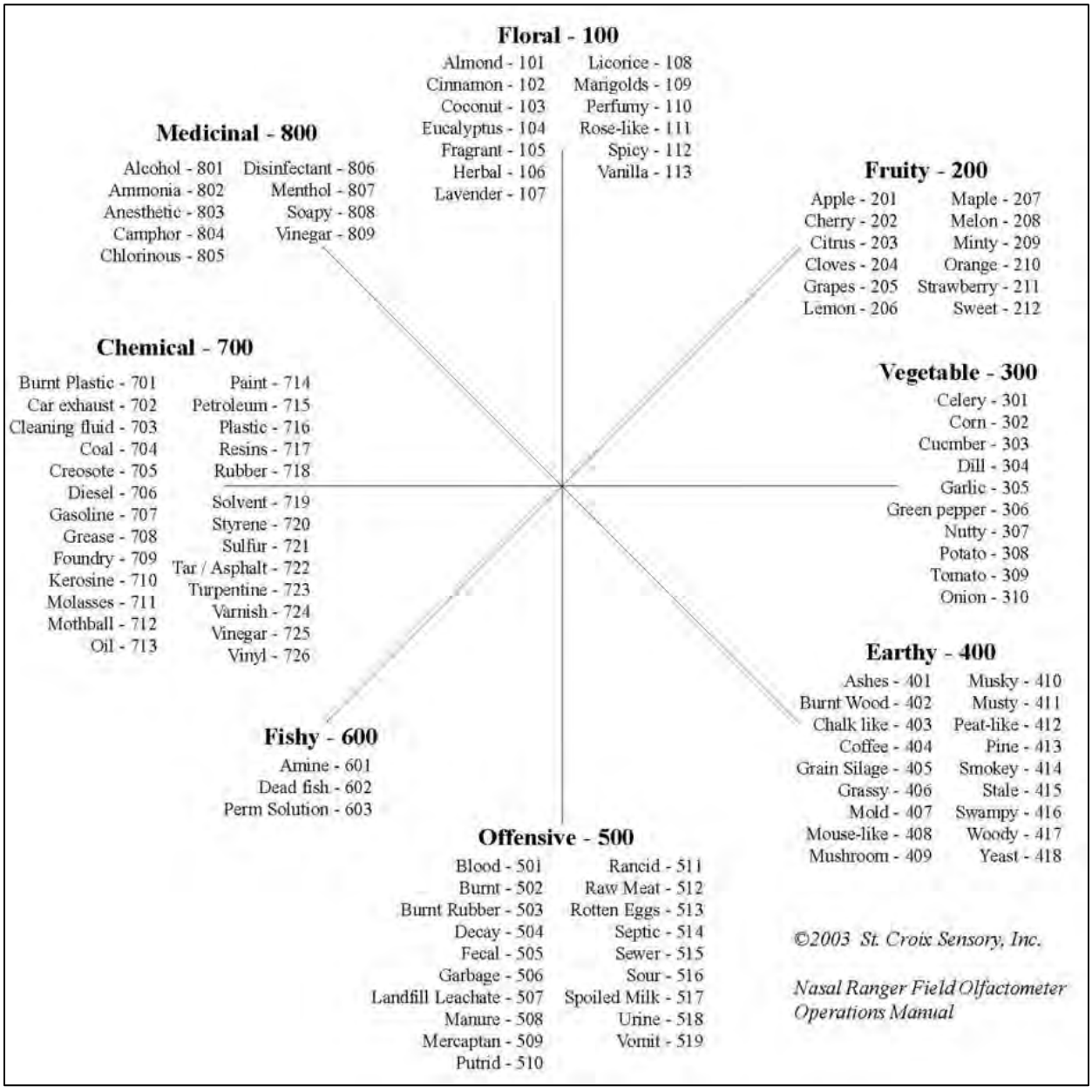

Figure 2-1. Odor Description Wheel. Source: St. Croix Sensory, Inc.

The intensity of the odor samples ranged from non-detect (< 2 D/T) to 30 D/T. The highest D/T values (30 D/T) were measured at the sites which represent the onsite sources of odors (S11, S12, and S13) (Figure 2-2). The source sites also generally had the most offensive odor characters. These were also the sites where there was the potential for exceedance of toxicity

guideline values based on air modeling (Chapter 1 Air Toxics). This does not indicate that these odors are associated with the chemicals which have the potential to exceed guidance. This does indicate a higher odor intensity which may be considered a nuisance to people at these locations.

Odor intensity at locations along the perimeter of the property ranged from non-detect (< 2 D/T) to 15 D/T. At the receptor sites or residential neighborhoods (S5, S6, and S7) the maximum odor intensity recorded was 4 D/T (Figure 2-2). When odor was detectable at the neighborhood receptor sites, the odors were described as offensive, earthy, and floral. Manure and garbage were used to describe the odor character for at least one residential receptor site each sampling day except the first (June 22, 2021) (Table 2-1).

Table 2-1. Field olfactometry odor character descriptions

Sample Site Description	*Site #*	*Location Coordinates*	*Sample Date*	*Sample Time***	*Odor Description****
		Latitude Longitude			
Landfill Interior/Source Sites	S11	47.453825, -122.054411	6/22/2021	7:47 AM	Offensive: Landfill leachate; Medicinal: astringent, ammonia
			6/23/2021	7:19 AM	Offensive: Landfill leachate, sewer, rancid; Chemical: solvent
			7/7/2021	7:54 AM	Offensive: Landfill leachate, garbage, manure; Chemical: Solvent; Medicinal: Ammonia
			7/8/2021	7:28 AM	Offensive: landfill leachate; chemical: solvent, astringent
	S12	47.453825, -122.054411	6/22/2021	7:29 AM	Offensive: Manure, garbage
			6/23/2021	7:02 AM	Offensive: Rancid, putrid, garbage
			7/7/2021	7:38 AM	Offensive: Manure, garbage; Earthy: Musky, soil
			7/8/2021	7:16 AM	Offensive: garbage, rancid, putrid
	S13	47.462961, -122.047857	6/22/2021	6:15 AM	Chemical: Gaseous; Offensive: Manure, putrid, garbage
			6/23/2021	6:38 AM	Offensive: Rancid, garbage; Chemical: Solvent; Medicinal: Ammonia
			7/7/2021	7:16 AM	Offensive: garbage, decay, putrid, rancid; Chemical: solvent, gas
			7/8/2021	6:55 AM	Chemical: slightly gaseous

Sample Site Description	*Site #*	*Location Coordinates* *Latitude Longitude*	*Sample Date*	*Sample Time***	*Odor Description****
Landfill Perimeter Sites	S4	47.45164, -122.05838	6/22/2021	8:38 AM	Offensive: manure; Earthy: woody
			6/23/2021	8:25 AM	Floral: Herbal; Earthy: Grassy, musky, petrichor
			7/7/2021	9:59 AM	offensive: Manure; earthy: soil, woody
			7/8/2021	7:49 AM	ND
	S8	47.45164, -122.05128	6/22/2021	8:19 AM	Offensive: manure; Earthy: woody
			6/23/2021	8:07 AM	Earthy: Musty, grassy; Offensive: Manure
			7/7/2021	8:21 AM	Offensive: Manure; earthy: Grassy, musky, woody
			7/8/2021	8:01 AM	Offensive: Manure; Earthy: soil, musty, fresh compost
	S9	47.45292, -122.03951	6/22/2021	10:08 AM	Earthy: Grassy; Floral: herbal; Chemical: Car exhaust
			6/23/2021	9:42 AM	Earthy: Musky, petrichor; Chemical: Car exhaust
			7/7/2021	8:38 AM	ND
			7/8/2021	8:16 AM	Offensive: Manure; Earthy: Grassy, woody, fresh compost
	S10	47.45941, -122.03888	6/22/2021	10:32 AM	Floral: Herbal; Earthy: Grassy
			6/23/2021	9:56 AM	Offensive: Garbage; Earthy: Grassy
			7/7/2021	8:53 AM	Earthy: Grassy, woody, musty; Floral: Herbal; Chemical: Car exhaust
			7/8/2021	8:27 AM	Offensive: Manure, garbage
	S1	47.4556, -122.05842	6/22/2021	8:56 AM	Offensive: manure; Earthy: woody
			6/23/2021	8:39 AM	ND
			7/7/2021	9:44 AM	Offensive: Manure, garbage
			7/8/2021	9:26 AM	ND
	S2	47.46527, -122.05832	6/22/2021	9:35 AM	Offensive: manure; Earthy: woody
			6/23/2021	9:13 AM	Earthy: grassy; Offensive: Manure
			7/7/2021	9:18 AM	Earthy: Grassy, woody; Floral: herbal; Offensive: Garbage, manure
			7/8/2021	8:59 AM	Offensive: fecal (horse)/manure; Earthy: woody, musty, grassy

Sample Site Description	*Site #*	*Location Coordinates* *Latitude Longitude*	*Sample Date*	*Sample Time***	*Odor Description****
Landfill Perimeter Sites	S3	47.46326, -122.05826	6/22/2021	9:16 AM	ND
			6/23/2021	8:59 AM	Earthy: grassy, musky
			7/7/2021	9:30 AM	Earthy: Woody, musty; offensive: garbage, manure
			7/8/2021	9:12 AM	ND
Neighborhood Receptor Sites	S5	47.46612, -122.06039	6/22/2021	12:57 PM	ND
			6/23/2021	11:33 AM	Floral: Herbal; earthy: Grassy; Offensive: Manure
			7/7/2021	11:59 AM	offensive: Manure; earthy: soil, woody, grassy
			7/8/2021	5:30 AM	ND
	S6	47.46416, -122.06039	6/22/2021	12:42 PM	ND
			6/23/2021	11:15 AM	Offensive: Garbage, putrid, manure
			7/7/2021	11:52 AM	offensive: garbage, manure; earthy: soil, woody, grassy
			7/8/2021	5:08 AM	ND
	S7	47.45966, -122.06071	6/22/2021	12:25 PM	ND
			6/23/2021	11:50 AM	Offensive: Manure; earthy: Grassy, musky
			7/7/2021	11:36 AM	Offensive: manure, garbage; earthy: woody, grassy
			7/8/2021	5:43 AM	Offensive: Manure, garbage; Earthy: Musky
Upwind, Off-Site Reference Site	Ref1	47.44311, -122.02867	6/22/2021	11:09 AM	ND
			6/23/2021	10:32 AM	ND
			7/7/2021	10:52 AM	ND
			7/8/2021	6:18 AM	ND

*Data averaged across approximately 10-15 min at each sampling location.
ND: Not detected
** Collection times were limited to mornings due to the necessity of delivering samples to the laboratories. The collection on July 8th was in response to specific complaints that odors occurred in the night and early mornings.
***Reference odor wheel (Figure 2-1) for additional context of odor descriptions.

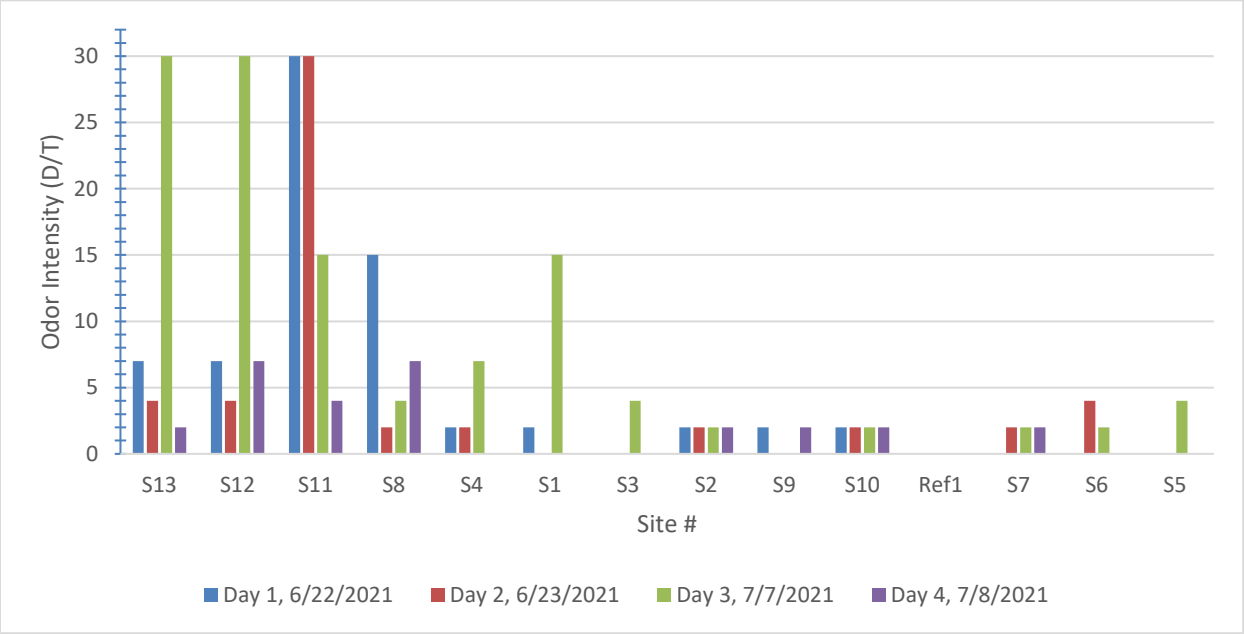

Figure 2-2. Odor intensity at field sampling locations on and around CHRLF. Measured by field olfactometry. Ref1, S5, S6, S7, and S10 are off the CHRLF property and S11, S12, and S13 are source locations. Note: Samples where odor intensity was non-detectable (< 2 D/T) are shown as blanks (e.g., Ref1 (the reference site) had no odor detections).

2.3.3 Field Sampling and Odor Characterization by St. Croix Sensory

Field sampling of odor was conducted using the VAC'SCENT Vacuum Chamber, provided by St. Croix Sensory analytical laboratory. The chamber has an integrated pump and draws air into 10L Tedlar bags. These were shipped overnight to St. Croix Sensory for testing by a panel of four trained odor assessors. The odor detection threshold testing was conducted in compliance with and under all conditions specified or required by ASTM E679 and EN13725. ASTM E679 describes the method for determining odor or taste thresholds which may be characterized as detection of an odor but not necessarily recognition, and recognition threshold of the odor. EN13725 is a European standard for olfactometry in the laboratory and from point sources. The final reports from St. Croix Sensory are in Appendix I.

The St. Croix Sensory testing provides information on several measures of odor strength and characteristics:

- **DT** - Detection Threshold as determined by ASTM E679 and EN13725. Dimensionless dilution ratio at which half the assessors detect the diluted air as different from the blank air. Odor Units (OU) or Odor Units per cubic meters (OU/m^3) are commonly used as

pseudo-units. This should not be confused with D/T which is a ratio of the number of dilutions needed to make the odorous ambient air non-detectable.

- **RT** - Recognition Threshold as determined by ASTM E679 and EN13725. Result is dimensionless dilution ratio at which half the assessors recognize a character in the diluted odorous air.
- **I** - Perceived odor intensity as determined by ASTM E544. Intensity is expressed as average reported scale value on 10pt n-butanol in water static scale.
- **HT** – Hedonic Tone value. Average rating of assessors' opinion of odor pleasantness on scale of -10 (most unpleasant) to +10 (most pleasant).
- **DR** – the slope of the dose-response relationship of odor intensity with dilution (persistency of odor)

The results are summarized in Appendix J. The lowest DT and RT were both off site on different days, while the highest DT and RT, the highest I, the lowest HT, and the steepest DR were all at site S11 (leachate lagoons) on June 22. The lowest and highest values for each measure and their locations are presented in Table 2-2.

Table 2-2. Summary minimum and maximum laboratory odor metrics obtained from St. Croix Sensory Analysis

Odor Metric	*Source Locations (S11, S12, S13)*	*On CHRLF Property (S1, S2, S3, S4, S8, S9)*	*Off CHRLF Property (S5, S6, S7, S10)*	*Ref1*
Detection Threshold (DT)	70, 560	60, 370	50, 120	60, 160
Recognition Threshold (RT)	40, 290	30, 220	25, 70	30, 85
Perceived Intensity (I)	0.7, 4.8	1.2, 3.8	0.5, 3.3	0.2-2.8
Hedonic Tone (HT)	-2.8, +0.9	-2.5, +1.9	-1.2, +0.2	-1, +1
DR (Dose Response)	-2.59, -0.49	-2.25, -0.83	-1.88, -0.35	-1.86- -0.14

The most common descriptor was "plastic" and was the predominant descriptor on all four sampling days. On June 22, "sulfur" was the descriptor for all sites on CHRLF property and one offsite location (S10). On June 22 and 23, "plastic" was the descriptor for all sites including the reference site, with the exception being site S11, the leachate lagoons. On August 7 and 8, all sites had the descriptor "plastic," including the Reference site, with no other odors noted. These descriptors are summarized in Appendix J.

2.3.4 HDR Modeling Results

HDR (2021) used the current version of the EPA-approved AERMOD dispersion model (version 21112) to complete this odor modeling. The model utilized the regulatory default options recommended in the current version of EPA's "Guideline on Air Quality Models" (EPA 2005) and the following methodology:

- Rural dispersion coefficients were used because the land-use zoning of the three-kilometer (about 1.9 mile) radius around the facility is greater than 50 percent rural (i.e., non-urban) based on the Auer land-use classifications.
- Locations of emission sources were determined using a combination of field sampling notes, facility design information, and Google Earth.

- The source and receptor coordinates used in this analysis are based on the NAD83 Universal Transverse Mercator (UTM) Zone 10 coordinate system.

AERMOD was used to calculate the odor emission rates for the leachate lagoons or the landfill working face that would generate the maximum measured 30 D/T concentration at S11 and S12, based on the wind speeds and directions during odor sampling as summarized in Chapter 1.0 Air Toxics. The back-calculation is based on the field olfactometry data collected by the sampling team on site. Other meteorological input parameters for the back-calculation AERMOD run (e.g., stability, roughness length (horizontal mean wind speed near the ground), cloud cover, etc.) were based on 2020 meteorological data for the same date and time as the sampling events. The calculation assumes that odors detected via field olfactometry are emanated from either the leachate lagoons or the working face; although there are other sources on site (e.g., the top deck, S13) and off site (e.g., Cedar Grove Composting, etc.) that also may contribute to source odors.

Based on AERMOD runs using the full 5-year period of meteorological data, contour plots were prepared for the existing (2021) case, and for two separate "worst-case" future scenarios. "Worst-case" scenarios considered the -site impact of disposal areas (MSW disposal on west-central and southeastern portions of landfill site) as described in the HDR Technical Memorandum (HDR 2021). For each of the three cases modeled, odor contour plots are provided for a 99th percentile odor concentration (a concentration that is predicted to not be exceeded 99 percent of the time) for existing, west-central, and southeast MSW disposal scenarios as shown in Figures 2-3, 2-4, and 2-5, respectively. Table 2-3 lists the modeled odor concentration for each site under the three scenarios. The values in these figures represent a high-end, conservative estimate; these modeled odor concentrations will not occur frequently or regularly. Although values peak at 100 OU, this should not be interpreted to mean that odor levels will reach this peak with any regularity or for any extended period of time, but that there is the potential for this odor level. The modeling results should be considered along with the field olfactometry on which it is based. For example, modeling predicts an existing high-end estimate of 100 D/T for sites 5 and 6 (both located in the neighborhood to the west of CHRLF); however, actual sampling in these locations resulted in a maximum D/T of 4 with most measures non-detectable.

Table 2-3. Air dispersion model results for odor concentrations (OU) per station for the existing CHRLF facility and two alternative locations for active areas

	Odor concentration (OU)		
Sample	*Existing (2021)*	*West MSW disposal*	*Southeast MSW disposal*
Ref 1	7	7	20
S1	20	20	20
S2	100	100	20
S3	100	100	20
S4	0	20	2
S5	100	100	20
S6	100	100	20
S7	20	20	20
S8	20	100	20
S9	20	20	100
S10	7	2	100
S11	100	100	100
S12	20	100	20
S13	100	20	100

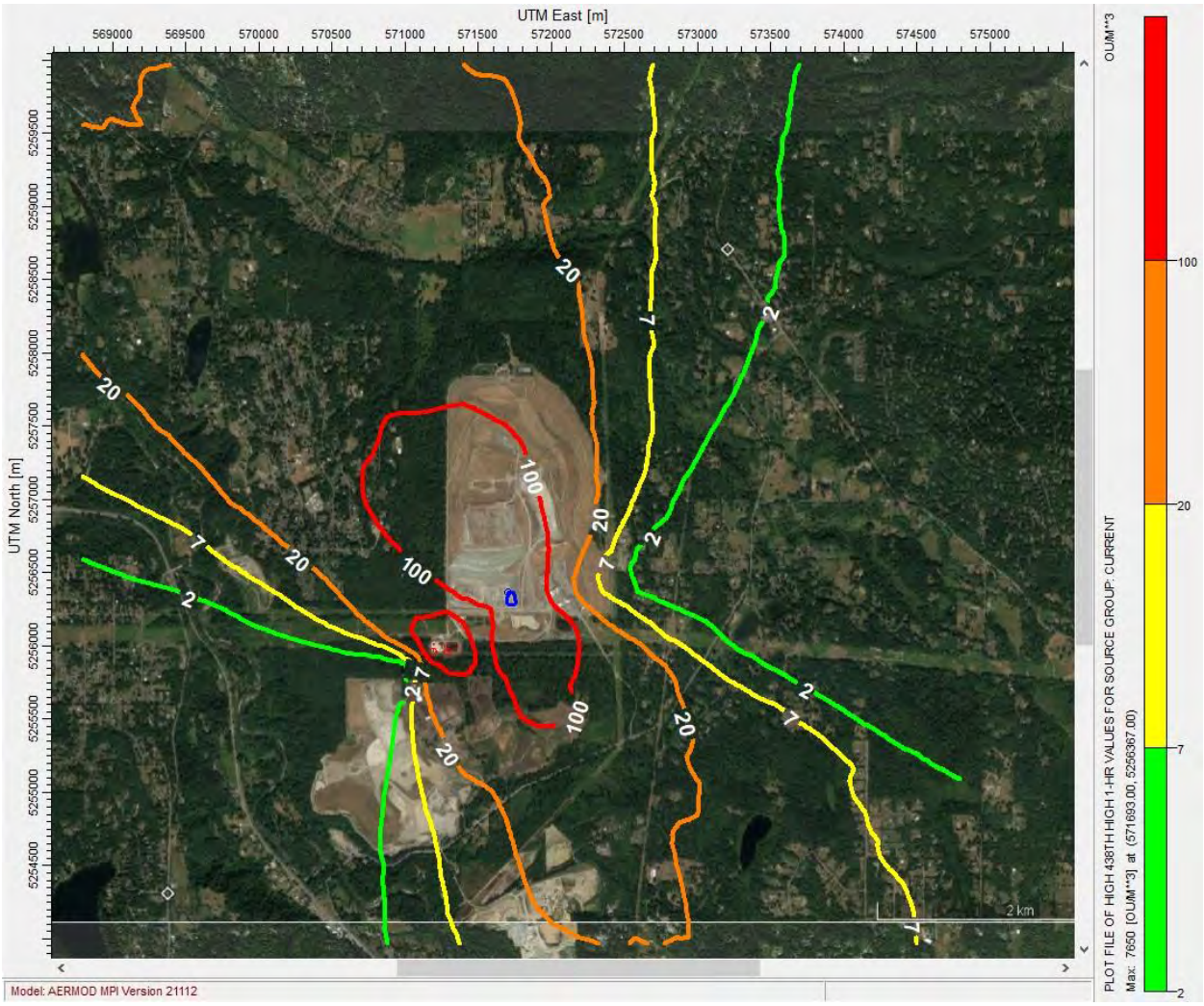

Figure 2-3. 99th percentile existing (2021) odor concentration (see Figure 1-2 for sampling locations). Air dispersion modeling conducted by HDR showing the highest possible odor-to-detection threshold for the existing CHRLF operations.

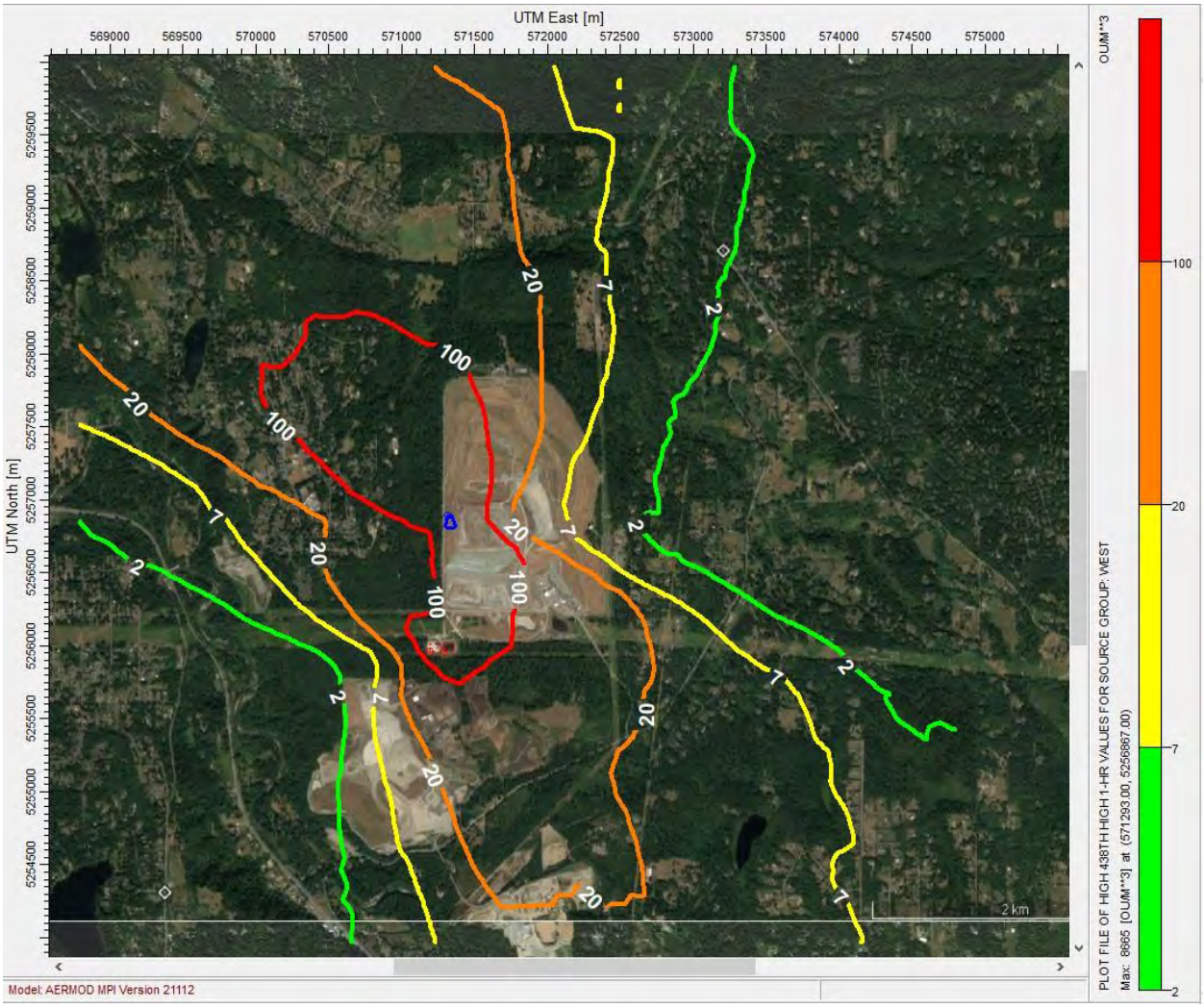

Figure 2-4. 99th percentile odor concentration West MSW disposal (see Figure 1-2 for sampling locations). Air dispersion modeling conducted by HDR showing the highest possible odor-to-detection threshold for an alternate CHRLF operation with the active area to the west (blue area).

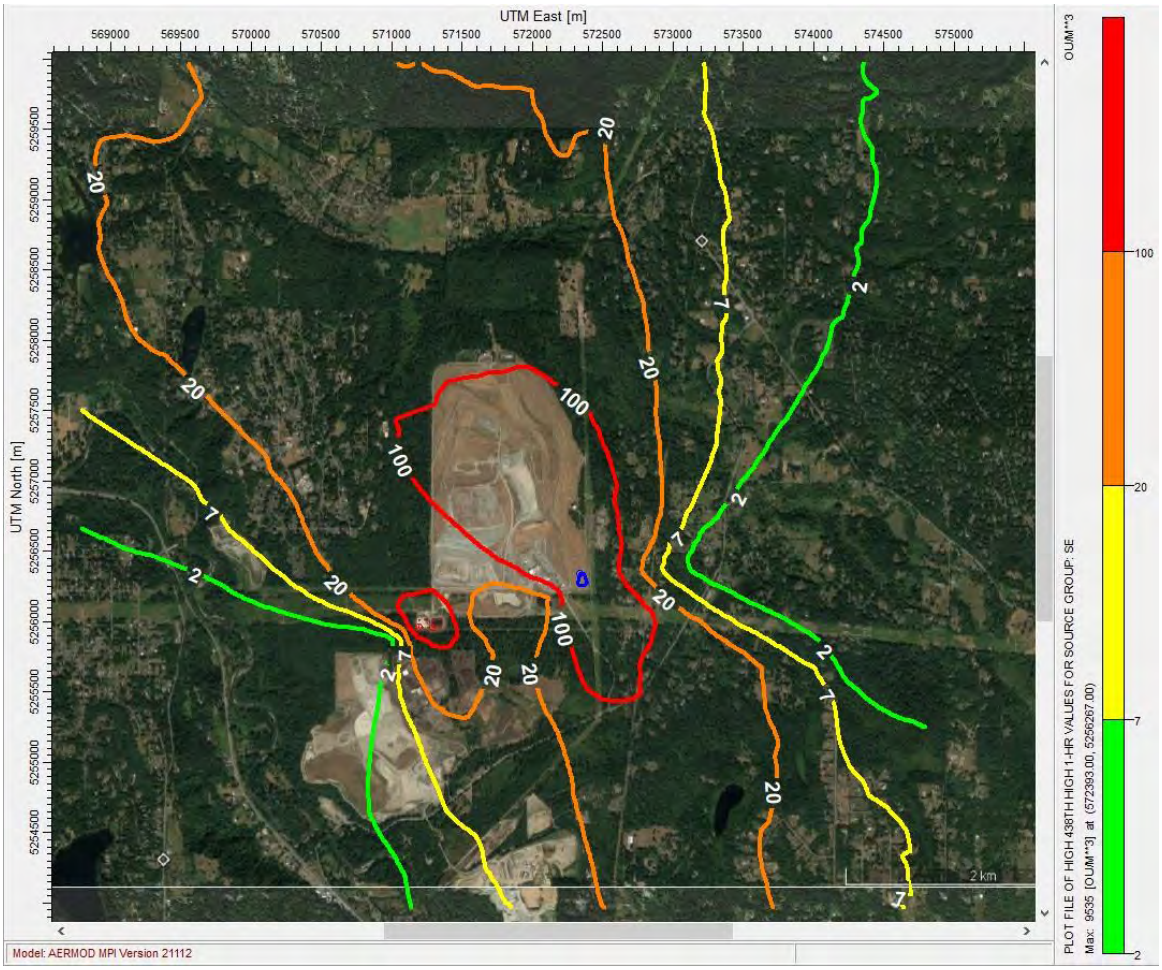

Figure 2-5. 99th percentile odor concentration Southwest MSW disposal ((see Figure 1-2 for sampling locations). Air dispersion modeling conducted by HDR showing the highest possible odor-to-detection threshold for an alternate CHRLF operation with the active area to the southeast (blue area).

2.4 Dose-Response Assessment

Similar to Chapter 1.0 Air Toxics, odor measurement results that were described in Section 2.2 are compared to acceptable levels provided by the appropriate authoritative bodies. As opposed to air toxics, where acceptable levels are often based on a toxicity threshold, with odor, acceptable levels are commonly based on avoiding odor complaints or nuisance effects. Chapter 173-350 of the Washington Administrative Code (WAC) and Chapter 173-351 WAC require the control of nuisance odors from landfill active areas (WAC 173-351-200 (2)(a-b)) and surface impoundments (i.e. leachate and stormwater ponds) (WAC 173-350-330(6)(a)(iv)(A)) in

Washington state and King County. These criteria are narrative, requiring specific control measures (i.e., covering of active areas) to control odors associated with disposed solid waste and surface impoundments so as to avoid odor nuisance.

Other states throughout the U.S. provide more specific odor regulations using the common approach of fixed ambient odor dilution-to-threshold (D/T) limits (Appendix K). As described in Section 2.2.1, D/T is a measure of odor strength in the ambient air, with higher values describing a stronger odor. This type of regulation typically uses field olfactometers (e.g., Nasal Ranger, Scentometer) to measure D/T values frequently at the odor receptor location or property line of the odor source (Brancher et al. 2017). This approach is similar to the field olfactometry described in Section 2.2 and will provide a similar comparison.

Regulatory odor standards range from 4 to 24 D/T. Based on the review of available regulatory standards, the most common maximum odor concentration for residential receptor areas is 7 D/T. Additionally, Huey et al. (1960), in discussing the Scentometer, stated that ambient odors above 7 D/T would probably cause complaints while those measuring 31 D/T could be described as a serious nuisance if they persisted for a considerable length of time (EPA 1978a). Therefore, 7 D/T will be used to compare exposure values presented in Section 2.2.

2.5 Risk Characterization

The focus of this section is to address whether unpleasant odors are causing adverse health effects. Chemicals that cause foul odors do not necessarily cause adverse health effects. Stimulation of olfactory, pain, and pressure neurons are a physiological response.

In this chapter, risk characterization for odors will follow a similar analysis to the air toxics in Chapter 1.0 Air Toxics. The exposure values in Section 2.2 will be compared with the regulatory values in Section 2.3. The values are based on nuisance effects rather than adverse health effects; therefore, no hazard quotient will be necessary and will not be calculated. To address public concern that the odors may be associated with toxicity, a comparison of published odor thresholds and toxicity values is provided. This was conducted for the chemicals which were measured during the on-site sampling.

2.5.1 Comparison of D/T measures

The D/T was measured during on-site sampling and is presented for each location by day in Figure 2-2 and in Table 2-4. Table 2-4 also includes the results of the HDR modeling for the 99th percentile odor estimates for the existing (2021) operations. The air dispersion modeling was based on calculation of field olfactometry to two sources: the leachate lagoons and the active area working face. As one would expect, the odor modeling results presenting the 99th percentile were consistently higher than the on-site measured odor concentrations.

Odors are episodic and generally short in duration, rather than continuous over weeks, months, or years. Based on monitoring over four days at locations both on site and in the surrounding neighborhoods, odors were generally low to nondetectable, except at source locations. The odor characteristics ranged from floral to earthy to offensive based on field olfactometry (Section 2.2.1), to sulfur and plastics by laboratory panel analysis (Section 2.2.2). To determine a high-end exposure scenario for current and future site developments, HDR modeled the 99th percentile estimates based on the most recent five-year meteorological data for current odor impacts and the impacts from two alternatives (HDR 2021).

Although the modeled estimates are presented informationally, in practice, guidelines for odor quality in air are based on olfactometry and not air dispersion modeling. The D/T of 7 was chosen because it is the most common guidance value and is below a level that causes serious nuisance. On all four days of field sampling, none of the olfactometry values from sampling locations in the surrounding neighborhoods (Ref1, S5, S6, S7, and S10) were greater than 7 D/T. The highest values were at the source locations (S11, S12, and S13).

Table 2-4. Summary D/T from field olfactometry by sample date and dispersion modeling for current CHRLF operations

Location	*6/22*	*6/23*	*7/7*	*7/8*	*Model*
Ref1 (reference site)	<2	<2	<2	<2	7
S1 (on site, near S12)	2	<2	**15**	<2	**20**
S2 (on site, West fenceline)	2	2	2	2	**100**
S3 (on site, West fenceline)	<2	<2	4	<2	**100**
S4 (on site, Southwest fenceline)	2	2	7	<2	0
S5 (off site, West neighborhood)	<2	<2	4	<2	**100**
S6 (off site, West neighborhood)	<2	4	2	<2	**100**
S7 (off site, West neighborhood)	<2	2	2	2	**20**
S8 (on site, South fenceline)	**15**	2	4	7	**20**
S9 (on site, Southeast fenceline)	2	<2	<2	2	**20**
S10 (off site, East)	2	2	2	2	**7**
S11 (source, leachate lagoons)	**30**	**30**	**15**	4	**100**
S12 (source, active area)	7	4	**30**	7	**20**
S13 (source, areas 5/6/7)	7	4	**30**	2	**100**

Bold type denotes measurements that exceed 7 D/T.

2.5.2 Comparison of Odorous Chemicals to Toxicity Values

Of the 25 chemicals detected at least once during on-site sampling (data from grab samples presented in Chapter 1.0 Air Toxics), all also have published odor thresholds. Of these chemicals, three had at least one measured value that exceeded its odor threshold: ethanol, hydrogen sulfide, and ethylbenzene (Appendix L).

In comparison, maximum measurements of all three chemicals and their odor thresholds were also below their respective toxicity values. In Chapter 1.0 Air Toxics, toxicity values were for short- or long-term exposure conditions based on numerical benchmark concentrations (e.g., ASILs, MRLs, etc.) and were compared to one-hour, 24-hour, or annual averaging of exposures estimated using numerical air dispersion modeling. In the odor HRA, 60-minute Protective Action Criteria (PAC) were used since the odor measures were based on approximately five-minute measurements. PACs have tiered exposure values with a PAC-1 set at a level to prevent

temporary, non-disabling effects. More information about PACs, the basis for the ethanol, ethylbenzene, and hydrogen sulfide PACs, and the PACs for all detected chemicals is in Appendix M.

Table 2-5. Measured concentrations, odor thresholds, toxicity values for ethanol, ethylbenzene, and hydrogen sulfide

Chemical	***CAS#***	***Highest measured value at any site (µg/m³)***	***Highest measured value at fence line site (µg/m³)***	***Highest measured value in neighborhoods (µg/m³)***	***Lowest odor detection threshold from the literature (µg/m³)***	***PAC-1, 60-minute (µg/m³)***
Ethanol	64-17-5	320	160	49	170	3,391,656
Ethylbenzene	100-41-4	1.3	1.3	0.43	<9	143,297
Hydrogen sulfide	7783-06-4	17	15	17	0.06	711

With these chemicals, there may be a detectable odor, but that level would be below the toxicity value and not indicative of any toxic effect. Notably, the measured concentrations of these chemicals at sampling locations in the surrounding neighborhoods (Ref1, S5, S6, S7, and S10) were all below the odor detection thresholds, which is consistent with field sampling olfactometry results.

In addition, there were four chemicals that were measured for which the odor threshold is greater than the toxicity value: bromodichloromethane, carbon tetrachloride, chlorodifluoromethane, and dichlorodifluoromethane. For these chemicals, if levels were sufficiently high, temporary, non-disabling effects could occur with no detectable odor. However, for these chemicals, the measured air concentrations were much lower than the toxicity value and no health effects are likely based on the measured exposure levels (Appendix L).

2.6 Limitations

There are limitations implicit to any risk assessment. Odor is a subjective experience and people have different responses to all types of odors; thus, there were multiple efforts to standardize response using published guidelines for standardization of sampling and testing for odors (e.g., ASTM).

Odors are episodic, but every effort was made to determine when odor complaints most frequently occurred. Field sampling was conducted over four days (two in June and two in August) during the early- to late-morning with a focus on capturing varied weather conditions and higher-odor conditions. For example, in response to community concerns about odor, sampling was initiated at 5 a.m. on August 8th to address potential overnight/early morning increases in odor. Despite this, it is possible that sampling missed higher-odor conditions (e.g., due to different weather or wind patterns). To avoid underestimating potential odors based on limited field sampling, air dispersion modeling provided high-end values as an upper estimate of odor impacts.

The surrounding area includes other facilities, horse farms, vegetation, and marshy areas that are possible sources of odors that either contribute or are the sole source for specific odors and air toxics (e.g. Cedar Grove Composting, Queen City Farms). Impact from these other sources would have been included in the field sampling.

For the air dispersion modeling, only sources at the CHRLF facility were modeled. The air dispersion modeling was based on back-calculation of field olfactometry to two sources: the leachate lagoons and the active area working face. This assumes that these two locations are the only sources for the D/T measured in the field; however, the field olfactometry is based on all sources on- and off-site. This provides an additional level of conservativism to the modeling results of the current and future potential odor levels at the 99th percentile, as it assumes that all odors present at the time of measurement were from these two sources. Although based on the best available empirical evidence, modeling provides an inherently uncertain estimate and actual concentrations may vary from predictions. Using the 99th percentile gives a high-end estimate (that is, for 99 percent of measures), the actual odor is expected to be below the estimate. All appropriate measures were taken to ensure that concentrations were not underestimated.

2.7 Findings and Conclusions

The purpose of this odor risk assessment was to address community concerns over potential health risks from odor-causing compounds from CHRLF. Odor measurements were taken on site over four sampling days using field olfactometry and grab samples that were analyzed by a trained odor panel in the laboratory. Air dispersion modeling for odor (based on D/T) was also conducted to estimate potential high-end odor levels (HDR 2021). Since the regional requirements in King County are described in a narrative rather than quantitative maximum odor levels, these odor measurements were compared to regulatory guidelines from other states and municipalities.

Based on monitoring over four days at locations both on site and in the surrounding neighborhoods near CHRLF, odors were generally low to nondetectable, except at source locations. The odor characteristics ranged from “floral” to “earthy” to “offensive” based on field

olfactometry (Section 2.2.1), to sulfur and plastics by laboratory panel analysis (Section 2.2.2). Odor strength and characteristics were similar between on-site locations and the surrounding neighborhoods, with the exception of source locations.

While the focus was to define odors from CHRLF during the sampling, other sources of odors may have impacted field measurements and odor in the surrounding communities. For example, the characteristics in the neighborhoods (S5, S6, S7) were most often similar to the characteristics at the south fence line near the Cedar Grove Composting facility (S4, S8). These characteristics were described as "manure," "offensive," "grassy," and "earthy," to name a few. On several sampling dates, an odor was described as "garbage." Importantly, despite the description, the intensity in the surrounding neighborhoods was <4 D/T, which is below the screening criterion of 7 D/T.

Of the chemicals sampled for and detected in Chapter 1.0 Air Toxics, there were three that were detected at greater than their lowest reported odor threshold: ethanol, ethylbenzene, and hydrogen sulfide. Importantly, for these chemicals both detections and odor thresholds are below their respective toxicity values. That is to say, although air concentrations may have been sufficient to produce a detectable odor, they were insufficient to cause any adverse health effect.

Air dispersion modeling was used to estimate the current 99th percentile impact of CHRLF and evaluated two future alternatives: a West active area and a Southeast active area. The air dispersion modeling is inherently conservative as it estimates a high-end (99th percentile) odor level and likely provides an overestimate of potential odor impacts. Although values from the model peak at 100 OU, this should not be interpreted to mean that odor levels will reach this peak with any regularity or for any extended period of time. The modeling results should be considered along with the field olfactometry on which it is based. For example, modeling predicts an existing high-end estimate of 100 D/T for sites S5 and S6 (both located in the neighborhood to the west of CHRLF); however, actual sampling in these locations resulted in a maximum D/T of 4, which was below the screening criterion of 7 D/T; and most measures were non-detectable. Even if odor levels reached 100 D/T, this is not indicative that an adverse health effect will occur, but it is possible that this level will be a nuisance to residents in these areas. Current odor measurements acknowledge the potential for nuisance effects, but the potential for adverse health effects is minimal (Chapter 1.0 Air Toxics).

The results of the odor HRA support that there is the potential for odors on CHRLF property and in the surrounding neighborhoods. This odor potential exists with current operations and with future alternatives. If or when community members experience bad environmental odors, multiple resources are available to aid local health officials in the investigation of odor sources

and the determination of if they may be harmful[6, 7]. Currently, landfill gas technicians conduct routine odor monitoring and respond to observations from odor complaints. Despite this potential for odor, levels of chemicals are below levels that are likely to cause a health effect.

[6] Visit ATSDR's Air Pollution Odor Diaries Website for more information: https://www.atsdr.cdc.gov/odors/air_pollution_odor_diaries.html

[7] Public Health – Seattle & King County respond to citizen complaints for odors associated with landfilling operations. For more information visit: https://kingcounty.gov/depts/health/environmental-health/toxins-air-quality.aspx

3.0 NOISE AND VIBRATION

Acoustics and vibration assessments were performed by the County's technical subcontracting expert, Quietly Superior, Inc. (QSI), in 2020 and 2021. Noise and vibration occur at varying levels as a result of the operation of the CHRLF and conditions at the Renton site. QSI's assessments were performed to evaluate the measured and projected noise and vibration levels under the No Action and Action Alternatives of the CHRLF Site Development Plan and Facility Relocation (KCSWD 2020d).

Noise and vibration may impact human health when they exceed certain values. This evaluation compares the acoustic and vibration findings of QSI with established safe levels documented in other investigations and the peer-reviewed literature. This assessment is meant to be health-protective and, as such, focuses on peak noise and vibration levels.

This chapter is structured as follows: Section 3.1 discusses potential health impacts associated with exposure to ambient noise and how it relates to CHRLF and the Renton Transfer Station; Section 3.2 describes ground-borne vibrations associated with the CHRLF as well as associated regulations and potential health-endpoints; Section 3.3 discusses limitations of this study; and Section 3.4 concludes with overall discussions and conclusions of the health risks assessed for noise and vibration generated at the CHRLF.

3.1 Noise

This section discusses the generalized health effects associated with ambient noise exposure and the levels at which health effects and/or nuisance, or general annoyance are caused by noise. Noise regulations developed by the state and King County are designed to be protective of human health. These regulations are used to determine whether the measured and projected noise levels generated by CHRLF and/or Renton site operations are likely to cause health effects or irritation/annoyance to nearby residents, visitors to the sites, or other exposed receptors.

3.1.1 Generalized Health Effects Associated with Ambient Noise Exposure

Based on a literature review (*e.g.*, EPA 1972, 1973, 1974, 1978, 1981; Eberhart 1987; Öhrström 1989, 2006; Griefahn 1989, 1990; Suter 1991; Berglund 1999; Bhatia 2007; WHO 2009), the most common physiological effects caused by persistent exposure to environmental noise in humans consist of:

- Hearing loss;
- sleep disturbance or difficulty falling asleep;
- increased blood pressure or heart rate;
- headaches;
- fatigue;
- stomach ulcers; and
- vertigo

Psychological effects that can be induced or exacerbated by exposure to noise can include the following (EPA 1974 & 1978b; Suter 1991; Berglund 1999; Seligman 2001; WHO 2009; Guski 2017):

- speech interference;
- irritation; and
- anxiety

Noise-induced hearing loss is the most well-defined and possibly the most common human health effect of exposure to noise. Major field studies of continuous noise exposure from the 1960s and 1970s – such as Burns and Robinson (1970), Baughn (1973), Passchier-Vermeer (1968), and the U.S. National Institute for Occupational Safety and Health (NIOSH 1973) – have remained unchallenged and relevant to current risks associated with hearing impairment from continuous noise exposure. Data from these studies were used in the EPA determination of the federal standards for avoiding significant adverse effects due to noise exposure. The EPA also identified the maximum permissible levels to protect against impaired speech communication, long-term irritation, sleep interference, hearing loss and other adverse health impacts caused by noise exposure (EPA 1974; Suter 1991).

3.1.2 Noise Levels Associated with Health Effects

EPA identified an annual average exposure level of 70 decibels (dBA) as the safe level that could be experienced over a lifetime without risk of hearing impairment from continuous noise exposure. In addition, EPA determined guidelines for daytime and nighttime noise levels at which individuals would not experience irritation or interference with activities, including sleep disruption, speech communication impairment, and general, long-term annoyance induced by persistent exposure to noise. EPA suggests maintaining an outdoor day-night average sound level (L_{dn}), defined as the cumulative noise exposure during an average annual day, not exceeding 55 dBA. This level will permit normal speech communication at approximately three meters. Maintaining this outdoor L_{dn} will provide an indoor L_{dn} of approximately 40 dBA with windows partly open for ventilation. The nighttime portion of this indoor L_{dn} will be approximately 32 dBA, which is expected in most cases to protect against sleep interference (EPA 1974).

The World Health Organization (WHO) also developed guidelines for community noise based on a systematic review of peer-reviewed literature to determine the lowest levels of noise believed to cause health effects (Berglund et al. 1999). WHO designated guideline values for irritation at 50 or 55 dBA, below which a majority of the adult population will be protected from becoming moderately or seriously annoyed, respectively. WHO also developed night noise guidelines, determining that the annual average night exposure should not exceed 40 dBA. By limiting average nighttime noise exposure to at or below this level, health effects associated with noise-induced sleep disturbance or insomnia, such as elevated blood pressure, should be mitigated.

3.1.3 State and Local (County) Noise Level Recommendations, Standards, and Regulations

The Noise Technical Report submitted by QSI (2020a) reviews the regulations set at the state and county level as they pertain to the CHRLF and Renton sites. This section will describe the regulatory basis for QSI's noise assessment and compare the maximum sound levels established by regulatory agencies with the health-protective levels determined in the previous section.

King County noise ordinance is set forth in King County Code (KCC) Chapter 12.86. Maximum noise levels are defined in Sections 12.86.110 and 12.86.120. The CHRLF is zoned as a rural district. The most sensitive receiving properties are the residential properties adjacent to the landfill on the north, east, and west sides. These are also zoned as rural districts.

In rural districts, daytime maximum permissible sound levels are limited to 49 dBA to protect human health and quality of life (Table 3-1). Nighttime maximum permissible sound levels are required to be reduced by 10 dBA from 10:00 p.m. to 7:00 a.m. on weekdays, and from 10:00 p.m. to 9:00 a.m. on weekends. In addition, the maximum sound during a measurement interval (one minute for a constant source or thirty minutes for a nonconstant source) may exceed the sound level limit by no more than 15 dBA.

Table 3-1. King County – Daytime maximum permissible sound levels. KCC 12.86.110 Environmental Sound Levels

	Receiving Property District	
Sound Source District	*Rural*	*Residential*
Rural	49 dB(A)	52 dB(A)
Residential	52 dB(A)	55 dB(A)
Commercial	55 dB(A)	57 dB(A)
Industrial	57 dB(A)	60 dB(A)

In Renton, 8-7-2 of the Renton municipal code adopts the noise limits specified in chapter 173-60-040 of the Washington Administrative Code (WAC). Chapter 173-60-040 WAC establishes maximum permissible environmental noise levels based on the source and receiving property's Environmental Designation for Noise Abatement (EDNA). In the case of the Renton site, the most sensitive receiving properties are designated as Class A receiving properties. The Renton site is designated as a Class C noise source. The daytime (7:00 a.m. to 10:00 p.m.) maximum permissible environmental noise level for Class A properties receiving noise from a Class C noise source is 60 dBA. The WAC further requires that nighttime (10:00 p.m. to 7:00 a.m.) noise limitation should be reduced by 10 dBA (Table 3-2).

Table 3-2. State maximum permissible environmental noise levels (WAC 173-60-040)

EDNA of Noise Source	***EDNA of Receiving Property***		
	Class A[1]	*Class B*[2]	*Class C*[3]
Class A[1]	55 dBA	57 dBA	60 dBA
Class B[2]	57	60	65
Class C[3]	60	65	70

1. Class A Environmental Designation for Noise Abatement (EDNA) - lands where human beings reside and sleep
2. Class B EDNA - lands involving uses requiring protection against noise interference with speech.
3. Class C EDNA - lands involving economic activities of such a nature that higher noise levels than experienced in other areas is normally to be anticipated.

In summary, in reviewing the noise-related County regulations applicable to the CHRLF, it is clear they are consistent with both the EPA (1981; 1978b; 1972) and WHO (Berglund et al. 1999) noise guidelines to protect against moderate to severe annoyance and adverse health effects. Therefore, these values are expected to be applicable to potentially exposed residential receptors in and around the CHRLF operations. The County noise ordinances outlined above are the most conservative when compared with peer-reviewed literature, federal guidelines, and state regulations (see Tables 3-1 and 3-2). They are also clearly below the noise levels necessary to prevent potential adverse health impacts due to exposure to ambient noise (discussed above in Section 3.1.2) (EPA 1981, 1978b, 1972; Berglund et al. 1999; Öhrström 2006; FTA 2018). Therefore, the County's maximum permissible noise levels applicable to CHRLF operations are not expected to be detrimental to human health.

In reviewing the state regulations applicable to the Renton site (WAC 173-60-040), the daytime noise level of 60 dBA is above the 50 – 55 dBA daytime noise level recommended by the EPA (1981; 1978b; 1972) and WHO (Berglund et al. 1999) to protect against moderate to severe annoyance and adverse health effects. Additionally, the nighttime noise level of 50 dBA exceeds the recommended 40 dBA nighttime noise level recommended by the EPA, WHO and other investigators. Therefore, the results of the noise model for the Renton site will be assessed to determine if residents of nearby residential properties are likely to be adversely impacted by daytime noise levels from the Renton site exceeding 55 dBA, as well as nighttime noise levels exceeding 40 dBA. The results of the noise model will be reviewed in Section 3.1.5 below.

3.1.4 CHRLF and Renton Site Noise Model

In 2020, QSI produced a report on the results of the revised environmental noise assessment performed for the CHRLF 2020 Site Development Plan DEIS. The purpose of this report was to assess the noise impacts associated with each action alternative proposed in the CHRLF 2020 Site Development Plan (described in detail in KCSWD (2020)). QSI's analysis used new and previous measurements of existing community noise levels at receptor sites around the property

perimeters and existing sources on the site (described in more detail below). These measurements were used to develop a model to project future noise levels for all action alternatives at CHRLF and the proposed relocation of support facilities to the Renton site. These models were also used to propose necessary measures for mitigating noise levels so projected noise levels would be in compliance with state and local regulations.

To develop the noise model, QSI measured existing community noise levels at positions around the perimeter of the CHRLF and Renton site properties, as well as noise generated from onsite equipment. The equipment measured included waste transfer trucks, dual trailer tippers, bulldozers, compactors, scrapers or articulated haul trucks with excavator, a gravel screen and excavator. Facility noises, such as North Flare Station (including the main flares, blower, and candlestick flares), Bio Energy Washington (BEW) (for daytime noise evaluation), CAT Shack, truck wash, estimated air conditioning for the administrative and maintenance buildings, maintenance facilities, staff parking, and truck parking (and associated warmup/idling), were also measured to be included in the model (QSI 2020a.).

In addition, CHRLF noise projections were updated in response to DEIS comments to include BEW nighttime noise, cell towers, and associated facilities as noise sources, and to re-evaluate noise levels at a slightly higher elevation associated with the proposed completed top deck height. QSI also analyzed the noise level impacts of King County's proposal to switch from a seven-day to a five-day work week at CHRLF. QSI also conducted noise measurements along the eastern and western property lines of CHRLF to validate the results of the noise model used. Further details are provided in the QSI Noise Technical Report (2020a) and QSI Addendum to Noise Technical Report (2021a).

Based on this analysis, QSI recommended multiple mitigation measures to implement at the CHRLF and Renton Transfer Station to ensure compliance with the County and State noise codes, respectively, and mitigate any potential health effects associated with exposure to ambient noise. Many of the proposed mitigation measures are aimed at reducing truck noise. A detailed discussion of the mitigation measures recommended by QSI is provided in Section 13 of the QSI Noise Technical Report (2020a.) and QSI Addendum to Noise Technical Report (2021a).

3.1.5 Results of CHRLF and Renton Noise Modeling

The CHRLF noise model was developed to assess compliance with local (County) noise regulations. In general, by implementing the mitigation measures recommended by QSI, the noise generated by CHRLF under each action alternative is not expected to exceed County noise limits in the surrounding residential neighborhoods. The exception is that, when including BEW noise in the nighttime noise analysis along with CHRLF operations activity, projected noise levels along the southeast property line corner of the landfill exceed the 39 dBA nighttime noise limit specified in KCC under the "worst case conditions." Projections for worst case conditions model noise conditions for the maximum number of loads per hour in adverse sound propagation

conditions, meaning that sound would tend to travel further. Adverse sound propagation conditions are likely to occur with downwind conditions or when there is a temperature inversion (G. Price, pers. comm., January 2022). To reduce nighttime noise to below 39 dBA, a further reduction of approximately 6 dBA would be necessary. However, whether this reduction is achievable is unknown. It is also unknown whether the worst-case conditions predicted by this analysis will occur. A detailed discussion of the results of the CHRLF noise analysis with the potential mitigation measures is provided in Section 14 of the QSI Noise Technical Report (2020a) and QSI Addendum to Noise Technical Report (2021a).

The nighttime noise levels projected by QSI (2020a) for the Renton site indicate that nighttime noise in the residential neighborhoods adjacent to the Renton site will likely be greater than 40 dBA and less than 50 dBA after mitigation measures have been implemented. The daytime noise in the residential neighborhoods adjacent to the Renton site is projected to be less than 50 dBA after mitigation measures have been implemented (QSI 2020a). A detailed discussion of the results of the CHRLF noise analysis with the potential mitigation measures is provided in Section 21 of the QSI Noise Technical Report (2020a) and QSI Addendum to Noise Technical Report (2021a).

3.2 Vibration

This section discusses the generalized health effects associated with exposure to vibration and the levels at which health effects and general annoyance occur. These levels are compared to state and local vibration rules and regulations to determine if they are protective of human health. This information is used to determine whether the measured and projected vibrations generated by machinery operating at the CHRLF are likely to cause health effects to nearby residents, site visitors, or other exposed receptors.

3.2.1 Generalized Health Effects Associated with Vibration Exposure

Exposure to ground-borne vibrations, which occur in close proximity to heavy machinery that allows vibrations to travel through the ground, can result in strong irritation and annoyance to receptors such as nearby residents. Figure 3-1 illustrates the velocity at which ground-borne vibrations become noticeable and cause such irritating effects. Typically, residential annoyance from frequent vibrations occurs near 72 velocity decibels (VdB), with the threshold of perception for humans near 65 VdB (FTA 2018).

Determining the specific health effects associated with ground-borne vibration is difficult because there has been relatively little research into the human response to vibration (FTA 2018). As such, the threshold of human perception of ground-borne vibrations (65 VdB) is often used as a conservative estimate to avoid potential health effects associated with ground-borne vibrations. It is important to acknowledge, however, that the human response to vibration in buildings is extremely complex and the degree of irritation felt cannot always be explained by the magnitude of a vibration alone (FTA 2018).

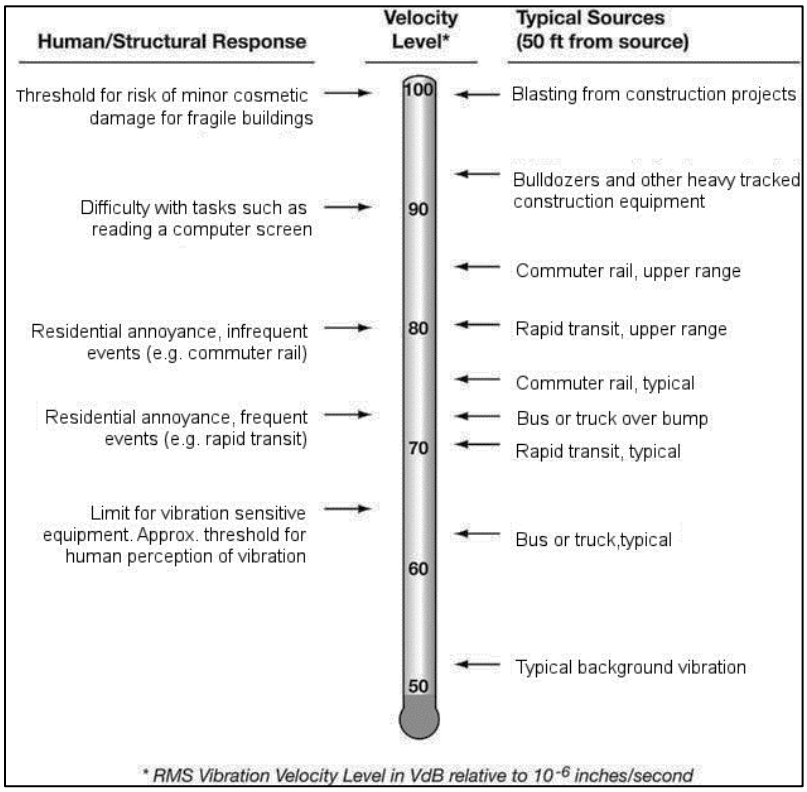

Figure 3-1. Typical levels of ground-borne vibration. Source: FTA 2018.

3.2.2 Federal, State, and Local (County) Vibration Recommendations and Standards.

Currently, there are no legal standards that limit exposure to vibration (OSM 2018), but the Federal Transit Administration (FTA) recommends that in order to limit residential annoyance from frequent vibration events, vibration levels should not exceed approximately 72 VdB (FTA 2018).

3.2.3 CHRLF Vibration Modeling

QSI conducted vibration modeling to assess potential effects associated with vibrations from CHRLF operations. To support this modeling, vibration measurements were taken from vibratory rollers, the highest vibration causing source operating at the CHRLF. Vibratory measurements were taken in Areas 5 and 8 under different operating modes (vibratory action off; mode I: 30 Hz, 0.076-inch amplitude; and vibratory action on; mode II: 36 Hz, 0.035-inch amplitude) (Figure 3-2). Vibration measurements were taken at 50 feet (location 1) and the western property line (location 2) from vibratory roller operating in Area 5 of CHRLF. Measurements were taken at 50 feet (location 4), 408 feet (location 3) and the western property line (location 2) while vibratory roller operated in (active) Area 8 of CHRLF (Figure 3-2). Using these measurements, QSI modeled the vibration levels anticipated under all action alternatives and compared them to the No

Action alternative. Based on the model produced, vibrations on soft soil would be reduced to the 65 VdB perception level at a distance of approximately 287.3 feet operating in mode I and 435.8 feet in mode II. Vibrations produced by vibratory equipment on hard soils would reach the 65 VdB perception level at approximately 766.1 feet operating in mode I and 906.3 feet in mode II (Table 3-3) (QSI 2021b). For a more detailed discussion of the CHRLF vibration analysis see the QSI Vibration Analysis Technical Report (2021b).

Figure 3-2. Image of vibration monitoring layout. Red lines represent locations where vibratory rollers were used to take vibration measurements. Modified from: QSI 2020b.

Table 3-3. Modeled distances for vibration noticeability based on vibratory roller measurements. Modified from: QSI 2020b.

	Lv[1] Reference (VdB)	Distance (ft)	Reference Distance (ft)	Projected Lv[1] (VdB)
Soft Soil Analysis				
Mode II	96.81	287.3	25	65.00
Mode I	102.24	435.8	25	65.00
Hard Soil Analysis				
Mode II	109.59	766.1	25	65.00
Mode I	111.78	906.3	25	65.00

1. Lv is the Root-Mean-Square Vibration Velocity (the square root of average velocity squared, usually over a one-second period) expressed in decibels (VdB) per one micro-inch/second.

3.3 Limitations

Exposure-response relationships for health effects associated with both noise and vibration are not well documented in peer-review literature and the validity of those relationships are heavily scrutinized (Berglund et al. 1999). Therefore, determining health effects associated with specific noise or vibration levels can be difficult and involve a high degree of uncertainty. Additionally, multiple factors influence the human response to noise and/or vibration events. Some factors include:

- Frequency of event(s);
- Duration of event(s); and
- Individual response to event(s).

Other environmental factors (e.g. weather conditions, atmospheric pressure, composition of surrounding structures) also influence how noise and vibration travel and are experienced by a human receptor.

Due to this, a conservative approach was taken in this analysis with the intent of being protective of human health. It is important to note that health effects may not occur at levels exceeding the thresholds identified herein.

3.4 Findings and Conclusions

This section provides a discussion of the overall findings of this chapter and conclusions regarding the potential health risks associated with exposure to ambient noise generated by the CHRLF and Renton site operations and vibration generated at the CHRLF.

3.4.1 CHRLF and Renton Noise Findings and Conclusions

In consideration of the recommendations provided by EPA, WHO, and relevant peer-reviewed literature, significant adverse health effects to the neighboring communities of the CHRLF discussed in Section 3.2.1 can be avoided by operating within the King County noise ordinance maximum permissible levels. Both WHO and EPA recommend an average annual outdoor noise level of 50 – 55 dBA during daytime hours (with a 10 dBA reduction during nighttime hours) to avoid moderate to severe irritation and protect public health and welfare with an adequate margin of safety. KCC 12.86 requires that maximum environmental noise levels not exceed 49 dBA in rural areas during daytime hours and 39 dBA during nighttime hours.

Based on QSI's findings, under all action alternatives, with the proper mitigation measures in place, noise levels originating from the CHRLF are expected to be within the maximum permissible environmental noise levels where residential receptors are located outside the property lines of the facility (QSI 2020a). It is therefore anticipated that little to no adverse health effects or unacceptable nuisance from noise should occur in association with CHRLF operations.

The exception to this general conclusion is that nighttime noise generated by the combination of BEW and nighttime landfilling/trucking activities may exceed 39 dBA in the neighborhood located along the southeast property line of the CHRLF. Based on a review of the noise model projections, under the action alternatives nighttime noise levels at receptor locations in the southeast neighborhood generated from the CHRLF property (including BEW noise) are likely to range between 37.1 dBA and 42.5 dBA with mitigation measures in place. While noise levels above 39 dBA during nighttime hours exceed the King County noise ordinance, annual exposure to these noise levels still falls within the WHO and EPA recommended average annual outdoor noise level (40 – 45 dBA). These levels are set to avoid moderate to severe irritation and protect public health and welfare with an adequate margin of safety, therefore no severe health impacts are expected as a result of these nighttime noise levels.

It is important to consider that nighttime noise levels projected by the noise model are highly conservative and are meant to represent worst-case conditions which are possible but unlikely to occur. It is recommended that further investigation be conducted into whether the worst-case conditions predicted by the noise model can be validated. Based on the results of that investigation, exploration of additional mitigation measures may be necessary to reduce landfilling/trucking and BEW nighttime noise to below County maximum permissible sound levels. If the worst- case conditions of the noise model do occur and no mitigation measures are taken to reduce landfilling/trucking and BEW nighttime noise, acute nuisance or irritation effects, such as difficulty falling asleep or sleep disturbance, may be expected.

Noise levels projected for the Renton site were used to assess compliance with WAC 173-60-040 maximum permissible environmental noise levels. Due to zoning of the Renton site, daytime maximum permissible environmental noise levels for the receiving nearby residential neighborhoods are set at 60 dBA (with a 10 dBA decrease for nighttime hours). While the

projected noise levels indicate compliance with these noise levels, EPA, WHO, and relevant peer-reviewed literature recommend a maximum average annual outdoor noise level of 50-55 dBA during daytime hours (with a 10 dBA reduction during nighttime hours) to avoid moderate to severe irritation and protect public health and welfare with an adequate margin of safety.

Analysis of the noise projections under Alternative 3, Option 3 to relocate support facilities to the Renton site indicate daytime noise levels, after noise mitigation measures are implemented, are not likely to exceed 50 dBA in the neighboring areas where residential housing is located (refer to Section 9.2 and 9.3 in Addendum to Noise Technical Report (QSI 2021a)). Maintaining these noise levels would likely be protective of irritation or adverse health effects caused by ambient daytime noise exposure for those residing near the Renton site.

Nighttime noise level for the nearby residential communities under Alternative 3, Option 3 to relocate support facilities to the Renton site, after mitigation measures are implemented, are projected to be between 40-60 dBA depending on the 5-day or 7-day work week scenarios (refer to Section 9.2 and 9.3 in Addendum to Noise Technical Report (QSI 2021a)). Nighttime noise levels above 40 dBA may cause acute nuisance or irritation effects, such as difficulty falling asleep or sleep disturbance. Although the projected nighttime noise levels are above the EPA and WHO recommended nighttime noise levels, the noise model indicates that noise differences in the surrounding community are generally in the 0-5 dBA range from noise levels.

3.4.2 CHRLF Vibration Findings and Conclusions

QSI took vibration measurements and conducted vibration modeling and found no evidence that any equipment or operations on the CHRLF, under any of the action alternatives, emit vibrations that exceed the FTA's 72VdB threshold for residential annoyance from frequent vibratory events outside or at the property lines. This analysis revealed that, under worst-case conditions (Hard Soil + Mode I), a receptor location (i.e., a place of residence) would need to be within 906 feet of the vibratory source for vibrations to be at the threshold of noticeability (65 VdB). Because the landfill has a 1000-foot buffer surrounding the active areas, vibrations caused by machinery operating on CHRLF are not likely to be noticeable to nearby residents living outside of the boundary. Based on these findings, no mitigation measures are necessary to reduce vibration levels associated with any of the action alternatives. It is therefore concluded that the vibrations generated by CHRLF machinery or processes pose little to no significant risk to human health.

4.0 PEST MANAGEMENT AND DISEASE VECTOR CONTROL

Exposure of humans to pest species and/or animal disease vectors is a key pathway in evaluating the potential for health risk associated with CHRLF operations. This section focuses on compliance with Chapter 173-351 WAC, enforced by Public Health-Seattle & King County (Public Health), as well the Municipal Solid Waste Landfill Permit for the CHRLF (Permit No. PR0014736) issued by Public Health. Compliance with these regulations and permit requirements is intended to ensure that disease vectors such as rodents, birds, insects (e.g. flies and mosquitoes), and other animals or pest species are controlled to protect human health and the environment. This HRA included a review of the disease vector control and pest management practices and measures taken by KCSWD with regard to compliance with federal guidelines (40 CFR 258.22) as well as state guidelines (Chapter 173-351-200(3) WAC) pertaining to disease vector control. This evaluation was conducted to address public comments received in response to the DEIS and to provide a comprehensive HRA. The analysis follows pest- and disease-related definitions and guidance provided by the World Health Organization WHO (2008).

This chapter is structured as follows: Section 4.1 provides a brief introduction to the pest management and disease vector control conditions at CHRLF. Section 4.2 provides a detailed description of bird management practices, including deterrence, harassment, and other practices. Section 4.3 describes the wildlife surveying and monitoring practices followed at the facility. Section 4.4 covers permitting issues, especially concerning bird management and bald eagle issues at CHRLF. Section 4.5 provides a brief overview of insect and rodent pest management practices. Section 4.6 discusses potential impacts from pest species and their mitigation. Section 4.7 discusses mitigation measures to avoid human and environmental impacts, including those from treated biomedical wastes. Section 4.8 provides an overall discussion and conclusions based on this health risk evaluation.

4.1 Disease Vector Control

CHRLF handles and manages a wide variety of putrescible (decaying) materials, which can attract a variety of pest species such as flies, mosquitoes, and other insects or arthropods, as well as rodents, birds, and other organisms. These organisms in turn may become potential disease vectors. For example, birds have been documented picking up and transporting a variety of waste material and debris from the CHRLF facility and depositing it in the surrounding neighborhoods. If this debris were to contain infectious pathogens or chemical contaminants, it could theoretically cause or contribute to disease or toxicity. The federal and state regulations cited above require that owners or operators of all municipal solid waste/landfill units control on-site populations of possible disease-bearing vectors. This includes using pest management techniques appropriate for the protection of both human health and the environment.

Numerous public comments expressed concern regarding potential human exposure to waste or debris from the CHRLF being transported by birds and becoming disease vectors or an exposure pathway to infectious or pathological agents. The King County Waste Acceptance Rule requires that only treated biomedical waste and containerized sharps are approved to go to the landfill, and therefore other residential medical waste is expected to be incidental from households and domestic waste collection.

Accordingly, this chapter of the HRA emphasizes management of birds as pests, especially as potential vectors of disease. A discussion of birds identified as potential disease vectors or health threats is provided in the CHRLF Wildlife Management Plan (King County 2019).

4.2 Bird Management

Pest bird species at CHRLF raise the greatest concern with regard to pest behaviors and potentially acting as vectors that transmit diseases to humans. Section 7.1.4.1 of the DEIS provided a general description of bird management approaches and techniques used to manage pest bird species at the CHRLF. This analysis updates the earlier work, including a document review, including online databases, to evaluate known pest bird species at the facility (USFWS 2019; WDFW 2019a; WDFW 2019b). The pest bird species at CHRLF known to require management and control include:

- Bald eagle
- Glaucous-winged gull
- American crow
- European starling
- Common raven
- House sparrow
- Brewer's blackbirds
- Pigeons (rock dove)

There are substantial concerns regarding bird populations at CHRLF that could negatively impact the health and safety of landfill visitors and surrounding residents and neighbors. Specific concerns include:

- Birds removing and/or transporting waste material from the landfill property and depositing it on neighboring properties).
- Large numbers or flocks of birds defecating on or near the facility, including users of and visitors to the landfill, neighboring property owners, leachate lagoon systems, stormwater detention ponds, etc. Bird fecal matter could be a vector for *Salmonella* or other pathogenic microorganisms.

- Corrosion damage to structures, autos, and machinery and destruction of test port covers for the landfill gas extraction system, caused by fecal deposition from large numbers of flocking and roosting birds and accumulation of fecal matter.
- Damage to buildings and structures caused by nesting birds, including clogged drains and vents with nesting material, and aggressive nest behavior.
- Potential threats to electrical power and health and safety from birds roosting in large numbers on power lines, primarily European Starlings and pigeons (King County 2019).

4.2.1 Deterrent, Harassment, and Other Measures for Managing Bird Pests On or Near Active Site

In light of the ongoing potential pathways for human exposure to birds, bird droppings, etc., KCSWD revised its wildlife management plan to address these pest species; the wildlife management plan developed by Dayton (2019) provides detail on approved and permitted measures designed to manage and control these species. Specific measures include harassment, deterrence, and exclusion where possible. These measures are used specifically on birds at the CHRLF and are designed to prevent them from causing unwanted and possibly harmful exposures to humans and property. The plan offers specific recommendations along with examples for each proposed measure. These include:

- Daily covering of exposed active areas of CHRLF;
- Developing a "no wildlife feeding" policy;
- Deterring wildlife by mowing the grass regularly to deter birds;
- Requiring truck drivers to clean their vehicles prior to departing the CHRLF to reduce the spread of refuse or debris that could attract birds or other pests;
- Installing dedicated tipping (dumping) stations to reduce the size of the overall exposed refuse "face" where refuse may be available to birds (this KCSWD measure reduces the area of exposed refuse in comparison to the past, when multiple waste transfer trucks directly dumped their contents side by side;
- Managing habitat, e.g., by excluding, minimizing, or removing current roosting and nesting habitat;
- Using decoy human silhouettes, which are moved frequently;
- Using pyrotechnics (see discussion below), for which a permit is required for both storage and use of explosives, and which must be done outside of the nesting season;
- Employing lethal enforcement measures only when non-lethal measures are not effective;
- Use of exclusionary netting & bird spikes (e.g, in and around truck wash area);
- Filling in gaps in walls and fences to preclude breeding or nesting opportunities; and
- Using decoy traps targeting juvenile European starling, an unwanted pest species.

As documented in the DEIS and Dayton (2019), CHRLF has attempted to use a number of other deterrent and harassment methods, especially with regard to birds. These are important because, if they are ineffective, the KCSWD permit specifies that non-lethal methods should be attempted before any lethal enforcement is conducted. As an example, KCSWD installed adjustable overhead grid systems in an attempt to deter birds from flying into the CHRLF active areas. This method was not successful as birds were easily able to avoid the grids. KCSWD has subsequently used other measures such as varied grass height, installing high density polyethylene (HDPE) liners, and frequent trash sweeps, to try to discourage the presence of birds lounging at the facility, with varying success.

To help prevent birds and other wildlife from feeding, removing debris, or breeding/nesting in waste materials, and to help control odors and blowing debris, exposed waste in active landfill areas is covered at the end of each day with six inches of compacted soils placed on waste materials (for side slopes and completed portions of each lift). Also, landfill personnel use a semi-automated tarping system to cover the active face of the landfill. Any exposed portion of the material not covered by the tarp is covered with a compacted six-inch soil layer.

Human decoy silhouettes have been used quite effectively. They need to be moved frequently and reinforced with harassment or deterrent measures. To control European starlings, a decoy trap has been effective. This trap has reportedly captured up to 100 juveniles per month (Dayton 2019). Retaining wall nesting exclusions have also been effective to control starlings. Other measures include netting and bird spike exclusions, especially at truck washing stations and CAT shack. Various preventive measures have been used to avoid birds landing on and potentially fouling stationary equipment when not in use.

As noted above, pyrotechnics are also used for non-lethal harassment of pest birds. Pyrotechnics are noise-making "scaring" devices that are fired from a pistol launcher or 12-gauge shotgun. Use of pyrotechnics, for which a permit is required for both storage and use of explosives, must be done outside of the nesting season. Manufacturers and types of pyrotechnic devices used at CHRLF are listed in Dayton (2019). All requirements regarding use of firearms also apply to the use of pyrotechnics.

As specified above, the KCSWD permit only allows lethal enforcement of pest bird species if other non-lethal measures have been tried. Thus, every effort is made to avoid lethal measures if possible. However, some pest bird species are not protected from lethal measures at the site, such as European starlings and pigeons, and it is not uncommon to use lethal measures to lessen the impact on site from these species. Gulls are protected and are regarded as individual birds, as described in Section 4.4.

4.3 Five-Point Wildlife Survey and Monitoring Requirements

Bird and wildlife populations are monitored and counted by KCSWD personnel or subcontractors, using a point survey technique at five locations within the CHRLF. Two observations per day are made, and the data from the surveys is used to assess the efficacy of the bird management plan and allow for further adaptation and refinement of the wildlife management plan. These surveys also provide a basis for determining whether bird use of the area changes over time.

Although the landfill experiences heavy bird activity year-round, the most intense period is July through February, which is outside of the main nesting period for bald eagles. KCSWD has a permit from the US Fish and Wildlife Service (USFWS) allowing the wildlife management contractor to deter eagles using the same types of techniques it uses on other species of birds (KCSWD 2019a). During the less intense period from February through June, bird management activities are currently reduced to monitoring, as well as any possible actions that can be taken to manage bird species depredation under federal and state guidelines (KCSWD 2019a).

Figure 4-1. Example five-point wildlife survey conducted at CHRLF. Source: Dayton 2019.

Dayton (2019) described a five-point wildlife survey, shown schematically in Figure 4-1. The five points on CHRLF currently used, which may change over time, include:
(1) Lower access road
(2) Northwest access road
(3) New asphalt truck entrance
(4) Northeast corner of Area 8; and
(5) Upper center viewpoint of Area 8.

Each of these five viewpoints are located within the facility fence line. As described, the basic protocol is to visit each of the five points for three minutes, taking a 360-degree view to observe all wildlife, and to record each of the individual animals observed during that time. A sample data sheet for recording wildlife using the five-point system is shown in Figure 4-2 below. This data sheet shows date/time of observation; point number; species observed; species count; attractant; behavior; weather at time of observation; harassment needed (yes/no); and remarks.

Conducting periodic or annual wildlife surveys is important to determine numbers of specific pest species present, emphasizing those actively using the site. These surveys can be used to differentiate between species using the site for the short term, such as those migrating through, as opposed to those that inhabit the site over the longer term.

Cedar Hills 5-Point Avian Survey Data Sheet (Example of 3-min Surveys)

Date	Time	Point	Species	Species Count	Attractant	Behavior	Weather	Harassment	Remarks
2-Jun-19	8:13	1	Bald eagle = BAEA	16	Active Site=AS	LF= loafing	PC	N	
2-Jun-19	8:13	1	American Crow= AMCR	23	MP= mitigation pond	lF= loafing	PC	Y	PYRO 23 DISPERSE
2-Jun-19	8:14	1	Common Raven=CORA	9	GR= grass long or short	Feeding	PC	N	
2-Jun-19	8:15	1	European starling= EUST	46	Active Site=AS	FL=fly local	PC	Y	1 LETHAL TAKE 45
2-Jun-19	8:26	2	Killdeer=KILL	2	Gravel=GR	lf= loafing	PC	N	Showing Nesting
2-Jun-19	8:26	2	Bald eagle = BAEA	8	CF= conifer trees	LF= loafing	PC	N	
2-Jun-19	8:29	2	European starling= EUST	23	CF= conifer trees	Fl=fly local	PC	Y	PYRO 23 DISPERSE
2-Jun-19	8:54	4	ELK	8	GR= grass long or short	Feeding	PC	N	
2-Jun-19	8:55	4	American Crow= AMCR	22	Active Site=AS	Feeding	PC	Y	1 Lethal take 21 disperse
2-Jun-19	8:56	4	European starling= EUST	111	Active Site=AS	FL=fly local	PC	Y	Pyro 105 disperse
2-Jun-19	8:56	4	Common Raven=CORA	5	Active Site=AS	Feeding	PC	N	
2-Jun-19	9:19	5	Bald eagle = BAEA	13	Pond Liner	LF= loafing	PC	N	
2-Jun-19	9:19	5	American Crow= AMCR	28	Active Site=AS	FL=fly local	PC	N	
2-Jun-19	9:20	5	Brewer's Blackbird=BRBL	5	Gravel=GR	LF= loafing	PC	N	
2-Jun-19	9:48	5	European starling= EUST	16	Active Site=AS	FL=fly local	PC	Y	1 Lethal Take 14 disperse
2-Jun-19	9:50	3	European starling= EUST	5	Starling Trap	Perched Structure=PS	PC	N	
2-Jun-19	9:51	3	American Crow= AMCR	13	Gravel=GR	FL=fly local	PC	N	

Quick Species Abbreviations
Glacous-winged gull= GWGU
American Crow= AMCR
Bald eagle = BAEA
European starling= EUST

Attractant codes	Behavior Codes		Weather Codes
GR= grass long or short	FL=fly local	MB= mobbing	Partly cloudy=PC
AS= Active site	FP= fly passing	FD= feeding	Cloudy=CL
MP= mitigation pond	LF= loafing	BD= copulating	Sunny= SU
CF= conifer trees	HK=halking insects	DS= dispersing	Overcast= OV

Figure 4-2. Sample data sheet for five-point wildlife survey conducted at CHRLF. Source: Dayton 2019.

4.4 Permitting Management of Bald Eagles and Other Pest Species at CHRLF

The overall permit authorizing pest management activities at CHRLF is the Municipal Solid Waste Landfill Permit (KCSWD 2020c). This permit emphasizes non-lethal deterrent or harassment measures before lethal measures could be justified for any of these avian pests.

KCSWD currently holds a Migratory Depredation Permit (No. MB16717C-0, cited as KCSWD 2020b), which specifies that lethal take is not to be the primary means of control, and that active hazing, harassment, or other non-lethal techniques are required to continue in conjunction with any lethal take measures for migratory or other birds. Regarding bald eagles, the permit further specifies that CHRLF is not authorized to take (kill), capture, or disturb bald eagles or other species listed as threatened or endangered under the federal Endangered Species Act (50 CFR 17). Moreover, the permit does not authorize take or release of any migratory bird nests or eggs on any federal land without federal authorization.

KCSWD uses pyrotechnic measures (loud scaring devices) to deter eagles and other birds primarily from October to March. Pyrotechnic information is listed in Dayton (2019).[8] King county formerly held an Eagle Depredation Permit (EDP), specifying that only secondary deterrent or harassment measures can be used, such as the nightly covering of the active areas at CHRLF. The EDP requirement was canceled by USFWS (J. Dayton, pers. comm. October 2021) due to the large numbers of eagles at CHRLF; it was determined by USFWS that this permit was no longer needed to pursue non-lethal deterrent or harassment measures. Even with recent dramatic increases in bald eagle numbers at the facility compared to past years, the USFWS would not require this permit to be renewed unless active eagle nesting is observed in the vicinity of the site.

A key focus for KCSWD has been to monitor, deter, and potentially harass bald eagles in an attempt to keep them from removing or transporting refuse debris from the facility, which could lead to nuisance or to transporting pollutants or vectoring pathogen-containing waste to surrounding communities. Bald eagles are opportunistic feeders, using the CHRLF as an alternative food source to supplement their natural feeding (Elliott et al. 2009). They are not known to nest on the CHRLF facility. Studies have been conducted focusing on bald eagle migration and home range characteristics, using radio telemetry, digital data, and other tools.

Eagle trapping and relocation of nuisance individuals would be potentially allowed with an EDP. To trap and/or relocate these birds, the following would be required:

- Justification to trap eagles under an EDP permit from USFWS[9];
- Justification to band birds under a US Geological Survey avian banding permit;[10] and
- Data recording requirements for suitable relocation of birds as needed.

Also, under its currently active Migratory Depredation permit requirements and as noted above, KCSWD must ensure that non-lethal harassment measures are followed, although lethal take is allowed as well. The allowed non-eagle annual take under this permit is up to 50 common ravens, and up to 850 gulls (comprised of up to 600 glaucous-winged gulls, 200 California gulls, 25 herring gulls, and 25 ring-billed gulls). Numerous gulls are present on site and may be transporting refuse or debris off site.

[8] It can also be found at https://www.margosupplies.com/us-en/product/comet-banger/, and https://www.margosupplies.com/us-en/product/range-extender-rocket/.
[9] Found at https://www.fws.gov/pacific/eagle/permit_types/popup/DE.html
[10] Found at https://www.usgs.gov/centers/pwrc/science/banding-permit-general-information?qt-science_center_objects=0#qt-science_center_objects

4.5 Insect, Rodent, and Weed Management at CHRLF

Numerous rodent species (squirrels, raccoons, mice, rats, etc.) and insects (flies, mosquitoes, grasshoppers) and/or other arthropods (spiders, mites, ticks, etc.) are also common at the CHRLF, and may exhibit pest behavior. Both Chapter 173-351 WAC, State Criteria for Municipal Solid Waste Landfills, as well as the Public Health Municipal Solid Waste Landfill Permit for CRHLF require that potential vectors and pest species be controlled and managed to protect human health and the environment.

These species are carefully controlled, and few pest problems associated with these organisms have been reported. Few, if any, insecticides or rodenticides are reportedly used at the facility. However, daily compaction and covering of the solid waste eliminates most refuges for rodents and reduces opportunities for fly propagation and breeding. Moreover, KCSWD routinely performs inspections of the landfill for areas of standing or stagnant water that could provide breeding opportunities for mosquitoes. When such an area is identified, landfill personnel remove the standing water, typically by re-grading the area.

Catch basins and other structures containing standing water are regularly sampled by KCSWD personnel or subcontractors for mosquito larvae during the breeding season. If larvae are found, the water is treated with bacteria that specifically target and kill mosquito larvae. Mosquitoes avoid the leachate aeration lagoons because they prefer standing or stagnant water for breeding.

To date, and in large measure due to these practices, there have been no significant reports of rodent, fly, or mosquito problems at the CHRLF. Best management practices (BMPs) currently employed to control these potential vectors are apparently effective and would continue under any of the alternatives under consideration.

Weed control at CHRLF occurs on an ongoing basis, with hand pulling and cutting occurring where feasible, and spot spraying for larger infestations when weather conditions allow. The only herbicide reportedly used at the landfill is triclopyr (trade name Element 3A). The landfill uses 5 to 7 gallons of this herbicide annually (KCSWD 2020b).

4.6 Impacts to Ecosystem - Plants and Animals

The affected environment includes the CHRLF property and 1,000-foot buffers, and all areas within one-half mile of the property line to capture potential effects on wildlife. Upland vegetation communities are shown in Figure 4-3 and wetlands and priority habitats in Figure 4-4. To obtain information about plants and animals potentially affected by CHRLF operations, several previous evaluations were completed at the facility. These included data received from the USFWS, and Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species. This review indicated a wide variety of species, including salmonids downstream of the

site and a biodiversity corridor along the west edge of the landfill (WDFW 2019a; see Figure 4-4). The corridor connects the Cedar River biodiversity areas to the Squak Mountain biodiversity area, and contains a variety of habitats potentially supporting a wide range of native wildlife, including elk, deer, cougar, bear, salmonids, woodpeckers, owls, hawks, and herons (WDFW 2019).

Wildlife currently reported to use the landfill buffer areas coexist with the noise and potential disturbances associated with landfill operations. With the exception of rodents, birds, and ungulates (deer and elk), wildlife use of the landfill area itself is reported to be minimal during active landfill operations (KCSWD 2020b), which would limit the exposure of plants and/or animals to toxic or pathogenic materials or debris associated with CHRLF operations. As noted above, it is well documented that numerous pest species, especially birds, ingest or are exposed to a variety of refuse or debris from the facility. It is not known whether such material causes mortality or other ecotoxic effects. It is perhaps more likely that these pest species could potentially transport noxious materials to human communities.

This evaluation indicates that there would be no expected significant unavoidable adverse impacts to upland vegetation, noxious weeds, wetlands, and /or wildlife at CHRLF site during construction or operation of the any of the alternatives, including relocation options. This includes prevention of infestations of key noxious weeds at the CHRLF. Many of the measures used to control these invasive species are described in King County (2019). Additional measures to minimize or avoid further impacts to upland vegetation, wetlands, and wildlife include are discussed in Section 4.7).

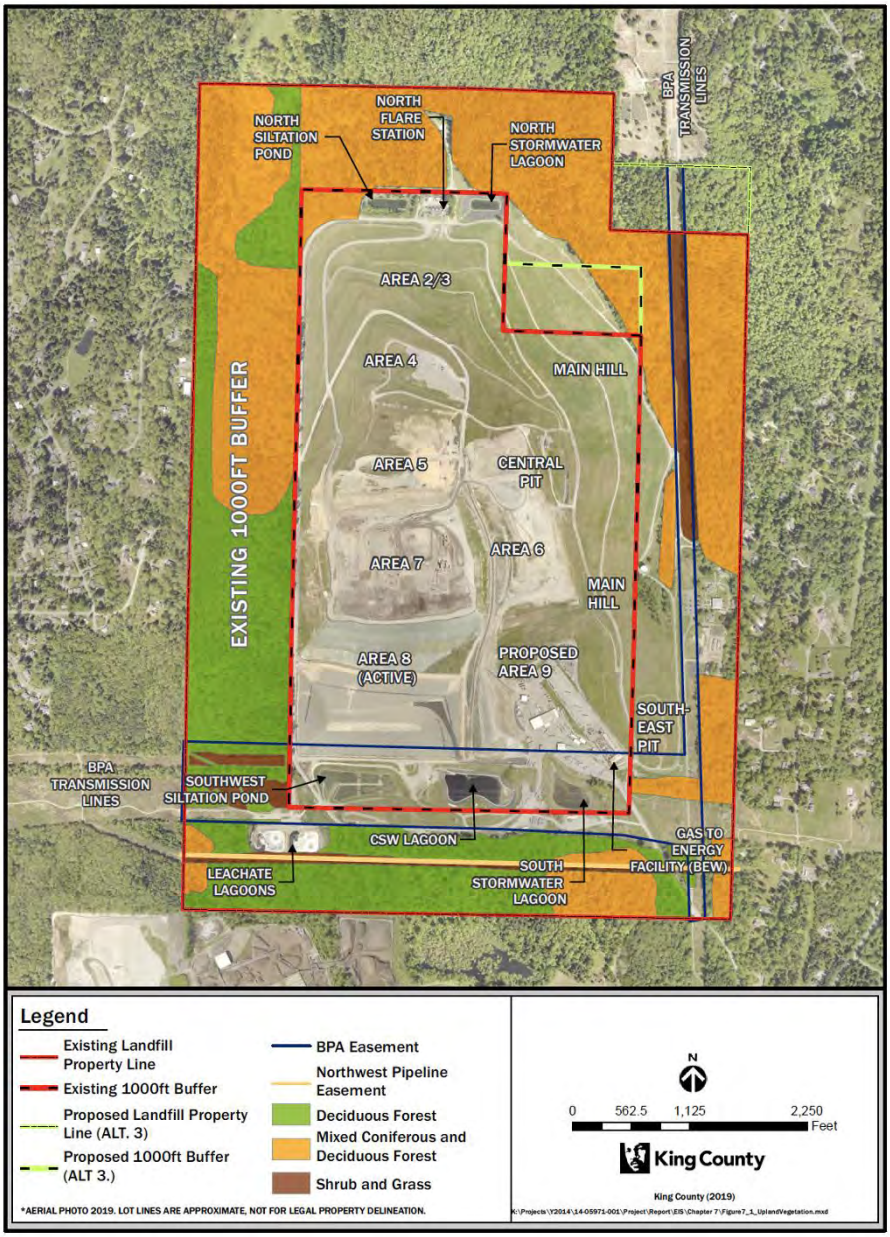

Figure 4-3. Upland vegetation communities at CHRLF. Source: KCSWD 2020c.

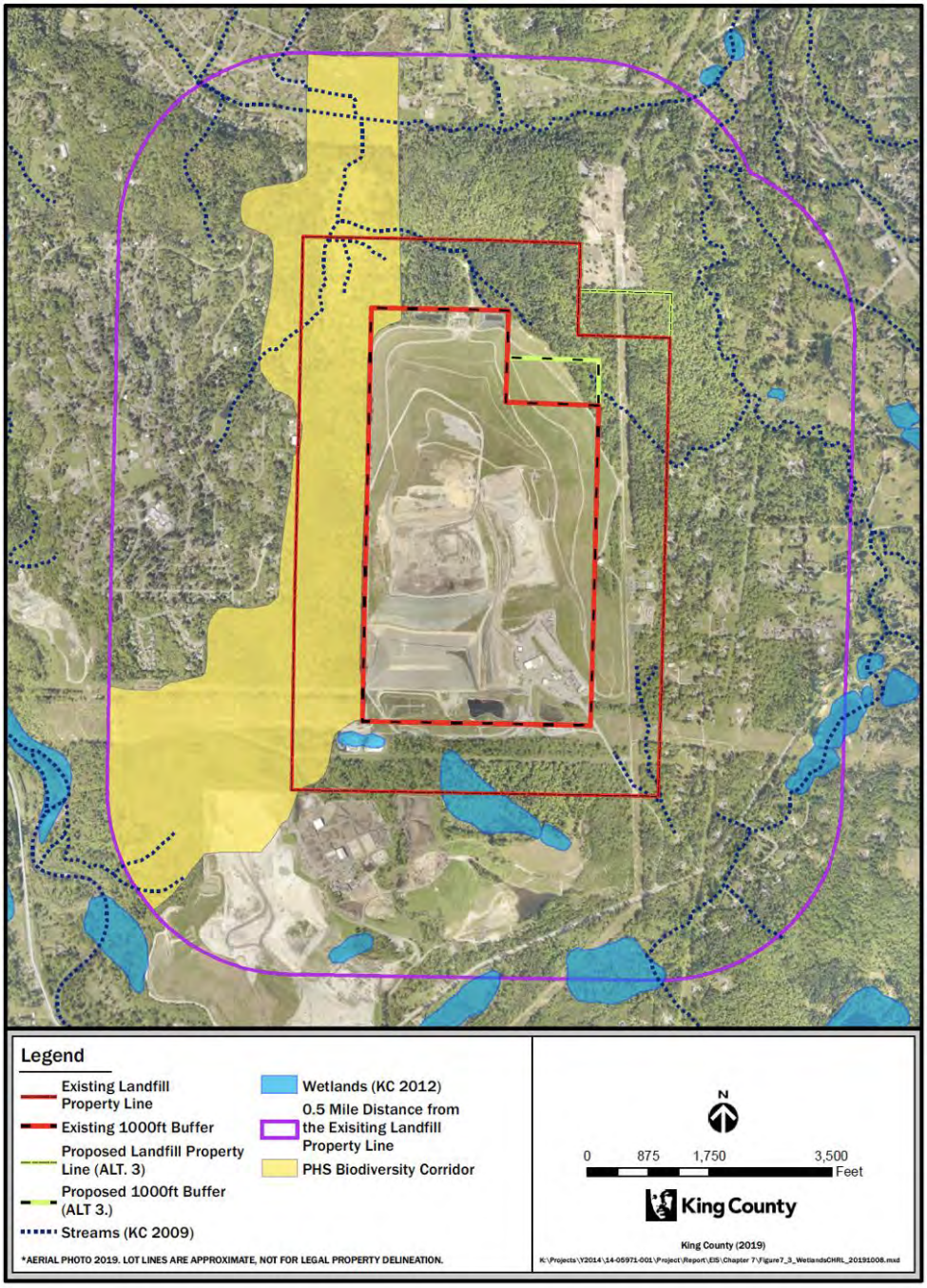

Figure 4-4. Wetlands and priority habitats in the vicinity of CHRLF. Source: KCSWD 2020c.

4.7 Mitigation Measures for Birds and Other Pest Species

KCSWD implements BMPs and appropriate management measures for control of birds and other pest species, as discussed above. Part of this evaluation is to review individual bird and pest mitigation measures implemented at CHRLF to minimize potential impacts to human health and the species themselves. These updated measures would be expected to continue under all alternatives under evaluation, including the No-Action alternative.

Regarding pests such as mosquitoes, insects, flies, rodents, or other pest species, there have been no significant rodent, fly, or mosquito control problems at CHRLF due to numerous BMPs and control measures; as noted previously, these include daily cover and compaction of solid waste, and monitoring for elimination or treatment of standing water. It is noted that the BMPs currently employed at the facility to control disease vectors would continue under any of the proposed alternatives.

The CHRLF bird management protocols are largely successful, based on abundant bird and wildlife data collected in part by the County's bird management and wildlife specialist. An example is secondary poisoning, which occurs when a raptor (e.g. eagle, hawk, or owl) consumes a rodent or other prey animal that has been poisoned by a rodenticide, and when the raptor consumes the poisoned prey, the raptor is then itself exposed to rodenticide poisoning (USFWS Fact Sheet).

This is known to occur at other facilities and locations, but there is no recorded evidence of secondary poisoning at CHRLF. The wildlife expert conducting the wildlife surveys at the facility is vigilant to detect any evidence of such poisoning, and has reported no such occurrence. This vigilance is a *de facto* BMP to protect these raptors. Accordingly, no additional measures or new field data should be required to successfully manage birds and other species.

In addition, continuous monitoring will be conducted to ensure program effectiveness. Wildlife currently coexists with landfill operations and noise. When landfill operations eventually end, the remaining disturbed areas will be revegetated with an approved landfill cover, and wildlife use of the site would be expected to increase. Under all alternatives, salmonid habitats will be protected. Indirect impacts could occur to wetlands, streams, and buffer areas if any of the proposed actions cause impacts such as an influx of sediments, changes in wetlands or other hydrology, or changes to local drainage patterns. If such effects occur, further mitigation may be required.

Numerous mitigation measures are being implemented to minimize impacts to upland vegetation, wetlands, and wildlife. They include:

- Preserving as many trees as possible by integrating them into the footprint of any relocated facility.

- Replanting additional trees in buffer areas surrounding the landfill.
- Revegetating areas temporarily cleared for construction activities, but not permanently removed with native vegetation appropriate to the landfill.
- Controlling known populations of noxious weeds before ground-disturbing activities to avoid spread.

4.7.1 Treated biomedical waste practices

Biomedical waste is defined as waste material that could contain pathogenic microorganisms infectious to humans. Clinics, hospitals, or other health care facilities are examples of biomedical waste generators. KCSWD only accepts treated biomedical waste at its facilities, including properly containerized sharps. Home-generated sharps are only accepted in designated kiosks at four transfer stations—Bow Lake, Factoria, Vashon, and Shoreline—and commercially-generated sharps are delivered directly to the landfill via a Waste Clearance Decision, which requires certain conditions to be met under the King County Waste Acceptance Rule and Board of Health Solid Waste Regulations, Title 10 of the King County Board of Health Code. This waste is required to be sterilized via autoclave or other means, and be no longer capable of transmitting disease, and must be accompanied by a Waste Clearance Decision, as noted above, before it can be accepted by CHRLF. Therefore, if bald eagles or other birds potentially transport such treated waste from the facility, as reported in some of the public comments, it is likely a negligible risk of human exposure to infectious disease.

Home-generated medical waste is not subject to the same requirements. They are acceptable under Title 10 and the Waste Acceptance Rule when blood, excrement, or other bodily fluids are absorbed by materials such as bandages, sanitary napkins or commercial absorbents so that the fluid will not be released from the material and/or become airborne during normal solid waste handling practices. As such these materials could conceivably contribute to a risk of exposure. However, KCSWD personnel conduct random screening of waste deposited at the CHRLF, and when biomedical or similar waste is identified, it is recorded as part of the inspection (J. Dayton, pers. comm Nov. 2022). Also, as noted below, a literature review indicated no reports throughout the US of any biomedical or related waste being transported from a solid waste landfill and causing any known disease.

Literature was reviewed concerning the potential reports around the issue of birds or other organisms transporting biomedical waste and potentially vectoring disease, and this review disclosed no reported cases (Daniels Health 2021; WHO 2014). This is due in part to the fact that the medical and health industries have made significant advances worldwide since the 1990s in developing and enforcing biomedical regulations for handling and disposal of wastes (WHO 2014; Dave and Bhatt 2020). A variety of technologies are available that disinfect (e.g. using antibiotics or oxidizing agents), sterilize (e.g. using autoclaving) chemically neutralize, and/or

contain the biomedical waste, and this in part has limited potential for transmission, especially in developed countries. No such cases have been identified in the US or abroad (WHO 2014).

4.8 Findings and Conclusions

The HRA review and evaluation of pest management and disease vector control measures implemented at CHRLF conclude that BMPs effectively control and manage bird and other pests at the facility and do so in a manner that reduces or eliminates human risk or exposure. It is also concluded that treated biomedical waste is not a viable pathway for human exposure to infectious microorganisms, including bacteria, viruses, and other pathogens. Required measures are proactive and comprehensive to ensure that no human exposure or health effects could reasonably occur to site visitors or surrounding residents in association with the pest organisms present at the site. Home-generated medical waste is not subject to the same requirements as facility-generated medical waste, although KCSWD makes every effort to reduce or eliminate the chance that birds or other pests could transport home-generated waste off site by spot-checking and inspecting waste as it arrives and is processed. It is noted that the literature review discussed in Section 4.7.1 includes home-generated biomedical waste as well, and there is no documented evidence that home-generated waste from a solid waste landfill has led to disease or pathogenesis.

Control measures and BMPs implemented at the CHRLF to protect the environment and surrounding ecosystem, including species of potentially vulnerable plants and animals, were evaluated. Measures taken to protect the ecosystem in and around the facility are systematic, carefully considered, and in compliance with regulatory requirements. It is concluded that adequate control and mitigation measures have been implemented to protect these plant and animal species, and these actions have prevented and continue to prevent any ecological risk or hazard associated with CHRLF or surrounding operations.

5.0 SURFACE AND STORMWATER

Precipitation that falls within the property limits of the CHLRF either infiltrates or produces runoff that is then collected and removed from the site (stormwater) or enters a natural feature such as a creek or wetland (surface water). Stormwater at the landfill is managed via several systems depending on the path and required treatment before release from the site. There are three distinct pathways that on-site stormwater may follow. Stormwater that does not come into contact with landfill waste (clean stormwater) is collected, discharged to stormwater ponds on site, and then discharged to surface waters on the perimeter of the property. Stormwater runoff that comes into contact, or potentially comes into contact, with landfill wastes is collected in a conveyance system separate from clean stormwater and is handled as contaminated stormwater (CSW). Leachate consists of liquid (e.g., precipitation) that has passed through or emerged from solid wastes. Leachate at the CHRLF is collected in the leachate collection systems, separate from the clean stormwater conveyance system. Leachate and CSW are routed to the leachate pretreatment system and are then discharged to the King County Wastewater Treatment Division (KCWTD) wastewater treatment system.[11]

On-site stormwater management processes, CHRLF stormwater and wastewater effluent discharge monitoring reports, KCWTD wastewater discharge monitoring reports, and water quality data of receiving surface waters were reviewed in this assessment. Available monitoring and other environmental data have been compared with regulatory guidelines and benchmarks, and in some cases with peer-reviewed literature, to evaluate whether any adverse human or ecological health effects could occur in association with stormwater runoff originating from the CHRLF facility.

This chapter is structured as follows: Section 5.1 identifies surface waters receiving clean stormwater runoff from the CHRLF, evaluates receiving surface water quality and the on-site management of clean stormwater, and discusses the potential risks associated with clean stormwater runoff generated by the CHRLF; Section 5.2 discusses the on-site management, collection, and conveyance of CSW; Section 5.3 discusses the on-site management, collection, and conveyance of leachate; Section 5.4 discusses potential exposure pathways that are associated with CHRLF CSW and leachate; Section 5.5 discusses the potential risks associated with CHRLF CSW and leachate; Section 5.6 discusses limitations of this assessment; and Section 5.7 summarizes and provides conclusions regarding the potential risks associated with surface and stormwater discussed in this chapter.

[11]Section 5.1.2 of the CHRLF Final EIS provides a detailed description of the on-site surface water and stormwater management systems in place for managing precipitation that falls within the CHRLF property limits.

5.1 Clean Stormwater

Clean stormwater runoff (stormwater that does not come into contact with landfill waste) generated at the CHRLF flows to one of five on-site drainage sub-basins: north, northeast, southeast, south, and southwest (Figure 5-1). Clean stormwater runoff from these on-site drainage sub-basins is either collected and discharged into surface waters or infiltrates in native soils prior to reaching surface waters. Clean stormwater runoff from the north end of the landfill discharges to surface waters within the Issaquah Creek basin. Clean stormwater runoff from the south end of the landfill infiltrates into private property or roadside drainage ditches located within the Lower Cedar River basin prior to reaching any surface waters.[12]

Populations that are most likely to be potentially exposed to surface waters containing clean stormwater runoff originating from the CHRLF are those that use or come into direct contact with surface waterbodies downstream of the north end clean stormwater discharges that occur within the Issaquah Creek regional basin. Clean stormwater runoff from the south end of the property infiltrates either entirely on private parcels or into underground infiltration systems along Cedar Grove Rd. and therefore represent very minimal risk of exposure to the general public.

[12] For a detailed description of the on-site drainage sub-basins, see Section 5.1.2 of the CHRLF Final EIS.

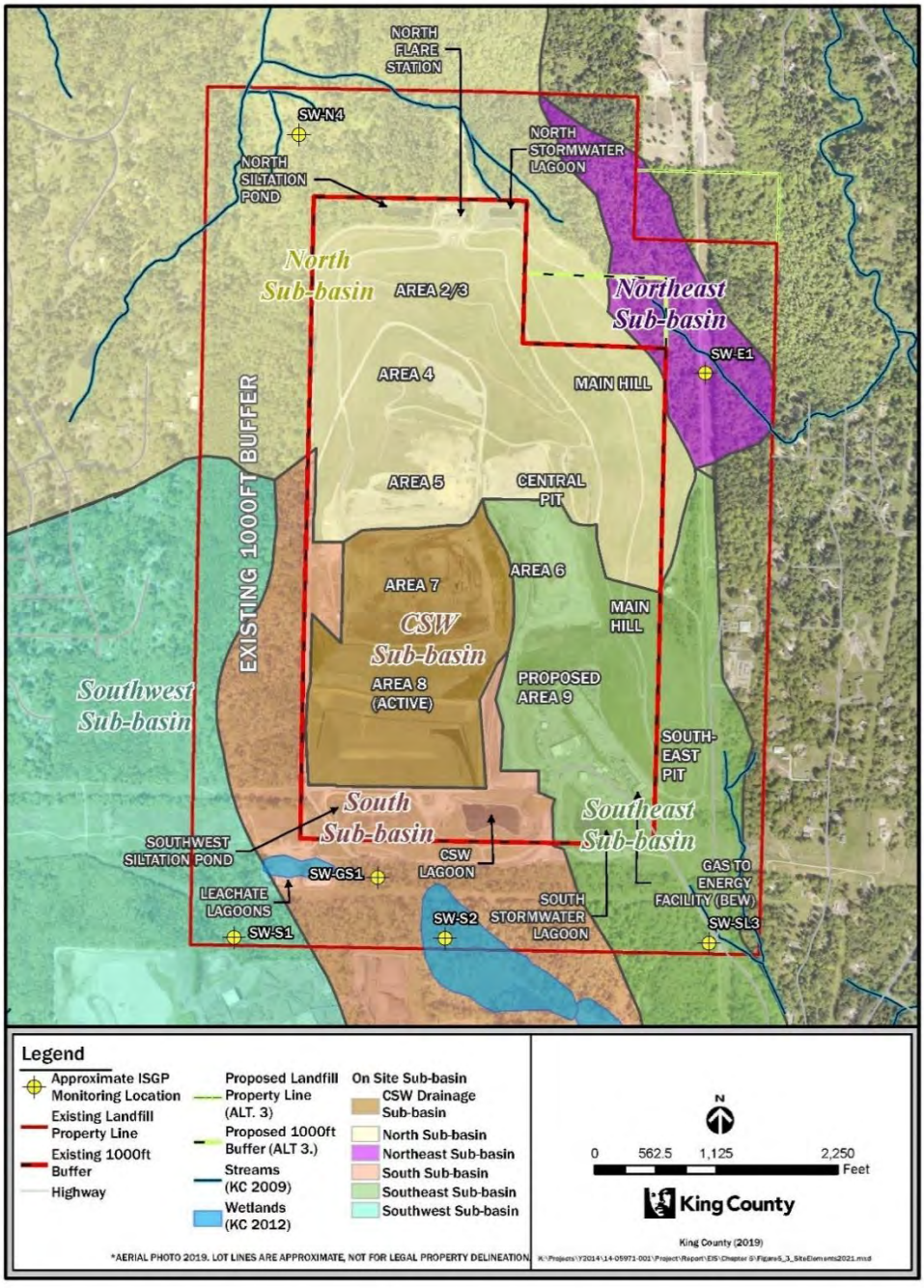

Figure 5-1. On-site drainage sub-basins of the Cedar Hills Regional Landfill. Source: KCSWD 2020d.

5.1.1 Potential Impacts of Stormwater Runoff to Surface Waters

A concern of nearby residents and community members regarding the potential future development and expansion of the CHRLF is the potential human and ecological health impacts associated with exposure to stormwater runoff generated by the CHRLF that may contain a human health hazard. Potential impacts of stormwater runoff would be related to construction activities that occur on the CHRLF, general landfilling activities, or potential contamination entering receiving waters. Without proper pretreatment or collection protocols, potential ecological or human health hazards could include:

- Heavy metals contamination
- Toxic organics contamination
- Oil and grease (petroleum hydrocarbon) contamination
- Excessive nutrients
- Increased biochemical oxygen demand (BOD)
- Increased total suspended solids (TSS) or turbidity
- Increased stream flow rates
- Changes to pH
- Changes to waterbody temperatures
- Introduction of pathogens

Although clean stormwater is isolated from landfill waste prior to discharge to receiving surface waters, these considerations were the major focus of the review of potential impacts of surface and stormwater generated by the CHRLF to human and ecological health.

5.1.2 Potential Exposure Pathways of CHRLF Clean Stormwater

Populations that are most likely to be potentially exposed to clean stormwater runoff originating from the CHRLF are those that use or come into direct contact with surface waters downstream of CHRLF stormwater discharge points. Clean stormwater runoff from the south end of the property infiltrates either entirely on private parcels or into underground infiltration systems along Cedar Grove Rd. prior to reaching the Cedar River and therefore does not represent a direct exposure pathway to the general public. Therefore, potential exposure to clean stormwater originating from the CHRLF could only occur through direct contact with clean stormwater discharged in the Issaquah Creek basin (via downstream discharges to McDonald Creek which ultimately discharge into Issaquah Creek).

5.1.3 Water Quality of Receiving Surface Waters (Regional Basins)

Multiple sources of data regarding the overall quality of the receiving waters directly and indirectly affected by clean stormwater generated from the CHRLF were reviewed in order to perform an evaluation of potential acute and chronic health effects from these discharges. Data

sources reviewed to complete this evaluation include:

- Water quality monitoring data for Issaquah Creek basin;
- Macroinvertebrate environmental monitoring data for the Issaquah Creek basin;[13]
- CHRLF quarterly environmental monitoring reports for surface and stormwater quality; and
- CHRLF annual stormwater discharge monitoring reports (DMRs) reported to Washington State Department of Ecology (Ecology).

The data sets reviewed were compared to regulatory standards and guidelines (e.g., Ecology's water quality standards in Chapter 173-201 of the Washington Administrative Code (WAC)), numerical indices (e.g., Water Quality Index, Puget Lowlands Benthic Index of Biotic Integrity (B-IBI)), and peer-reviewed literature to assess the overall water quality of waterbodies that receive clean stormwater discharges. Due to the lack of evidence that clean stormwater from the CHRLF discharges to the Cedar River (surface water flow directed toward the Cedar River infiltrates either on private parcels or into underground infiltration systems along Cedar Grove Rd. prior to reaching the Cedar River) and there is no anticipated discharge of clean stormwater from the landfill to the Cedar River, an evaluation of the water quality of the Cedar River or regional Cedar River basin was not conducted.

5.1.3.1 Receiving Surface Waters (Regional Basin) Monitoring

Chapter 173-201A of the WAC establishes the Water Quality Standards for Surface Waters of the State of Washington to protect public health and public enjoyment (beneficial uses) of the waters as well as the propagation and protection of fish, shellfish, and wildlife. These regulations are in accordance with EPA regulations under the Clean Water Act which establish the basic structure for regulating water quality standards and discharges of pollutants into waters of the United States.

Specific criteria are set to ensure that the beneficial uses of a waterbody are maintained. To protect beneficial uses designated for the Issaquah Creek basin, stream temperatures, dissolved oxygen levels, pH, turbidity, and bacteria levels are monitored by Ecology (Table 5-1).

[13]https://green2.kingcounty.gov/streamsdata/watershedinfo.aspx?Locator=0631

Table 5-1. Water quality standards for Issaquah Creek basin to support beneficial uses

Parameter	***Criteria***
Temperature (outside of supplemental spawning temperature*)	16°C
*Supplemental Spawning Temperature (for Core Summer Salmonid Habitat)	13°C between September 15th to June 15th
Dissolved Oxygen (mg/L)	9.5
pH (S.U.[a])	6.5 – 8.5
Turbidity	5 NTU[b] over background when the background is 50 NTU or less; or A 10 percent increase in turbidity when the background turbidity is more than 50 NTU
Bacteria (E. Coli criteria are expressed as CFU[c] or MPN[d])	To protect recreational use: E. coli organism levels must not exceed a geometric mean value of 100 CFU or MPN per 100mL, with not more than 10 percent of all samples (or any single sample when less than 10 sample points exist) obtained for calculating the geometric mean value exceeding 320 CFU or MPN per 100mL.[e, f]

[a] S.U. = standard units
[b] NTU = Nephelometric Turbidity unit
[c] CFU = colony forming units
[d] MPN = most probable number
[e] A minimum of three samples is required to calculate a geometric mean for comparison to the geometric mean criteria. Sample collection dates shall be well distributed throughout the averaging period so as not to mask noncompliance periods.
[f] When averaging bacteria sample values for comparison to the geometric mean criteria, it is preferable to average by season. The averaging period of bacteria sample data shall be ninety days or less.

King County Water and Land Resources Division (WLRD) also conducts monthly baseline water quality monitoring for the Issaquah Creek and basin. Eight water quality parameters are monitored at multiple stations located throughout the basin: dissolved oxygen, pH, temperature, turbidity, TSS, fecal coliform, total phosphorus, and total nitrogen. WLRD uses these water quality parameters to calculate a Water Quality Index (WQI) score that characterizes the long-

term, overall health of Washington state streams[14]. WLRD then categorizes streams as:

- "low concern" if stations score 80 and above on the WQI and do not fail water quality standards or guidelines;
- "moderate concern" if stations score between 40 and 80 on the WQI; or
- "high concern" if water quality at stations scores below 40.

In addition to water quality samples, WLRD also collects and analyzes benthic macroinvertebrates residing in Issaquah Creek to monitor stream health. By analyzing the different types (taxa) of benthic macroinvertebrates that live in and on the bottom of streambeds, benthic ecologists can determine the overall health of a stream as affected by water quality, habitat conditions, and other factors. To characterize stream health, WLRD uses a scoring system called the B-IBI[15] . The B-IBI classifies streams into five categories based on the number and type of macroinvertebrates found in stream samples:

- Excellent (B-IBI score of 80-100);
- Good (60-80);
- Fair (40-60);
- Poor (20-40); or
- Very Poor (0-20).

B-IBI scores are often aggregated to characterize the overall health of a basin.

WLRD has multiple water quality and macroinvertebrate environmental monitoring points within the Issaquah Creek and basin both of which receive clean stormwater discharge from the CHRLF. The following discussion uses these water quality indices to evaluate surface waters receiving clean stormwater discharges from the CHRLF.

5.1.3.2 Issaquah Creek Basin

The Issaquah Creek basin is one of the three most significant basins in urbanized King County with the upper and middle parts of the basin identified by the County as a "regionally significant resource area." This is in part due to Issaquah Creek subarea's exceptional fish habitat that supports important fish species such as Chinook, coho, and kokanee salmon as well as steelhead trout. Both McDonald Creek and Issaquah Creek lie within the Issaquah Creek drainage basin. Ecology identifies the beneficial uses for the Issaquah Creek basin as: water supply (domestic, industrial, agricultural, and stock), aquatic life (core summer salmonid habitat), primary contact recreation, and miscellaneous (harvesting, commerce and navigation, boating, and aesthetics) (Chapter 173-201A WAC: Water Quality Standards for Surface Waters of the State of

[14] For more information about how a WQI is calculated visit: https://green2.kingcounty.gov/streamsdata/WQI.aspx
[15] For more information about how the B-IBI is calculated visit: https://pugetsoundstreambenthos.org/About-BIBI.aspx

Washington). King County began water quality monitoring in 1972 to ensure these beneficial uses are maintained in the Issaquah Creek basin (King County 2016b).

Issaquah Creek is on Ecology's 303(d) list for violation of DO and water temperature standards. There is also an EPA-approved Issaquah Creek Basin Bacteria total maximum daily load plan in place and implemented for fecal coliform bacteria (discussed further below in Section 5.1.3.2.1).

5.1.3.2.1 Issaquah Creek Basin Water Quality Monitoring

Water quality of Issaquah Creek Basin is monitored at three different monitoring stations. Station A631 is located on the mainstem upstream of the state fish hatchery, 30 feet upstream from the bridge on W Underwood Blvd in Issaquah, WA. Station A632 is located on the North Fork near East Lake Sammamish Parkway SE. An additional site, station 0632, was established at the confluence of North Fork and Issaquah Creek.

The closest station downstream of the landfill's north-end monitoring locations that contribute clean stormwater to the Issaquah Creek basin is station A631 (Figure 5-2). Although overall water quality reported from this sampling station cannot be directly attributed to clean stormwater inputs from the north-end on-site drainage basins of the CHRLF, if the parameters monitored at station A631 are meeting the surface water quality standards (Chapter 173-201A WAC), it can be generally determined that clean stormwater inputs from the north-end of the CHRLF are not impacting the receiving surface water negatively. For water quality parameters not meeting the surface water quality standards, the most likely causes are discussed below. Other nearby sources likely influencing overall water quality of receiving waters in the Issaquah Creek basin include, but are not limited to, stormwater runoff from nearby compost, soil, gravel, and sand suppliers, and other impervious surfaces like highways and roads.

Issaquah Creek's overall WQI score at station A631 is 77, indicating water quality was of moderate concern based on data collected between 10/1/2019 and 9/30/2020. This index score expresses results relative to the levels required to maintain beneficial uses according to criteria in Washington's Water Quality Standards (Chapter 173-201A WAC) for temperature, pH, fecal coliform bacteria, turbidity, and dissolved oxygen. Additionally, while nutrient and sediment measures have no standard, results are expressed relative to guidelines for the specific eco-region the stream is located within.

The water quality parameters indicate that Issaquah Creek does not meet the water quality standards or guidelines for fecal coliform and total phosphorus at station A631. Untreated, contaminated stormwater runoff due to increased development is the primary pollutant impacting overall stream water quality in King County. In addition to stormwater, waterfowl and pet wastes, poor livestock manure management, and failing septic systems can also be major sources of fecal coliform bacteria in stream systems in urban, suburban and agricultural areas.

Elevated phosphorus concentrations can also be linked to similar sources as fecal coliform bacteria as high phosphorus concentrations can be found in fecal material and fertilizers. Areas undergoing development are also likely to cause increased phosphorus concentrations to nearby streams, as phosphorus occurs naturally in soils, as well as organic materials. A combination of these factors is the most likely cause of exceedances to fecal coliform bacteria and total phosphorus levels in Issaquah Creek.

Historically, water quality in Issaquah Creek between 2000 and 2004 remained high with WQI scores indicating low concern. Water quality scores varied between 2005 and 2008, fluctuating between moderate and low concern. Between 2008 and 2014, budget cutbacks forced King County to reduce its water quality monitoring program, leading to elimination of monitoring at station A631. In 2014, when monitoring resumed at the station, water quality had diminished significantly, as indicated by a WQI score in the mid-50's. In 2015, Issaquah Creek at station A631 WQI score increased to the high-70's, remaining in the moderate concern category, but significantly improved from 2014. Issaquah Creek at station A631 has remained in the moderate concern category since.

5.1.3.2.2 Issaquah Creek Basin Benthic Macroinvertebrate Monitoring

B-IBI scores from sites downstream of CHRLF within the Issaquah Creek basin (Figure 5-3) collected from 2013 by WLRD were aggregated and the mean of these scores was calculated. These scores ranged from 60 to 97.9 (Figure 5-3). The mean B-IBI score f or these sites was 82.4/100. This classifies the sites downstream from the CHRLF within the Issaquah Creek basin to be in good health.

Although numerous factors - such as urban or suburban development, land use, proportion of impervious surface cover, and many others - can influence benthic macroinvertebrate community assemblages within a stream segment, the clean stormwater runoff from the north-end basins of the CHRLF that is discharged to the receiving surface waters located within the Issaquah Creek basin is generated from areas that are covered by vegetation and does not come in to contact with landfill waste. Surface and stormwater leaving the CHRLF must also meet discharge benchmarks prior to being discharged into receiving surface waters (discussed further in Section 5.1.4 below).

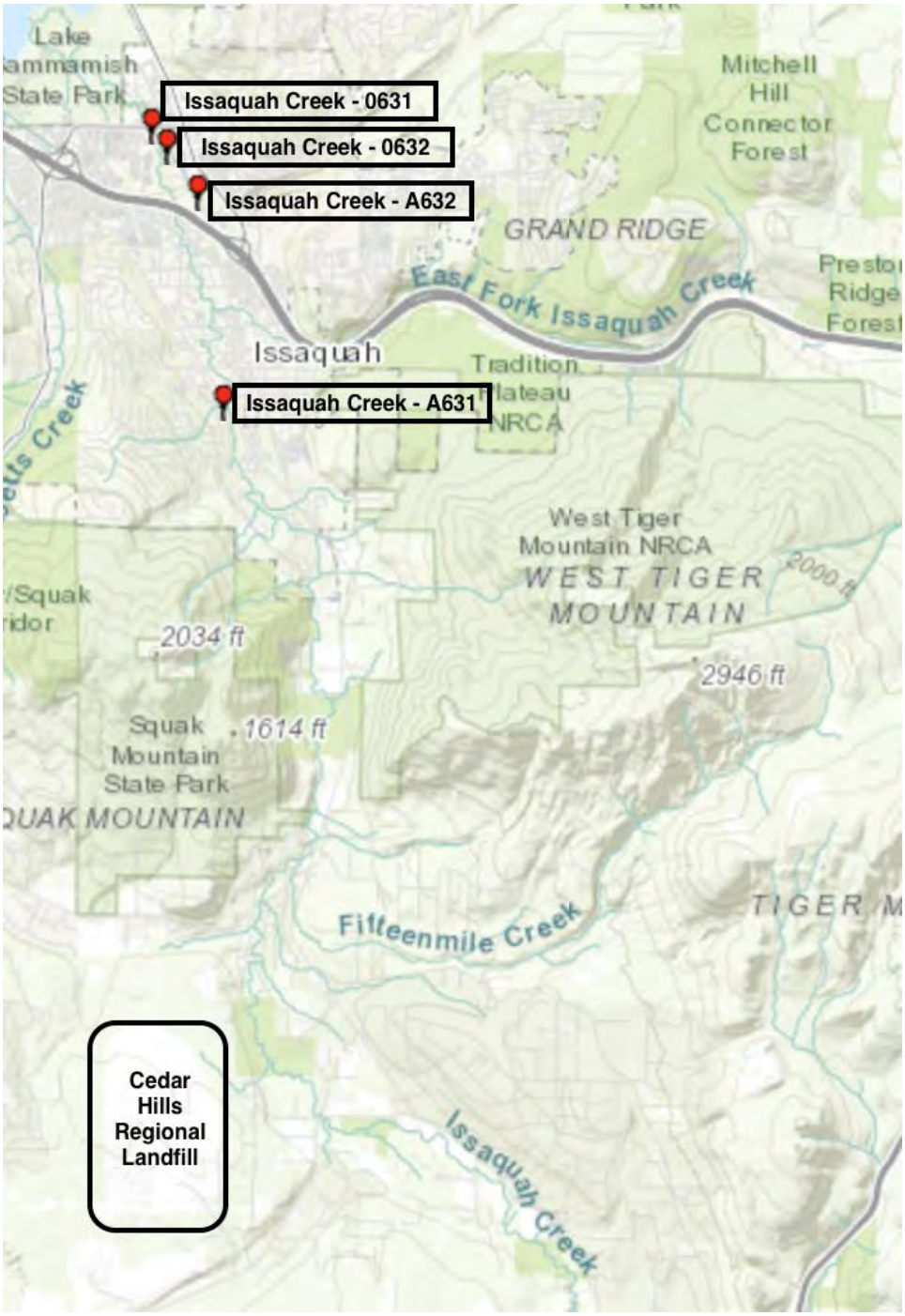

Figure 5-2. Schematic of WLRD Issaquah Creek water quality sampling locations in relation to CHRLF. Source: King County 2016c.

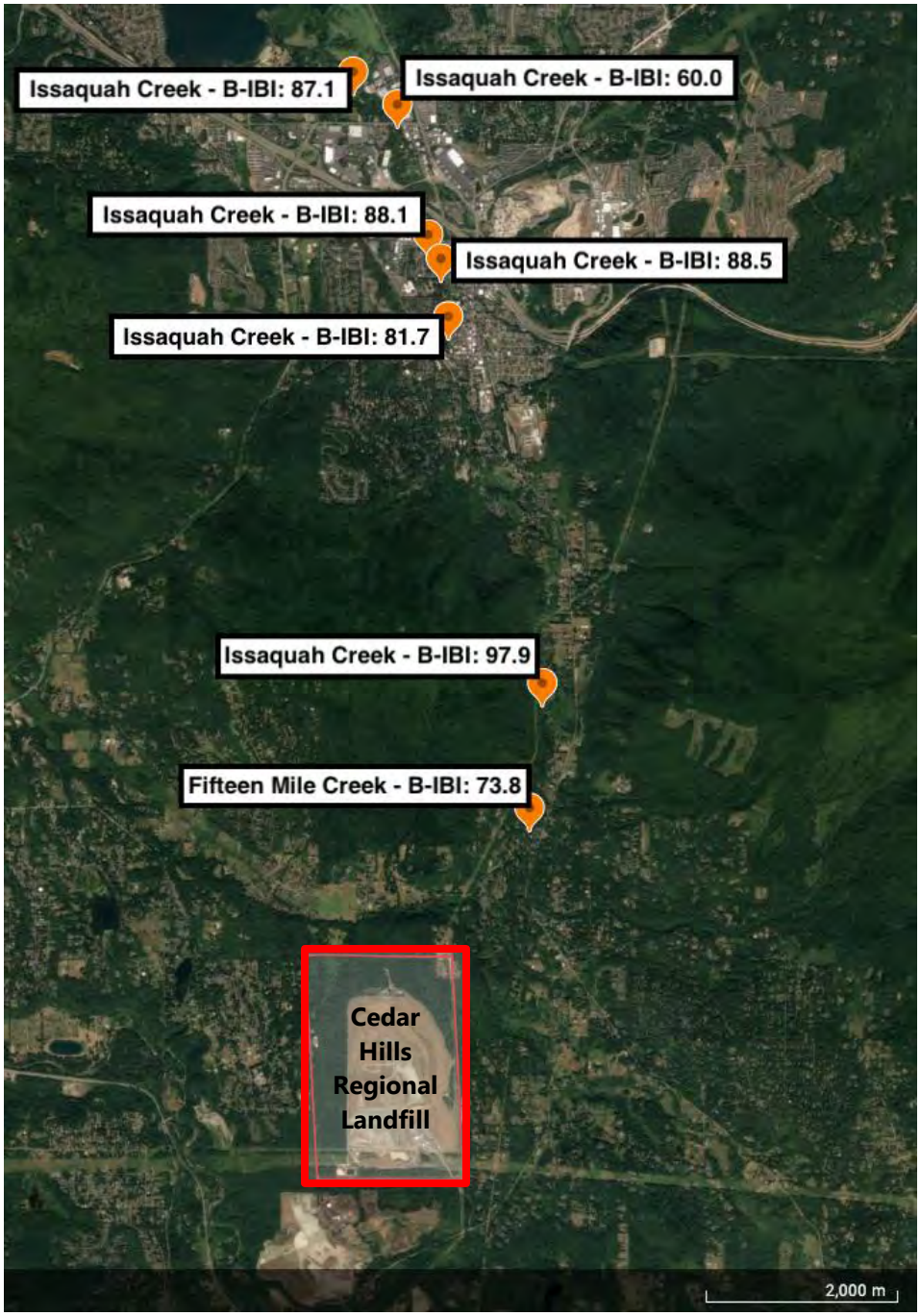

Figure 5-3. Benthic macroinvertebrate sampling sites downstream of the CHRLF within the Issaquah Creek basin. Sampling locations are marked and labeled with the stream name and B-IBI score. Source: Puget Sound Stream Benthos 2013 & Google Earth 2021.

5.1.4 On-Site Clean Stormwater Monitoring and Management

Discharges of industrial stormwater from CHRLF are covered by Ecology's Industrial Stormwater General Permit (ISGP) (permit no. WAR000756). This permit defines benchmark levels for discharge of select water quality parameters and effluent limits applicable to landfills. Stormwater permits issued by Ecology are guided by both the federal water pollution permit requirements and state laws to limit contaminants and protect water quality in general, including discharges into receiving surface waters, and in so doing to protect human and ecological health.

The ISGP requires KCSWD to monitor industrial stormwater discharges from CHRLF at multiple onsite monitoring points for the water quality parameters listed in Table 5-2, which include both benchmark and effluent limits. The ISGP requires CHRLF to report its monitoring results quarterly. The designated points for monitoring compliance with permit benchmark and effluent limits are stations SW-N4, SW-SL3 and SW-GS1. Figure 5-1 depicts the on-site surface stormwater drainage sub-basins and sampling station locations in and around the CHRLF.

Stormwater discharges from the CHRLF must also meet the requirements specified in the King County Surface Water Design Manual (King County 2016a) and Ecology's 2019 Stormwater Management Manual for Western Washington (SWMMWW) (Ecology 2019) to comply with requirements of Chapters 173-201A and 173-220 of the WAC. The ISGP also specifies implementation of best management practices (BMPs) for maintaining on-site water quality, the quality of water discharging from the site, and water quality monitoring requirements for the facility. A stormwater pollution prevention plan (SWPPP) is also required by the ISGP.

DMRs were reviewed for 2018 through 2020. With one exception, no exceedances of applicable benchmark levels and effluent limits were reported for 2018 through 2020. The fourth quarter of 2020 was the exception, when unusually high sediment was measured at monitoring location SW-N4 (turbidity: 103 NTU and total suspended solids of 32 milligrams per liter). KCSWD could not determine the exact cause of the elevated readings, however, they were transitory in nature (monitoring the next day revealed a return to normal conditions) and may have been related to transport of sediment during the first significant storm event of the season (first flush) (J. Kuene, pers. comm., December 29, 2021).

Table 5-2. Stormwater permit and ISGP benchmark and effluent limits for CHRLF (permit no. WAR5000756)

Parameter	***Units***	***Minimum Sampling Frequency***	***Benchmark***	***Effluent Limit***	
				Monthly Average	*Daily Maximum*
pH	Std. Units	Quarterly	5.0 to 9.0	6.0 to 9.0	6.0 to 9.0
Turbidity	NTU	Quarterly	25	--	--
Oil Sheen	Yes/No	Quarterly	None Visible	--	--
Copper, Total	µg/L	Quarterly	14	--	--
Zinc, Total	µg/L	Quarterly	117	110	200
BOD [a]	mg/L	Quarterly	--	37	140
TSS [b]	mg/L	Quarterly	--	27	88
Ammonia-N	mg/L	Quarterly	--	4.9	10
Alpha-Terpineol	µg/L	Quarterly	--	16	33
Benzoic Acid	µg/L	Quarterly	--	71	120
4-Methylphenol [c]	µg/L	Quarterly	--	14	25
Phenol	µg/L	Quarterly	--	15	26

[a] BOD = biochemical oxygen demand

[b] TSS – total suspended solids

[c] Analytical result reported as the total of 3-methylphenol (CAS RN 108-39-4) and 4-methylphenol (CAS RN 106-44-55)

In addition to the ISGP, KCSWD received coverage under Ecology's Construction Stormwater General Permit (CSGP) (permit no. WAR305034) in 2017 for construction activities associated with Area 8. This permit requires additional weekly monitoring at four discharge locations. There were several turbidity exceedances throughout 2018. The number of turbidity exceedances decreased significantly in 2019 and 2020 (Table 5-3).

Table 5-3. CSGP turbidity exceedances by quarter in 2018, 2019, and 2020 (permit no. WAR305034)

Year	***2018***				***2019***				***2020***			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Turbidity Exceedance (>25 NTU) (Yes/No)	Yes	Yes	No	Yes	Yes	No	No	No	Yes	No	No	No

Recent construction activity is likely causing increased erosion and sedimentation leading to the increased frequency of turbidity exceedances reported to Ecology for the CSGP. BMPs are being implemented as required by the CSGP SWPPP to prevent erosion and sedimentation, as well as reduce, eliminate, or prevent stormwater contamination and water pollution from construction activities (Ecology 2020). The BMPs that have been implemented appear to be reducing the frequency of turbidity exceedances in stormwater runoff at the construction monitoring sites, as no exceedances were recorded in the second, third, or fourth quarters of 2020 (Table 5-3). Any additional construction that will be required under the action alternatives will be in accordance with Ecology's SWMMWW, spill prevention control and countermeasure plans, SWPPP, and BMPs to minimize construction impacts such as erosion and sedimentation.

5.1.5 Potential Risks Associated with CHRLF Clean Stormwater Discharges

The following discussion relates to potential human and ecological health risks associated with CHRLF surface water and stormwater in light of the review and evaluation presented above.

Turbidity exceedances have been recorded in both the ISGP and CSGP self-monitoring reports. Excessively turbid waters in streams and rivers can negatively impact aquatic life and habitat. When particulate solids, such as eroded soil, heavy metal precipitates, and biological solids, enter streams, increased sedimentation and turbidity often results. This accumulation of sediments and particulates can disturb or destroy critical habitat for aquatic life. As a result of these impacts, fish may have more difficulty finding suitable habitat for egg laying or have decreased access to food sources such as macroinvertebrates. This may reduce overall populations of fish that rely on the affected streams for reproductive and sustenance purposes. An overall reduction in fish populations can also affect the health and wellbeing of human populations or communities that rely on fishing culturally, economically or for subsistence.

BMPs are implemented as required by the CSGP SWPPP to prevent, reduce, and eliminate erosion and sedimentation that may cause excessive turbidity in stormwater runoff associated with construction activities on the CHRLF. Implementation of BMPs at the CHRLF has resulted in

a decrease in the frequency of turbidity exceedances. Implementation of BMPs will continue to be required to ensure there are no significant impacts to receiving surface waters under the No Action and Action Alternatives.

Clean stormwater that does not come into contact with waste is collected and conveyed separately from stormwater that does come into contact with wastes. Due to this separation, no contaminants of concern were identified in clean stormwater generated from the CHRLF that could potentially pose a risk to human health. Clean stormwater from the CHRLF either infiltrates directly into native soils or is conveyed to detention ponds or wetlands for pre-settlement of solids prior to being discharged into receiving surface waters in near pristine conditions. The clean stormwater management practices and implementation of BMPs at the CHRLF will continue to ensure clean stormwater discharged from the CHRLF to receiving surface waters does not pose a risk to human or ecological health under the No Action and Action Alternatives.

5.2 Contaminated Stormwater

CSW is generated when stormwater runoff comes into contact with and becomes contaminated by landfill waste. CSW generated at the CHRLF is collected in the CSW conveyance system which consists of berms, culverts, pipes, and asphalt-lined ditches that direct the flows to the lined CSW lagoon (see Figure 5-1). CSW is held in the CSW lagoon so that solids can settle to the bottom of the lagoon before it is discharged to the leachate lagoons. CSW is also collected from the maintenance shop and the loaded trailer parking areas where equipment that operates on the active landfill area is maintained or stored. These CSW flows are piped directly to the leachate lagoons. There the CSW is mixed with leachate and aerated before being conveyed to the KCWTD system for treatment (discussed in further detail in Section 5.3).

The County currently limits active areas to minimize stormwater runoff and infiltration to approximately one acre and the intermediate soil cover to one lift. This practice would continue under all action alternatives in the future. Therefore, it is not anticipated that the overall volume of CSW generated from the CHRLF will be appreciably larger than current volumes.

5.3 Leachate

Precipitation falling on the active landfill area contributes to the formation of leachate. Chapter 173-3351-100 WAC defines leachate as "a liquid that has passed through or emerged from solid waste and contains soluble, suspended, or miscible materials removed from such waste." At CHRLF, leachate is collected in the leachate collection system. After collection, CHRLF leachate effluent is transferred through the KCWTD sanitary sewer system to the wastewater treatment plant. CHRLF leachate cannot be directly consumed by humans, nor is it directly discharged into receiving surface waters prior to treatment (further discussed below in Section 5.4).

Landfill leachate from the unlined refuse areas is collected by shallow buried side-slope

collectors, vertical wells, horizontal drains, perimeter leachate collectors, and final cover sweep collectors. Lined areas of the landfill collect leachate from a network of collection laterals and conveyance pipes above the bottom liner of the landfill. Leachate effluent is directed through a network of pipes and pumps and conveyed to two leachate pre-treatment lagoons on the CHRLF property. Additional sources of wastewater at CHRLF is generated and collected from truck wash water, landfill gas (LFG) condensate (including condensate removed from LFG at Bio Energy Washington (BEW)), runoff from BEW's three containment areas, rinse water generated during changeout of the sulfur removal media at BEW, wastewater from the pre-treatment lagoon underdrain, as well as occasional tanker truck loads of leachate generated from closed County-owned landfills in the County that is brought to the CHRLF for disposal at the west pretreatment lagoon.

The two leachate pre-treatment lagoons are lined with single, 60-mil-thick HDPE liners and have a capacity of approximately 7 million gallons each (14 million gallons total). The lagoons are equipped with four aerators used to aerate the wastewater in the lagoons. Aeration promotes biological growth, which reduces BOD and ammonia in the wastewater.

The leachate system is regularly inspected and maintained as outlined in the Cedar Hills Regional Landfill Plan of Operation (KCSWD 2015). The leachate system inspection and preventative maintenance program ensures the integrity of the leachate collection system (pipes, drains, forcemains, manholes), pump stations, extraction wells and all associated equipment, and generators, as well as the pre-treatment lagoons and aerators are in exceptional working order and regularly maintained (KCSWD 2015). This inspection and maintenance program safeguards against the potential for leakage of landfill leachate into surface or ground waters.

Landfill leachate from the leachate lagoons is conveyed to the KCWTD sanitary sewer system and wastewater treatment plant (discussed further in Section 5.4.3 below). Prior to transport, landfill leachate must meet effluent limitations and self-monitoring requirements as specified in Wastewater Discharge Permit (WDP) No. 7842-03, administered by KCIW.

The constituents that are required by the WDP to be monitored and reported include arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, zinc, cyanide, and total soluble sulfides, pH and discharge volume (Table 5-4). Self-monitoring is conducted weekly at the Leachate Effluent Pump Station (LEPS) Sample Site No. A90021 located downstream of the leachate aeration lagoons. Wastewater discharged from the pre-treatment lagoons must meet three criteria required by the WDP: daily average, instantaneous maximum, and maximum loading (Table 5-4).

Under the WDP, multiple actions must be taken when monitoring of effluent discharge indicates

a violation. These are:

- Take immediate action to stop the violation and notify KCIW within 24 hours of learning about the violation;
- Collect an additional sample and submit it to KCIW within 14 days of learning about the violation; and
- Submit a written report to KCIW explaining the cause of the violation and the corrective actions taken to respond to the violation and ensure ongoing compliance.

Table 5-4. Wastewater effluent limitations and self-monitoring requirements as required by KCIW discharge program (wastewater discharge permit no. 7842-03)

Parameter	*Daily Average (mg/L)*	*Instantaneous Maximum (mg/L)*	*Maximum Loading (lb/day)*	*Sampling Frequency*	*Sample Type*
Arsenic, Total	1.0	4.0	0.27	Monthly	Composite
Cadmium, Total	0.5	0.6	0.17	Monthly	Composite
Chromium, Total	2.8	5.0	1.20	Monthly	Composite
Copper, Total	3.0	8.0	6.89	Monthly	Composite
Lead, Total	2.0	4.0	1.20	Monthly	Composite
Mercury, Total	0.1	0.2	0.06	Monthly	Composite
Nickel, Total	2.5	5.0	2.49	Monthly	Composite
Silver, Total	1.0	3.0	0.44	Monthly	Composite
Zinc, Total	5.0	10.0	12.31	Monthly	Composite
Cyanide, Amenable	2.0	3.0	N/A	N/A	N/A
Total Soluble Sulfides (ppm)	N/A	0.1	N/A	Monthly	Grab
pH	Daily Maximum	Minimum	Maximum	Monthly	Grab
	5.5	5.0	12		
Daily Maximum Discharge Volume (gallons per day)	Industrial	Other	Total	Continuous	Pump Meter
	2,700,000	-0-	2,700,000		

5.4 Potential Exposure Pathways Associated with CHRLF CSW and Leachate

While exposure to stormwater contaminated by landfill wastes (i.e. CSW and leachate) have the potential to cause significant health impacts to humans and the environment, CHRLF CSW and leachate effluent cannot be directly consumed by humans, nor is it directly discharged into receiving surface waters. The potential exposure pathways associated with CHRLF CSW and leachate are:

- Air
- Groundwater
- Biosolids and Residual Wastewater Effluent

These potential exposure pathways are discussed below.

5.4.1 Air

Leachate is aerated in the leachate pre-treatment lagoons prior to being collected and transported to the KCWTD via sanitary sewer system (discussed further in section 5.4.3 below). The aeration process helps to degrade the majority of toxic air pollutants contained in the leachate, however, volatilization in the ponds releases some compounds into the air including ammonia and trace amounts of residual toxic air pollutants. This exposure pathway is discussed in detail in Chapter 1.0 Air Toxics of this HRA.

5.4.2 Groundwater

Natural and engineered controls protect groundwater beneath the CHRLF. More than 120 feet of unsaturated soils beneath waste areas, including soil layers with low permeability, retard downward migration of leachate derived from landfilled wastes. All landfill disposal areas constructed after 1985 include an impermeable landfill liner composed of HDPE. Extensive leachate management and groundwater monitoring systems help to prevent leachate generated at the CHRLF from being transported to and/or contaminating groundwater. The leachate management system consists of leachate extraction, conveyance, and pre-treatment facilities including leachate extraction drains and wells within waste; HDPE piping; epoxy-lined concrete piping, manholes, and pump stations, as well as HDPE-lined pre-treatment lagoons. This exposure pathway is discussed in detail in Chapter 6.0 Groundwater of this HRA.

5.4.3 Biosolids and Residual Wastewater Effluent

After pre-treatment in the leachate lagoons, the combined CSW and leachate effluent from CHRLF is discharged and transported to KCWTD via a sanitary sewer system, and ultimately is treated at the South Treatment Plant in Renton. Wastewater routed to the South Treatment Plant (wastewater influent) has two outlets that will be discussed in Section 5.4.3.1 and 5.4.3.2 below:

- Wastewater effluent discharged to the Puget Sound; and
- Biosolids.

In general, the wastewater influent goes through preliminary, primary, and secondary treatments where the solids settle out and are then converted into Loop biosolids. The secondary treatment wastewater effluent is then chlorinated to destroy most pathogens or disease-causing bacteria before it is discharged into Puget Sound (KCWTD n.d.).

5.4.3.1 Wastewater Effluent

Any water discharged into Puget Sound from the South Treatment Plant must meet the water quality requirements in the National Pollutant Discharge Elimination System (NPDES) WDP No. WA0029581 issued by Ecology (2015c). These requirements comply with the Washington Water Pollution Control Act (Chapter 90.48 Revised Code of Washington) and the Federal Clean Water Act. Waste discharge permits must include conditions that ensure the discharge will meet the surface water quality standards (Chapter 173-201A-510 WAC). Numerical and narrative water quality criteria (Chapter 173-201A WAC) protect aquatic life and recreation in and on receiving waters, protect humans from exposure to pollutants linked to cancer and other diseases based on consuming fish and shellfish and drinking contaminated surface water, and limit the toxic, radioactive, or other deleterious material concentrations that a facility may discharge to levels below those which have the potential to adversely affect designated water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health.

To ensure the effluent being discharged from the South Treatment Plant into the Puget Sound is protective of key beneficial uses as well as human health and the environment, the County characterizes wastewater effluent based on the reported concentration of pollutants in the wastewater effluent discharged, whole effluent toxicity testing and sediment characterization (Ecology 2015b). Pollutant concentrations of the detected chemicals in wastewater effluent discharged from November 2009 to July 2014, did not exceed the water quality criteria for surface waters (Ecology 2015b). Performance standards were also met for acute toxicity tests conducted in August 2012 and February 2013 and chronic toxicity tests conducted in October 2012 and February 2013 (Ecology 2015b). Historic sediment monitoring also does not indicate sediment toxicity near the Puget Sound outfall for the South Treatment Plant (Ecology 2015b).

5.4.3.2 Biosolids

The solids separated from the wastewater go through physical and chemical treatment processes to produce a semisolid, nutrient-rich product known as biosolids. Federal and state regulations require specific management practices for the effective use and disposal of biosolids. Biosolids are classified based on the level of treatment required to achieve pathogen reduction. Class A biosolids are those that have been treated to kill pathogens and can be used

in public spaces and home gardens without additional treatment. Class B biosolids are those that have been treated to significantly reduce, but not eliminate, pathogens and toxics and may not be applied to edible crops or other crops that could result in human exposure to toxics or pathogens.

EPA issued *Standards for the Use or Disposal of Sewage Sludge* (biosolids), which regulate "sewage sludge that is applied to land, fired in a sewage sludge incinerator and/or placed on a surface disposal site (40 CFR Part 503)." These regulations include pollutant limits, requirements for pathogen and vector-attraction reduction, management practices, monitoring, recordkeeping, and reporting, among other requirements. EPA identifies pollutants that can potentially pose a risk to human health and the environment by requiring:

- biennial reviews of available data on identified pollutants in biosolids,
- sewage sludge surveys to identify pollutants in biosolids from wastewater treatment plants,
- pollutant risk screenings to identify which pollutants do not pose a risk and which exceed USEPA's levels of concern, and
- risk assessments to identify whether pollutants present in biosolids exceed any levels of concern.

Currently, EPA regulates pollutant limits for land-applied biosolids for arsenic (As), cadmium (Cd), copper (Cu), lead (Pb), mercury (Hg), molybdenum (Mo), nickel (Ni), selenium (Se), and zinc (Zn). In addition, Chapter 173-308-160 WAC, *Biosolids Pollutant Limits*, establishes land-applied pollutant concentration limits and cumulative pollutant loading rate limits for biosolids that are consistent with USEPA guidelines (Table 5-5).

Table 5-5. Washington State pollutant limits for land-applied biosolids per WAC 173-308-160

POLLUTANT	*CEILING CONCENTRATION milligrams per kilogram (mg/kg; dry weight)*	*CUMULATIVE POLLUTANT LOADING RATE kg per hectare (dry weight)*	*LIMIT monthly average in mg/kg (dry weight)*
Arsenic	75	41	41
Cadmium	85	39	39
Copper	4300	1500	1500
Lead	840	300	300
Mercury	57	17	17
Molybdenum	75	-	-
Nickel	420	420	420
Selenium	100	100	100
Zinc	7500	2800	2800

King County produces a biosolids product from the solids produced by King County's wastewater treatment process called "Loop." Loop is certified as Class B biosolids. To protect human health and the environment, the use of Class B biosolids require application permits which include restrictions on public access and crop harvest that involve die-off of pathogens to non-detectable levels after application (King County 2017).

In addition to application requirements, the physical, chemical, and microbial characteristics of Loop biosolids are monitored monthly. Loop meets the quality standards for the anaerobic digestion process requirements for Class B pathogen reduction and vector attraction reduction, as well as for metals shown on Table 5-5 (King County 2020). Metal concentrations are tested monthly in the King County Environmental Lab from King County's South, West Point, and Brightwater treatment plants for the presence and concentrations of 18 metals, including arsenic. All concentrations of the nine metals regulated under state and federal biosolids rules (As, Cd, Cu, Pb, Hg, Mo, Ni, Se, and Zn) fell well below state and federal regulatory levels in 2019 and 2020 (King County 2020). Apart from selenium (which has remained stable at low levels for the last 29 years), there has been a statistically significant decrease since 1990 in all regulated metals in Loop products.

5.5 Potential Risks Associated with CHRLF CSW and Leachate

The following discussion relates to potential human health risks associated with CHRLF CSW and leachate in light of the review and evaluation presented above.

5.5.1 CHRLF Leachate WDP Exceedances

Exceedances of the arsenic loading limits have been identified in the CHRLF wastewater discharge self-monitoring sampling site A90021 (KCSWD 2020d: DEIS – Attachment I). CHRLF is required to address maximum daily loading exceedances in leachate effluent of the numerical loading limits required under the WDP.

It has been observed that the accumulation of arsenic in landfills and its concentrations in landfill leachate have increased at several sites in Washington and across the United States. It is possible that increased arsenic is detected because of its widespread use in industrial and commercial products such as creosote and chromium copper arsenate (CCA)-treated wood (APHC 2017; Jambeck et al. 2007; EPA 2006). Past disposal practices of filter media containing concentrated arsenic from the BEW facility may also have been a significant source of arsenic at the CHRLF. Disposal of BEW filter media at CHRLF was discontinued at the beginning of 2020 due to concerns regarding arsenic loading exceedances in wastewater in prior years (Wood 2020).

All other parameters were in compliance with established levels per the WDP.

5.5.2 Other Contaminants of Concern

The combined CSW and leachate effluent generated at the CHRLF contain numerous contaminants that, in sufficient quantities and at a high enough rate of exposure, have the potential to cause ecological or human health effects (referred to as contaminants of concern (COCs)).

Wastewater at the South Treatment Plant undergoes multiple treatment steps prior to being transported and discharged to the Puget Sound (discussed above in Section 5.4.3). Upon review of the CHRLF wastewater discharge SMRs, Loop biosolids quality data, and South Treatment Plant effluent characterization and toxicity testing, no COCs have been identified at or above levels that are likely to cause negative impacts to human or ecological health.

5.6 Limitations

This assessment is intended to demonstrate that, while multiple point and non-point sources of discharge contribute to the overall water quality of receiving surface waters, if the receiving surface waters are in overall good health, it can be inferred that discharges to receiving surface waters associated with clean stormwater and/or wastewater generated on or by the CHRLF are

likely not negatively impacting the beneficial uses of these receiving waters, which includes protection of human health. If water quality issues are found within the receiving waters, the likely potential causes of the water quality issues are discussed in this assessment and are not necessarily related to stormwater inputs from the CHRLF.

Additionally, only existing data was evaluated for this section of the HRA. However, this review was done under the expectation that the on-site stormwater and wastewater control measures, stormwater and wastewater effluent discharge monitoring, and BMPs will be implemented at the CHRLF so that any stormwater wastewater effluent being discharged to KCWTD South Treatment Plant and/or surface waters under the Action Alternatives will meet the same benchmarks and be of similar water quality as it is under current operations and/or the No Action Alternative.

5.7 Findings and Conclusions

Multiple data sets were reviewed regarding the overall quality of the receiving waters directly and indirectly affected by stormwater and/or leachate generated from the CHRLF in order to evaluate health effects associated with these discharges.

5.7.1 Clean Stormwater Findings and Conclusions

Multiple data sets were reviewed regarding the overall quality of the receiving surface waters located within the Issaquah Creek basin in order to evaluate whether clean stormwater discharged from the CHRLF may have the potential to cause any potential health effects associated with these discharges. They included:

- Water quality and macroinvertebrate environmental monitoring data for the Issaquah Creek Basin;
- CHRLF quarterly environmental monitoring reports for surface water and stormwater quality; and
- CHRLF annual stormwater DMRs reported to Ecology.

As discussed above in Section 5.6, this review was done under the expectation that stormwater control measures, clean stormwater discharge monitoring, and BMPs will be implemented at the CHRLF so that any clean stormwater being discharged to surface waters under the Action Alternatives will meet the same benchmarks and be of similar water quality as under current operations and/or the No Action Alternative. Therefore, after review and evaluation of the available water quality data and measures taken at the CHRLF to protect water quality, it is concluded that the potential risks to receiving surface waters associated with clean stormwater runoff under the No Action Alternative and the Action Alternatives proposed are not likely to cause a significant adverse impact to human or ecological health.

5.7.2 CSW and Leachate Findings and Conclusions

Three potential exposure routes were identified for CSW and leachate generated by the CHLRF. The exposure routes identified were:

- Air;
- Groundwater; and
- Biosolids and wastewater effluent.

The potential air and groundwater exposure pathways are discussed separately in Chapters 1.0 Air Toxics and 6.0 Groundwater of this HRA, respectively. CSW and leachate collected from the CHRLF, gets transported via sanitary sewer system to the South Treatment Plant in Renton, WA. Wastewater from the CHRLF is combined with other sources of wastewater at the South Treatment Plan where solids and liquids get separated. The solids separated from the wastewater go through physical and chemical treatment processes to produce a semisolid, nutrient-rich product known as biosolids. The liquids go through multiple treatment processes prior to being discharged to the Puget Sound.

To evaluate the potential ecological or human health impacts of CSW and leachate produced at the CHRLF, multiple data sets were reviewed. These include:

- CHRLF wastewater discharge SMRs;
- Biosolids (Loop) data for specific pathogens and toxic metals; and
- South Treatment Plant wastewater discharge SMRs.

Landfill leachate must meet effluent limitations and self-monitoring requirements for arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, zinc, cyanide, total soluble sulfides, pH and discharge volume prior to being transported to the South Treatment Plant. Self-monitoring of CHRLF leachate effluent is conducted monthly. Exceedances of the arsenic loading limits specified in the WDP have occurred recently. KCSWD is investigating the potential sources of arsenic in the landfill, examining methods and technologies to upgrade the performance of the leachate lagoons with respect to discharge pretreatment requirements and to implement source control measures within the landfill system as practicable.

The discharge permit loading limit set by KCIW for arsenic is in place to ensure biosolids produced by the South Treatment Plant are in compliance with all relevant standards and meet the requirements for Class B biosolids. Metal concentrations in biosolids produced by the South Treatment Plant are tested monthly in the King County Environmental Lab for the presence and concentrations of 18 metals, including arsenic. All concentrations of the nine metals regulated under state and federal biosolids rules (As, Cd, Cu, Pb, Hg, Mo, Ni, Se, and Zn) fell well below state and federal regulatory levels in 2019 and 2020 (King County 2020).

While leachate from the CHRLF must meet effluent limitations and self-monitoring requirements prior to being transported to the South Treatment Plant, water being discharged from the South Treatment Plant into the Puget Sound also must meet the water quality requirements in the NPDES WDP (WA0029581) issued by Ecology. The WDP stipulates that the water quality of the effluent being discharged into the Puget Sound will be maintained at a level that protects key beneficial uses as well as human health and the environment. Results of wastewater effluent characterization, whole effluent toxicity tests, and sediment characterization done by the County indicate effluent being discharged from the South Treatment Plant into the Puget Sound meet the water quality requirements that are protective of human health and the environment.

As discussed above in Section 5.6, this review was done under the expectation that CSW and leachate control measures, effluent monitoring, and BMPs will be implemented at the CHRLF so that any leachate effluent being routed to the South Treatment Plant under the Action Alternatives will meet the same effluent limitations as it is under current operations and/or the No Action Alternative. Therefore, after review and evaluation of the available water quality data and measures taken at the CHRLF and South Treatment Plant to protect water quality, it is concluded that the potential risks to receiving surface waters associated with clean stormwater runoff under the No Action Alternative and the Action Alternatives proposed are not likely to cause a significant adverse impact to human or ecological health.

Based on this review, under the current management of CSW and leachate at the CHRLF, there is no indication that CSW or leachate being generated by the CHRLF is causing significant adverse impacts to receiving surface waters. The current standards and requirements in place for biosolids and effluent leaving the South Treatment Plant are protective of human health and the environment.

6.0 GROUNDWATER

An assessment was conducted to determine whether current and future groundwater management practices are adequate to prevent or eliminate adverse or harmful exposures to human receptors in association with contaminated or low-quality groundwater. The basic hydrogeologic conditions at the CHRLF site are described below. Humans most commonly come into contact with groundwater through drinking water from wells or through irrigation, the key groundwater beneficial uses which are also described and evaluated in this chapter. In this HRA chapter, site-specific monitoring, groundwater quality testing and other data is presented and evaluated and used to support the findings and conclusions with regard to the groundwater pathway.

This chapter is structured as follows: Section 6.1 describes the basic hydrogeologic conditions in the vicinity of and underlying the CHRLF; Section 6.2 describes the extensive management and control system maintained by CHRLF for managing groundwater; Section 6.3 describes the monitoring systems in place to evaluate data and ensure groundwater quality in both perched units and in the regional aquifer; Section 6.4 discusses recent monitoring data concerning groundwater quality in and around CHRLF; Section 6.5 discusses protection of beneficial groundwater uses, focusing on drinking water; Section 6.6 discusses engineering controls and other best management practices (BMPs) used to ensure protection and maintenance of groundwater quality; Section 6.7 provides findings and conclusions for the health risk assessment with regard to whether groundwater could present adverse human health exposures or risk via the groundwater pathway at CHRLF.

6.1 Basic Hydrogeologic Conditions Underlying CHRLF and Renton

6.1.1 CHRLF

The basic hydrogeologic conditions underlying the CHRLF have been well characterized. Groundwater underlying the landfill in the closest proximity to waste material exists solely in perched units that are not hydrologically connected to the regional aquifer (Aspect 2010a, 2010b, 2011, 2013). Two localized perched groundwater zones occur on and around the site, which include the East Main Hill Perched Zone and the former South Solid Waste Area Perched Zone. Perched groundwater occurs in on-site glacial till and recessional outwash. No laterally or vertically extensive perched zones have been identified. Data indicate that on-site perched units are separated from the regional aquifer by unsaturated deposits approximately 120 feet in thickness.

Groundwater beneath the CHRLF is protected by several factors, including well over 100 feet of unsaturated soils beneath the landfill areas, characterized by low-permeability soil layers that retard downward migration and attenuate leachate or gases originating from landfill waste.

Groundwater flow under the CHRLF is highly variable both spatially and temporally, but the regional aquifer is the first continuously saturated zone beneath the landfill and serves as an effective means of monitoring for flow underlying the landfill footprint. Figure 6-1 shows regional groundwater characteristics in the vicinity of the CHRLF. Groundwater flow is generally to the north with flows exiting the site at the northeast corner of the landfill property. The elevation of groundwater in the regional aquifer is generally greater than 300 feet, which is well below the landfill and not hydraulically connected.

Groundwater flowing onto the CHRLF facility is highly variable both spatially and seasonally. Flow downgradient of waste cells are monitored by two wells on the west side and six wells located in the convergent flow corridor.

Recharge of the regional aquifer occurs predominantly by rainfall. There is a major recharge area near the McDonald Creek drainage (northwest of the facility) and Gravel Pit Lake on the QCF property, adjacent to the CHRLF property to the south. The owner of the QCF property has initiated plans for the filling of Gravel Pit Lake and replacement with additional storm drainage conveyance and infiltration system. Due to extensive groundwater contamination on this property, groundwater from this recharge area is monitored using numerous monitoring wells at both the QCF and CHRLF properties. There are no critical aquifer recharge areas on or immediately adjacent to the CHRLF facility (KCSWD 2020a).

6.1.2 Renton Facility

The Renton site is located in an upland area above the Cedar River Valley and is located within the City of Renton's Aquifer Protection Area under which certain site activities and uses are restricted (Renton Municipal Code Title IV, Chapter 3, Section 4-3-050, Critical Areas Regulations). Three monitoring wells were installed on the facility in 1991. The Renton site is underlain by the Maplewood Production Aquifer, and hydraulically connected with this aquifer. The aquifer extends north of the Renton site and is likely bounded by bedrock to the south (RH2 and PGG 1993). There are no reports of contaminant discharges to groundwater from the Renton facility beneath or within a 0.5-mile radius of the site (Ecology 2015a).

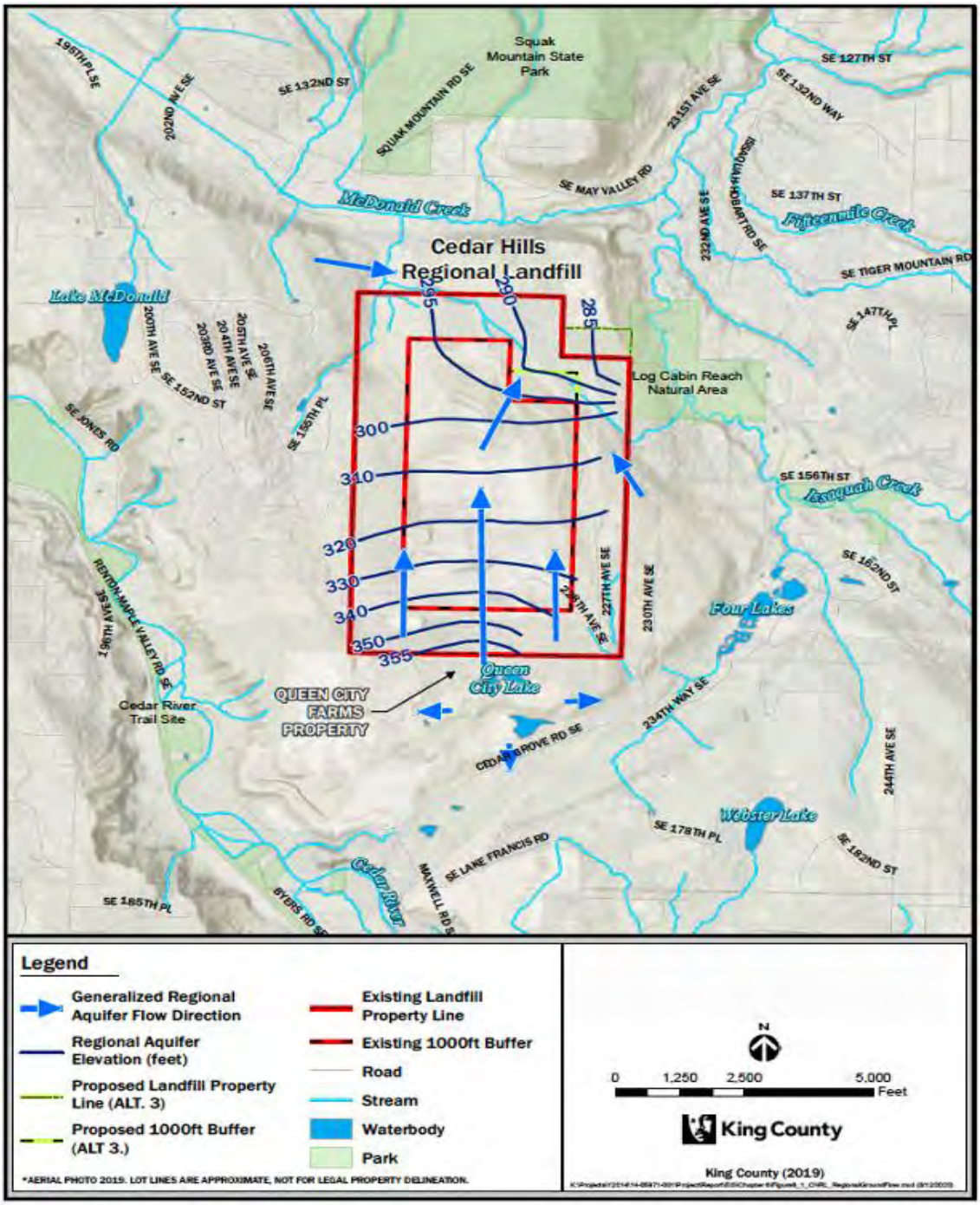

Figure 6-1. Regional groundwater flow in the area beneath and surrounding the CHRLF.
Source: KCSWD DEIS 2020a.

6.2 Management and Engineering Control Systems for Groundwater and Leachate

Numerous environmental control systems are in place at CHRLF to manage groundwater, LFG, leachate, and stormwater. The environmental control systems for LFG is discussed in Chapter 1.0 Air Toxics of the HRA. Approximately 50 groundwater monitoring wells are located in the landfill buffer. Monitoring data and results are discussed in detail in Section 6.4.

6.2.1 Control Systems for Groundwater

Groundwater beneath the CHRLF is protected by both natural and engineered controls. Natural controls include more than 120 feet of unsaturated soils beneath waste areas, which serve to retard downward migration and attenuate leachate or gases derived from landfill waste. In addition, all landfill disposal areas constructed after 1985 are required by state law to use a composite liner that includes high-density polyethylene (HDPE) and low permeability clay layer (WAC173-304; WAC 173-351). Koerner (2005) studied the chemical half-life of HDPE landfill liners and concluded that the effective lifetime of an HDPE liner maintained at a temperature of 68°F would be approximately 449 years, far exceeding the lifetime of the landfill itself. Any additional landfilling operations identified under any of the proposed alternatives would include use of these engineered liners to prevent leaching or migration to groundwater.

In addition, KCSWD currently maintains, and under all action alternatives would continue to maintain and adhere to, rigorous design, construction, operations, and maintenance practices to minimize or avoid any impacts to groundwater during construction and operation of landfill disposal areas and support facilities at CHRLF. Engineering and management practices required and implemented by KCSWD at CHRLF include:

- Preparing detailed design drawings and specifications for new refuse cell bottom liners, leachate collection systems, and the LFG collection system that clearly describe the materials, installation, and quality control testing of these systems;
- Requiring the adherence of less than 12 inches of leachate on bottom liners by both design and operation in the newer landfill cells;
- Requiring a hydrogeologic evaluation of any new landfill cells prior to permitting;
- Providing appropriate construction observation and field testing to document use of proper materials and installation methods;
- Monitoring both groundwater and surface water at approved monitoring points and using accepted practices to confirm high-level performance of the leachate management and pre-treatment systems;

- Monitoring surface water and groundwater at agreed monitoring points and using accepted practices to confirm the performance of the containment systems of the new cells;
- Separately monitoring facilities related to fleet management, including fuel islands, truck washes, and maintenance areas; and
- Reporting annually to provide a complete and transparent public record of on-site groundwater conditions.

6.2.2 LFG Control System

Landfill gases can affect groundwater carbon dioxide and dissolved oxygen concentrations and can convey contaminants to groundwater as well. LFG frequently occurs at approximately 50 percent methane and 50 percent carbon dioxide/water vapor mixture. This is discussed in more detail in HRA Chapter 1.0 Air Toxics.

6.2.3 Leachate

The leachate management system at CHRLF is efficient at identifying and removing any detected releases of leachate so migration cannot occur to either perched groundwater units or the regional aquifer. The system consists of leachate extraction, conveyance, and pre-treatment facilities, including leachate extraction drains and wells within waste. The system also includes HDPE piping, epoxy-lined concrete piping, manholes, and pump stations, as well as HDPE-lined pre-treatment lagoons. If leachate escapes the collection and conveyance system at the landfill, immediate actions are taken to clean up any releases to prevent transport or migration.

6.3 Beneficial Uses of Regional Aquifer Groundwater

Beneficial uses of groundwater have been defined for the groundwater underlying the CHRLF, and two of the most prominent beneficial uses are for human ingestion and irrigation. A comprehensive inventory of water supply wells in the vicinity of CHRLF was performed in conjunction with a site-wide hydrogeological evaluation (KCSWD 2004; KCSWD 2013). This review included identifying and reporting Ecology's water well records for the areas within 2,000 feet south and west and 3,000 feet north and east of existing and proposed waste disposal areas at the CHRLF (KCSWD 2004).

The review further identified wells classified by the Washington State Department of Health as Group A systems that provide service to 25 or more residents, Group B systems that provide service to less than 25 residents, and domestic wells that provide service to a single household. A review of King County iMaps (King County 2018) indicated the only additional well to those identified during the 2004 review within this general area is a Group B water supply well (Cedar Grove Composting system) located about 600 feet south of the CHRLF property line. The locations of water supply wells identified by the 2004 inventory and the additional Cedar Grove

system well are discussed in KCSWD (2020a). Groundwater quality monitoring data for regional aquifer wells is discussed in Section 6.5.2.

6.4 Groundwater Monitoring

Based on the management and control systems summarized above, this section focuses on the required periodic monitoring for groundwater in both perched units and the regional aquifer, and LFG probe monitoring. The purpose of this monitoring is to protect and maintain groundwater quality for beneficial uses (discussed in Section 6.3).

6.4.1 Description of Monitoring

Monitoring of groundwater beneath and in the environs of the CHRLF is critically important for maintaining groundwater quality and protecting each of its beneficial uses. Accordingly, very extensive groundwater monitoring has been conducted at the facility since 1983. Per the WAC 173-351-400 through 173-351-450, Ecology requires groundwater monitoring at all operating municipal solid waste landfills. Groundwater monitoring requirements for the CHRLF are specified in the Municipal Solid Waste Landfill Permit issued by Public Health (Appendix B of FEIS, see Herrera [2021]). The current groundwater monitoring system is explicitly designed to meet the state requirements (WAC 173-351-405). Groundwater monitoring is performed under an environmental monitoring Sampling and Analysis Plan (SAP) for the CHRLF (Aspect 2013), This document was approved by both Public Health and Ecology and is periodically updated.

The specific purpose and objectives of the CHRLF groundwater monitoring program are described in detail in the groundwater Sampling and Analysis Plan (Aspect 2013), which was approved by both Ecology and Public Health in accordance with WAC 173-351-200(4). The annual groundwater monitoring reports for CHRLF (e.g., KCSWD 2020a) provide the results of the annual groundwater monitoring activities at the facility. The current groundwater monitoring program requires monitoring groundwater elevations and sampling groundwater quality in 32 regional aquifer monitoring wells; groundwater elevations are monitored in an additional 11 regional aquifer wells. The monitoring program also requires monitoring groundwater elevations and sampling groundwater quality in 16 monitoring wells installed in perched saturated zones, with groundwater elevations being monitored in an additional nine wells completed in perched saturated zones (KCSWD 2020a). Groundwater monitoring and sampling are conducted quarterly or, for selected wells, semi-annually during the second and fourth quarters. Detection monitoring wells are all located downgradient or lateral to the waste areas.

A summary of the active groundwater monitoring wells is provided in Attachment F of the *Cedar Hills Regional Landfill 2019 Annual Report* (KCSWD 2020a)). Key well information includes:

- the well identifier;
- casing diameter;

- well depth;
- location (e.g., regional aquifer or perched unit);
- installation date;
- well monitoring classification;
- water level monitoring frequency;
- water quality monitoring frequency, and
- rationale for placement.

From Table 2.1 of Attachment F of KCSWD (2020a), it is evident there are numerous monitoring wells of many descriptions installed in numerous locations and depths in and around the CHRLF, which provide the comprehensive ability to monitor groundwater quality, detect the presence of LFG, and perform other key functions.

All groundwater monitoring and sampling data are evaluated by KCSWD using widely accepted statistical methods in compliance with state guidelines, and groundwater quality data are compared with relevant criteria including federal drinking water standards (e.g., maximum contaminant levels) and state groundwater criteria (WAC 173-200-040). Groundwater monitoring and sampling data are reported quarterly and annually in compliance with WAC 173-351-415. Based on the design and coverage for both perched units and the regional aquifer, it is evident that adequate numbers of monitoring wells have been installed and are operational to characterize groundwater quality and to detect whether contamination or other anomalies could be occurring in and around the facility.

6.5 Groundwater Quality in the Vicinity of CHRLF

This section focuses on groundwater quality in and around the vicinity of CHRLF. There is a clear distinction between upgradient and downgradient groundwater quality underlying the site. This section provides an overview of the characteristics of groundwater quality at CHRLF and interactions between groundwater gradients beneath the site.

6.5.1 Upgradient groundwater quality

Groundwater quality in the regional aquifer in the vicinity of the CHRLF has been and continues to be affected by land uses at the adjacent, 340-acre QCF property, which is south of the CHRLF and privately owned. Groundwater flows north from the QCF site and beneath the CHRLF property (see Figure 6-1). The contaminated QCF site was listed on EPA's National Priorities List in 1984 (EPA 1992a), and remedial actions have been implemented to address soil and groundwater contamination caused by legacy hazardous waste disposal (EPA 1992a; EPA 1994a; EPA 2018). Numerous activities have occurred over the past 50 years at the QCF site, which have included a pig farming operation that used municipal solid waste as feed; an animal rendering plant; unlined pits for disposal of liquid hazardous waste; unlined areas for disposal of solid

waste including drummed waste; a solvent recovery operation, and gravel mining operations (EPA 1992a; KCSWD 2004; EPA 2018).

Cedar Grove Composting Inc. currently manages compost piles immediately adjacent to the south of the CHRLF property. In addition, the five-year review report for Cedar Grove required monitoring for the 4-Tek portion of the QCF site.

Upgradient groundwater quality from the QCF site is well documented (e.g. KCSWD 202a), including migration across the property line and beneath the CHRLF. Chlorinated volatile organic compounds (VOCs), including perchloroethene, trichloroethene, and cis-1,2-dichloroethene (PCE, TCE, and cis-1,2-DCE) have been detected regularly in upgradient wells at CHRLF. TCE is present in four of these wells in exceedance of its primary federal Maximum Contaminant Level (MCL) as of 2020. Vinyl chloride, a degradation by-product of chlorinated VOCs, was also exceeded in two of these wells. State groundwater quality standards for TCE and vinyl chloride, respectively, are 3 µg/L and 0.02 µg/L (WAC 173-200). Overall, primary groundwater criteria were exceeded in some CHRLF upgradient wells for TCE, vinyl chloride, and arsenic as of 2020. Some wells exhibited exceedances of secondary standards for iron and manganese. In addition, increasing concentrations of several water quality indicator parameters were reportedly related to major clearing and grading activities occurring on the QCF property, beginning in 2011. However, these parameters have been attenuating in concentrations in recent years (KCSWD 2020a).

6.5.2 Downgradient groundwater quality

As of 2019, downgradient groundwater quality has consistently been in compliance with the state and federal standards. Exceedances that have occurred recently include a single primary federal drinking water exceedance for arsenic and secondary standards for iron, manganese, and pH. However, the chlorinated VOCs elevated in upgradient wells were undetected and suggest the CHRLF serves as an attenuation zone for QCF impacts, promoting the reductive dechlorination of VOCs as noted above (KCSWD 2019b), which would ultimately reduce or eliminate these toxic constituents and help protect groundwater beneficial uses. Dilution may also play a role, as the dechlorination process of VOCs is not favored under the anaerobic conditions commonly found in groundwater.

Groundwater quality analysis suggests that interactions with carbon dioxide from LFG migration may be occurring in some areas. This influence is detectable in regional aquifer wells screened near the water table, mostly around the central portion of the facility, outside of the waste footprint. Effects observed were increased alkalinity, calcium, and magnesium relative to deeper screened wells. Other redox-sensitive chemical compounds can be mobilized as well, including complex organics, arsenic, iron, and manganese.

6.5.3 Perched zone groundwater quality

As noted above, KCSWD has been monitoring groundwater quality in the perched zones and the regional aquifer since 1983. Quarterly and annual reports, filed with both Public Health and Ecology, provide an overview of the groundwater data. Groundwater monitoring in perched groundwater zones at CHRLF indicate that groundwater quality in two localized perched groundwater zones (the East Main Hill Perched Zone and the former South Solid Waste Area Perched Zone) has been impacted by past landfilling practices (Aspect 2010a; Aspect 2010b).

Because these perched zones are not hydraulically connected to the regional aquifer, they pose little or no risk to water supplies in the vicinity of the CHRLF. Groundwater quality monitoring within the East Main Hill Perched Zone is being managed under the state Model Toxics Control Act as part of the Voluntary Cleanup Program (KCSWD 2016). Site improvements and engineered facilities, discussed below in Section 6.6, have generally resulted in stable or decreasing contaminant concentrations in perched saturated zone groundwater (KCSWD 2020a).

6.6 BMPs and Engineering Controls to Minimize Adverse Effects to Groundwater

As discussed in Section 6.2.1, groundwater underlying CHRLF is protected by both natural and engineered controls. HDPE liners are required for all new landfill disposal areas (WAC 173-304; WAC 173-351), and any additional landfilling operations under any of the proposed alternatives would include use of these engineered liners to prevent leaching, as a barrier to LFG, or to prevent contaminant migration to groundwater.

In addition, under all action alternatives, KCSWD currently maintains and would continue to maintain and adhere to rigorous design, construction, operations, and maintenance practices to minimize or avoid any or all impacts to groundwater during construction, operation, maintenance, and closure of landfill disposal areas and support facilities at CHRLF. These measures are summarized in Section 6.2.1.

As noted in the conclusions, groundwater quality in downgradient regional wells has potentially been influenced by the presence of landfill gas in unsaturated soils along the flow path beneath refuse areas. Control and management of LFG at the CHRLF facility is discussed in Section 1.7 of HRA Chapter 1.0 Air Toxics.

6.7 Findings and Conclusions

The following discussion describes findings and conclusions based on the foregoing sections.

- Numerous (over 50) groundwater monitoring wells have been completed in both the perched zones of the site and the underlying regional aquifer, both upgradient and downgradient of the site. These wells represent a wide variety of depths and spatial distribution on the CHRLF site, which serves to reduce uncertainty concerning

groundwater, leachate, and LFG on the site. The monitoring well network is adequate to characterize groundwater water and to detect any contamination or other anomalies that might arise.

- Examination of regional aquifer groundwater quality, based on a comparison of the upgradient and downgradient monitoring wells, clearly indicates that the upgradient groundwater quality where VOCs and other compounds are regularly detected, is of lower quality than the downgradient groundwater. This is in part due to the regional aquifer groundwater underlying the CHRLF property serving to attenuate upgradient concentrations, improve groundwater quality, and protect beneficial uses.
- Groundwater quality in downgradient regional wells has potentially been influenced by the presence of landfill gas in unsaturated soils along the flow path beneath refuse areas. Further discussion on LFG is provided in Section 1.7 of the HRA.
- Chloride concentrations in regional aquifer groundwater samples north of the refuse areas are greater than elsewhere on site; this increase is believed to originate, in part, from underlying infrastructure in areas north (downgradient) of CHRLF waste (KCSWD 2020a). A review of groundwater quality data from 16 regional aquifer wells for chloride showed that no maximum or mean values exceed the state or federal secondary standard of 250 mg/L (EPA 2021d) as of 2019 (KCSWD 2020a). These data suggest that chloride, a nuisance chemical rather than a toxic chemical, is not originating from the CHRLF.
- Groundwater quality data in the regional aquifer in 2019 was generally consistent with historical water quality data. Exceedances that have occurred include a single primary federal drinking water exceedance for arsenic and secondary standards for iron, manganese, and pH.
- All groundwater samples collected from regional aquifer monitoring wells downgradient of the CHRLF refuse areas met federal and state primary drinking water quality standards (KCSWD 2020a).
- The chlorinated VOCs elevated in upgradient wells were undetected and suggest the CHRLF serves as an attenuation zone for QCF impacts, promoting the reductive dechlorination of VOCs.

Overall, it is evident that comprehensive and adequate measures are in place at CHRLF to ensure that groundwater affected by the CHRLF facility would not cause adverse exposures or health effects to neighbors or site visitors. As described, specific actions can be and frequently are taken in the event that groundwater quality exceeds applicable state or federal guidelines in order to prevent adverse exposures to human receptors.

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APPENDIX A
SAMPLING AND ANALYSIS PLAN

SAMPLING AND ANALYSIS PLAN

MEASURING CHEMICALS AND ODOR IN AMBIENT AIR IN AND AROUND THE CEDAR HILLS REGIONAL LANDFILL FACILITY IN MAPLE VALLEY, WA

Prepared for

Herrera Environmental Inc. and King County Solid Waste Division

June 16, 2021

Prepared by

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King County Small Contractors and Suppliers (SCS) No. 2425
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1.0 INTRODUCTION

The team of Chartrand Environmental and Intertox (the team) were retained by Herrera Environmental and King County Solid Waste Division (KCSWD) to perform a health risk assessment (HRA) to address numerous health-related comments to the Cedar Hills Regional Landfill Facility (CHRLF) Draft Environmental Impact Statement (DEIS). Much of the focus of these comments has been and is on air quality and odor issues. Accordingly, discussions have been held with KCSWD and King County consultants about the need to collect additional environmental data to address these concerns. This Sampling and Analysis Plan (SAP) provides details concerning data required to address public concerns related to air quality and odor in and around the facility. Noise (acoustics), vibration, groundwater, surface water, stormwater, and pest management issues related to neighborhood concerns will also be addressed, though no new data will be collected to address these issues. The results of this data collection effort will provide an independent scientific report and evaluation intended to address public comments on the CHRLF DEIS.

1.1 Statement of Purpose

The focus of this SAP and environmental investigation is to evaluate the potential exposure and effects of air toxics, including landfill gases and fugitive dusts, odors, and other stressors in ambient air on residents inhabiting areas adjoining or close to CHRLF based on numerous public comments provided in response to the 2020 CHRLF DEIS. This evaluation is focused on residential exposures and is not intended to be an occupational or worker protection survey or investigation.

1.2 Background

The CHRLF is located on a 920-acre site in unincorporated King County at 16645 228th Avenue SE, Maple Valley, Washington State. CHRLF operates 7 days a week, 362 days per year. Most of the waste delivered to and disposed of at the CHRLF is municipal solid waste (MSW) from both residential and non-residential sources. The site also has multiple stormwater ponds and leachate lagoons to control discharges from the landfill. CHRLF is adjacent to the Cedar Grove Composting facility and Queen City Farms, a prior Superfund site. A vicinity map and satellite image of CHRLF is shown in Figures 1 and 2.

The Intertox and Chartrand Environmental team conducted a site visit and reconnaissance on March 19, 2021 to evaluate and determine onsite and offsite air quality sampling locations. The perimeter of the facility along the fence line and a variety of areas on the property that may be suitable locations for representative sampling of air quality and odor conditions, including the surrounding neighborhood, were evaluated during this visit. This site visit was used to help develop and support the sampling design needed for decision making, as specified in this SAP.

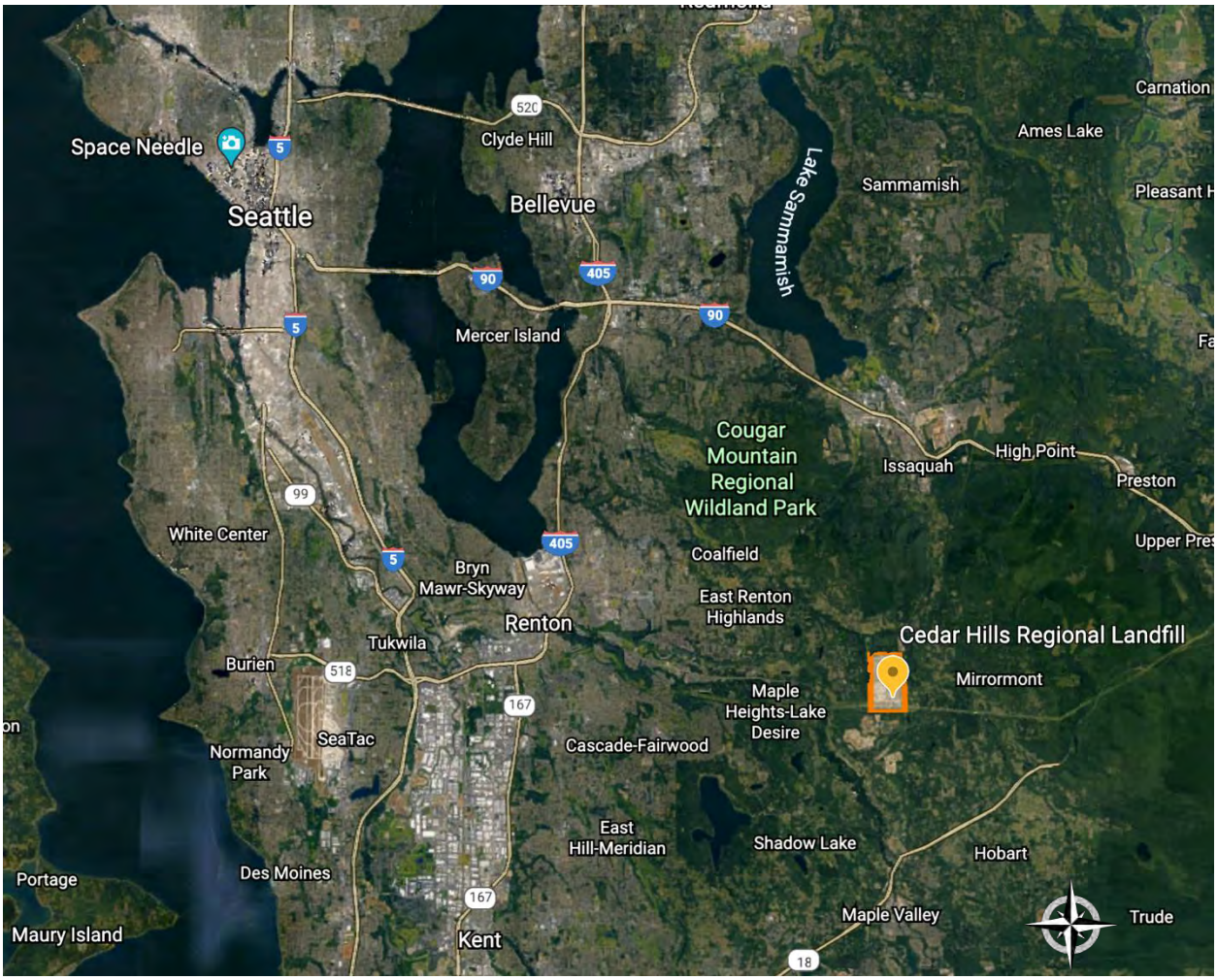

Figure 1. Vicinity Map of CHRLF as it Corresponds to the Greater Seattle Area, Washington State

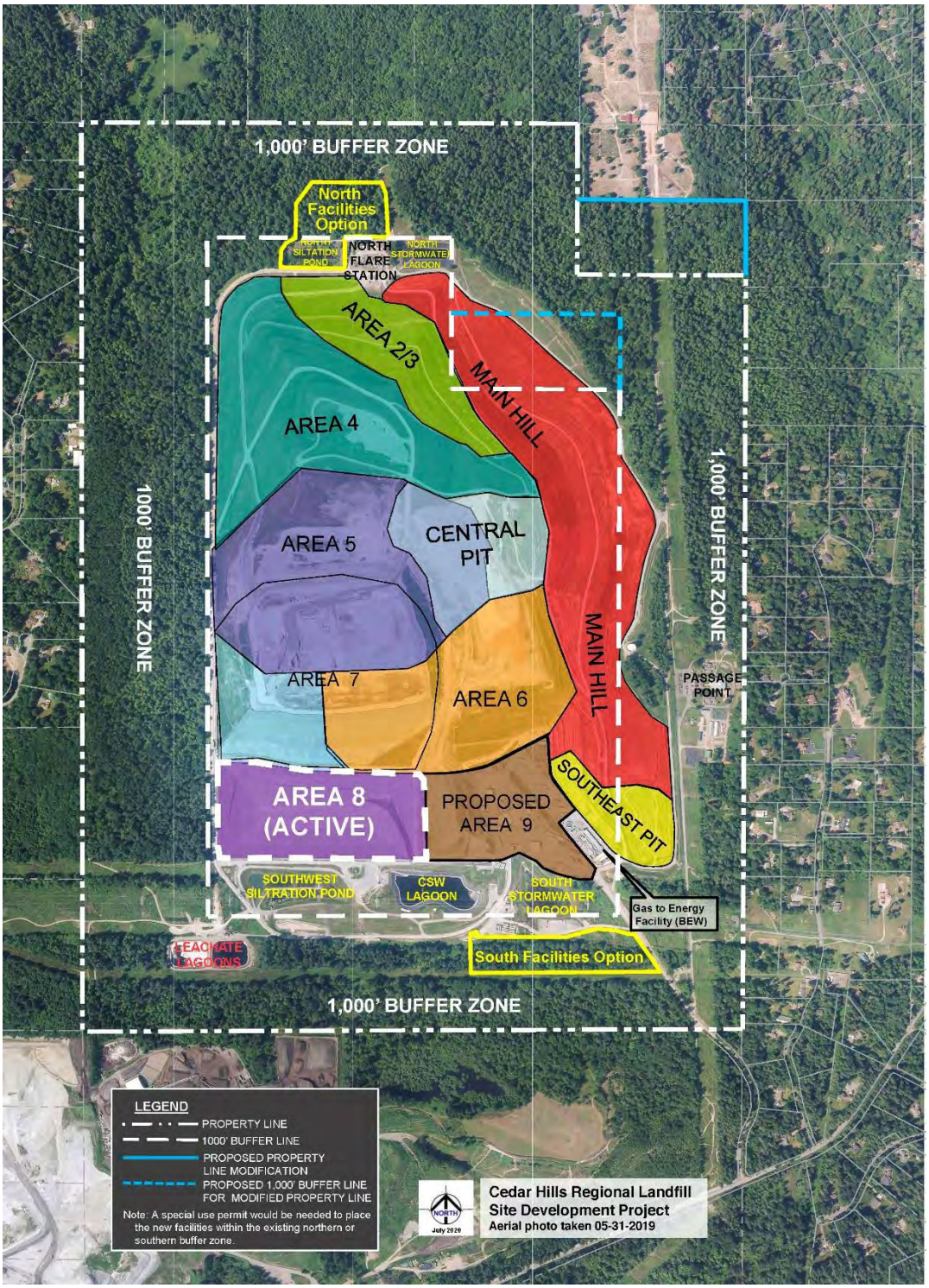
1,000' BUFFER ZONE
North Facilities Option
NORTH SILTATION POND
NORTH FLARE STATION
NORTH STORMWATER LAGOON
AREA 2/3
MAIN HILL
AREA 4
AREA 5
CENTRAL PIT
1000' BUFFER ZONE
1,000' BUFFER ZONE
AREA 7
AREA 6
MAIN HILL
PASSAGE POINT
AREA 8 (ACTIVE)
PROPOSED AREA 9
SOUTHEAST PIT
SOUTHWEST SILTRATION POND
CSW LAGOON
SOUTH STORMWATER LAGOON
Gas to Energy Facility (BEW)
LEACHATE LAGOONS
South Facilities Option
1,000' BUFFER ZONE
LEGEND
PROPERTY LINE
1000' BUFFER LINE
PROPOSED PROPERTY LINE MODIFICATION
PROPOSED 1,000' BUFFER LINE FOR MODIFIED PROPERTY LINE
Note: A special use permit would be needed to place the new facilities within the existing northern or southern buffer zone.
NORTH
July 2020
Cedar Hills Regional Landfill
Site Development Project
Aerial photo taken 05-31-2019

Figure 2. Satellite Image of CHRLF

1.3 Purpose of the Ambient Air Sampling Program

Measuring chemicals and odor from the facility using air sampling techniques is integral to this SAP. Air sampling will be conducted to support detailed responses to public comments related to human health, ecological risk assessment, and other toxicologically-oriented issues. The health protective focus of the sampling is to characterize the nature and extent of possible health effects, provide data to other teams for numerical air modeling, attempt to associate odors with airborne chemical agents, and provide results to be able to address the comments raised during the DEIS process.

USEPA (cited as EPA 2020) recommends that the most accurate way to characterize exposure is usually to conduct a well-designed monitoring study that concurrently measures environmental concentrations and internal doses over time. It is noted that elements of a well-designed exposure monitoring study include:

- Establishing quality assurance objectives that will allow exposure and risk assessors to make estimates of average and high-end exposures with a known level of reliability;
- Using sampling and analytical chemistry methods that are widely accepted by independent authoritative bodies (e.g. American Society for Testing and Materials (ASTM), National Institute for Occupational Safety and Health (NIOSH), etc.);
- Ensuring that quality control procedures have been employed and documented;
- Using measured empirical data wherever possible for estimating environmental fate and transport.

The sampling program outlined in this report, along with air dispersion modeling (conducted by HDR Inc.), is designed to obtain data to allow the team to evaluate whether the chemicals that are identified are present at concentrations sufficient to cause short- and long-term adverse health effects or foul odor concerns. Site specific data from both the source and periphery for both airborne gases and particulates will provide data on dispersion dynamics due to eddies, meteorological conditions, winds, and other factors. When combined and evaluated, these data will address public comments concerning air toxics and odors leaving CHRLF and entering the surrounding neighborhoods and beyond. The sampling results collected from this investigation can be compared with the dispersion modeling results conducted by HDR and can serve as field validation of modeling results.

To provide the most accurate data and best address the concerns of nearby residents, grab samples of air will be collected from locations on and around CHRLF. This approach was designed to address the numerous comments received from the neighboring community and stakeholders concerning problematic odors or air exposures. Because the dispersion modeling will estimate concentrations of air toxics and fugitive dusts over the longer term, grab samples will be taken to measure episodic, detectable concentrations of air toxics and odors. Collection of air in this manner can correlate odor sampling results with concurrent chemical analyses. The use of portable GC/MS, integrated flow, and high-volume sampling were considered, however, with careful consideration, it was determined that grab sampling and

laboratory analysis would be able to yield lower detection and reporting limits, as well as improved selectivity for chemicals of interest, thus characterizing the potential presence of harmful air toxics with greater accuracy.

Sampling will be conducted for odors and volatile organic compounds (VOCs and AP-42), discussed in more detail below. King County has also requested ambient air testing of arsenic (As) and antimony (Sb) as particulates along with arsine gas (speciated arsenic). The VOCs, particulate arsenic (As), particulate antimony (Sb), and arsine gas comprise the Chemicals of Interest (COI) for this SAP.

1.4 Organization of this Document

This document presents a workplan for collection and analysis of air samples at and near the CHRLF facility. The primary goals of this document are to outline the:

- Timing, numbers (sampling density), and locations of the air samples,
- Field equipment and methods to be utilized during the sampling event,
- Analytical laboratory methods utilized by the contract laboratories and,
- Quality assurance (QA) requirements applied to ensure that the air sampling techniques provide appropriate and scientifically valid data, and
- Data Quality Objectives (DQOs) used to achieve data quality and satisfy project needs.

The remaining sections of this document are as follows:

2.0 Project Personnel and Responsibilities
3.0 Timing and Location of Ambient Air Sampling
4.0 Field Sampling Methods
5.0 Sample Preservation, Storage, and Chain-of-custody
6.0 Laboratory Analytical Methods
7.0 Quality Assurance/Quality Control Requirements and Data Quality Objectives
8.0 Reporting Requirements and Data Retrieval Validation
9.0 Schedule
10.0 References
Appendices

2.0 PROJECT PERSONNEL AND RESPONSIBILITIES

Air sampling will involve technical staff of Intertox and Chartrand Environmental. The two managers and direct points of contact for King County SWD, in the event of any issues or questions, will be Dr. Lisa Corey for Intertox and Allan Chartrand for Chartrand Environmental. These two managers will be in frequent communication throughout the life of the project. The personnel who will participate in collecting samples for further analysis include:

- Richard Pleus, PhD, Intertox
- Lisa Corey, PhD, DABT, Intertox
- Anne Galyean, PhD, Intertox
- Allan Chartrand, MSc, DABT, Chartrand Environmental
- Kelli Hackney, Chartrand Environmental

The participating contract laboratories, each of which has specific capabilities for ensuring that all analyses are performed correctly, and that can and will provide required sampling equipment and laboratory analyses are:

ALS Global
2655 Park Center Dr., Suite A
Simi Valley, CA 93065

Based on the requested list of chemicals, one single laboratory was not equipped to complete all the analyses. The final lab(s) will be determined based on availability upon approval of this SAP.

3.0 TIMING AND LOCATION OF AMBIENT AIR SAMPLING

The following sections describe the anticipated timing, sampling frequency, and locations of air sampling. The actual days of sampling might require minor modifications to accommodate changes in wind speed or direction, weather, and other conditions.

3.1 Timing of Sampling

With approval of the proposed SAP and sampling dates by KCSWD, it is anticipated that the team will conduct air sampling during the week of June 21, 2021 [tentative]. Following the site visit, it was determined that there is generally a southeasterly wind (blowing from the southeast to the northwest). It is acknowledged that, due to landfill height and refuse microbial heat, localized wind directions may differ from the general southeasterly wind observed in the site visit, therefore wind direction will be field verified and recorded at each sampling location. Ideally, sampling would occur with a light southeasterly wind with no precipitation. If there is rain, the sampling can still occur; however, measures will be taken to protect sampling equipment. If weather conditions are determined to be too extreme, sampling may need to be postponed. Sampling will be conducted over four days. Sampling may not occur over consecutive days so as to attempt to evaluate varying meteorological conditions present during sampling.

3.2 Sample Collection Locations

Sampling is planned at 11 locations on and around the CHRLF property, as well as three source sampling sites within CHRLF. Source sampling will not include any stack emissions. The same locations will be sampled over a four-day period. The selection of a sampling day will be based on the weather conditions

and are likely to span over a week. The locations are described in Table 1, and a map provided in Figure 3.

Table 1. Summary of Proposed Locations and Number of Samples per Sampling Day

Sample Location Name; description	Lat/Long Coordinates	Odor	VOCs	Metal Particulates (As and Sb)	Speciated Metal (As (g))
S1 - West fence line, near area 8 (active area)	47.4556, -122.05842	2	2	2	1
S2 - West 1; West fence line, near horse stable, downwind	47.46527, -122.05832	1	1	1	1
S3 - West 2: West fence line, near house, downwind	47.46326, -122.05826	1	1	1	0
S4 - Southwest corner, upwind of CHRLF	47.45164, -122.05838	1	1	1	0
S5 - Maple Hills 1; West neighborhood, corresponding to West 1, downwind	47.46612, -122.06039	1	1	1	1
S6 – Maple Hills 2: West neighborhood, corresponding to West 2, downwind	47.46416, -122.06039	1	1	1	0
S7 - Maple Hills 3: West neighborhood, downwind	47.45966, -122.06071	1	1	1	0
S8 - South fence line; near Cedar Grove, upwind of CHRLF	47.45164, -122.05128	2	2	2	1
S9 - Southeast corner; upwind	47.45292, -122.03951	1	1	1	1
S10 - East neighborhood	47.45941, -122.03888	1	1	1	0
Ref1 - Reference; Southeast neighborhood, upwind	47.44311, -122.02867	1	1	1	0
S11 - Leachate ponds, upwind, **source sample**	47.453765, -122.054415	1	1	1	0

S12 - Site 8, in use, upwind, **source sample**	47.455715, -122.054032	1	1	1	0
S13 – Area 5/6/7 top deck intersection (along access road) upwind, **source sample**	47.462961, -122.047857	1	1	1	0
Totals		**16**	**16**	**16**	**5**

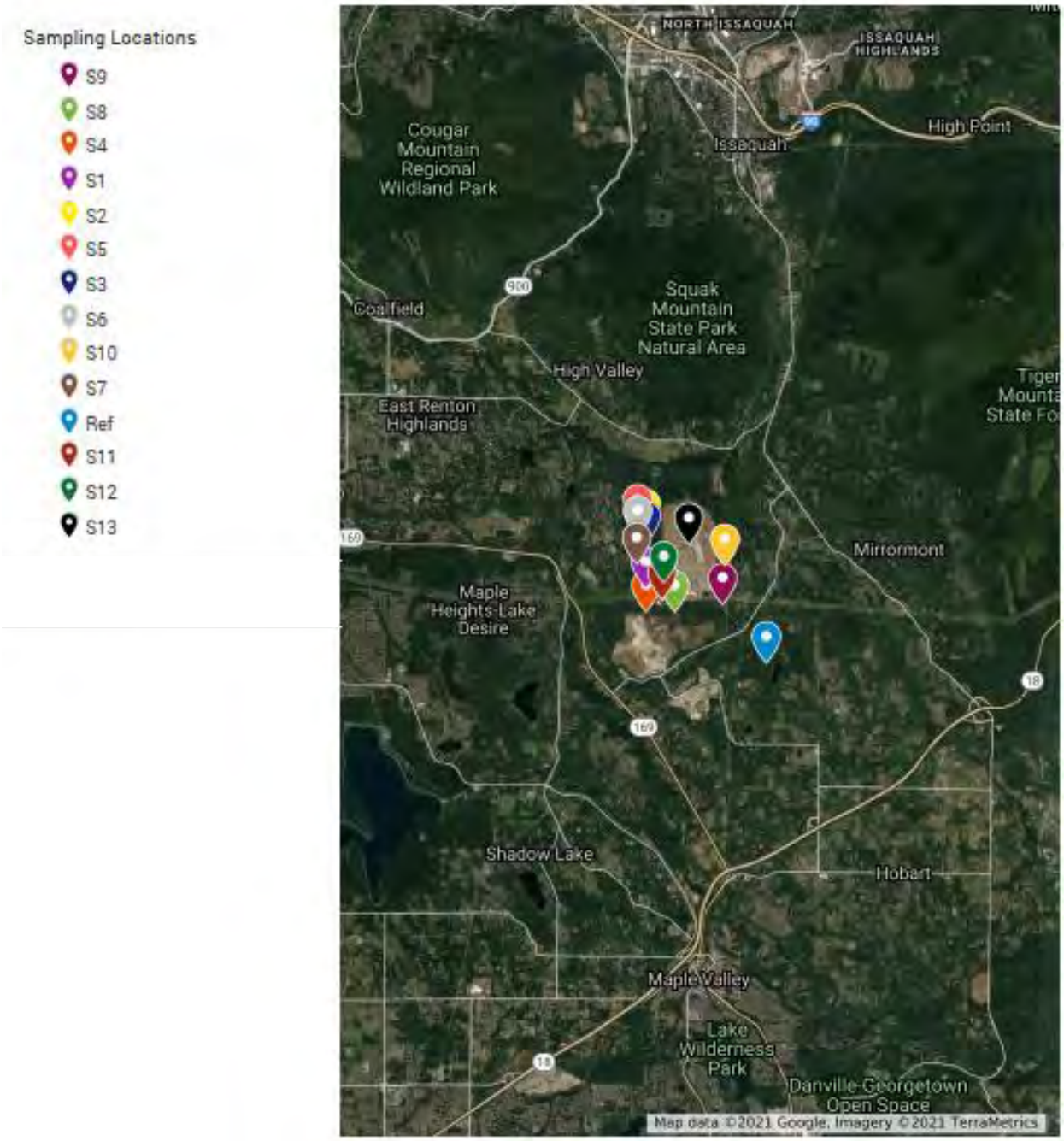

Figure 2. Map of Sampling Locations

4.0 FIELD SAMPLING METHODS

The following sections describe the documentation of field conditions, equipment, collection media, and procedures for collecting ambient air samples for VOC analysis and arsenic in ambient air.

At least one sample will be collected at each sampling location. Prior to initiation of the sampling event, the sampling team should confirm that all required materials are present (Appendix C).

4.1 Documentation of Field Conditions

Prior to the initiation of sample collection at each location, the start and end time of each sample and on-site conditions should be noted in the field notebook. In particular, the following should be noted:

- Date and time
- Actual sample location (site name and lat/long coordinates), including height above ground
- Air temperature
- Wind direction and approximate wind speed
- Meteorological conditions (*e.g.,* clear, overcast, cool)
- Presence or absence of odor
- Any other conditions that might affect the collected sample (*e.g.,* the presence of nearby automobiles)
- Suite of analytes tested and Method No.

Data on the meteorological conditions (*e.g.,* wind speed, wind direction, relative humidity) will be obtained from a portable meteorological/weather station (Kestrel 5500 Weather Meter) on the sampling day.

4.2 Equipment, Collection Media, and Procedures for Volatile Organic Chemicals

The following sections describe the sample collection procedures for samples for VOCs.

4.2.1 General Sample Collection Procedures

- A total of 16 air samples per day, including replicate and trip blank samples, will be collected by the team and analyzed for Toxic Organic (TO)-15 VOCs and additional chemicals on the Compilation of Air Pollutant Emission Factors (AP-42) list by the contract laboratories.

- Evacuated SUMMA®[a] polished stainless steel 6-liter canisters will be used to collect the air samples. Samples will be analyzed for VOCs by the laboratory as described in Appendix D, using U.S. EPA Method TO-15 (US EPA, 2019). The vacuum in the chamber pulls a sample of air into the container.
- Prior to sample collection, each canister is prepared and evacuated at the laboratory.
- The absolute inner canister pressure is recorded at the laboratory and will be verified by the sampling team in presampling preparation and in the field before sampling begins. The canister pressure will be documented in the field notes. Any canister that did not maintain a vacuum will be replaced with a spare and returned to the laboratory.

4.2.2 Equipment and Collection Media

Prior to the initiation of sampling for COIs, confirm that the laboratory has provided the following items in the sampling kit:

- Flow controllers provided by the laboratory
- SUMMA® polished stainless steel 6-liter canisters (16 per sampling day; 14 samples and 2 field duplicates)
- 9/16" Wrench
- Pre-printed sample labels
- Pre-printed chain-of-custody forms
- Packaging materials

4.2.3 Pre-sampling Procedures

Conduct the following procedures prior to initiating sampling each day:

Step 1: Review and prepare all documents (field kits, data sheets, field notes, sampling forms).

Step 2: Identify sampling locations on map.

Step 3: Check all sampling equipment.

4.2.4 Sampling Procedures

The following stepwise sequence will be followed to collect air samples for VOCs:

Step 1: Wearing nitrile gloves, use a 9/16" wrench, remove the brass cap above the valve on top of the SUMMA® canister.

[a] SUMMA® refers to a passivation process used on stainless steel to prevent iron or iron oxide on the surface which may be reactive.

Step 2: Attach the flow controller to the top of the canister. Tighten down with your fingers first, and then tighten gently with 9/16" wrench. The flow controller has been precisely calibrated at the laboratory for this project. (Note: Do not change the setting of the black knob at the top of the flow controller).

Step 3: Record sample start time.

Step 4: Turn the knob 1¼ turns counterclockwise to open the valve. The canister was evacuated and pressure checked at the laboratory. Since the flow controller restricts the air flow, there will be no hissing noise heard as air flows in.

Step 5: As these are grab samples, the sample time will be 5-10 mins in duration. At the end of the sampling period, close the valve by turning the green knob 1 ¼ turns clockwise (do not over-tighten). Replace the brass cap.

Step 6: Record sample end time.

Step 7: Identify the sample with the provided tag and use the provided plastic tie to connect the label to the canister. Please do not make any kind of mark on the canister.

Step 8: Complete appropriate chain-of-custody forms, master sample log entries, and canister tags for samples collected. Canisters have a 7-day maximum hold time at room temperature.

4.3 Equipment, Collection Media, and Procedures for Airborne Particulate Arsenic and Antimony

The following sections describe the sample collection procedures for samples for arsenic and antimony.

4.3.1 General Sample Collection Procedures

- A total of 16 air samples per day, including replicate and trip blank samples, will be collected by Intertox and analyzed for arsenic and antimony by the contract laboratories.
- Individual pumps will be provide and prepared by the laboratory to be specific for this test procedure will collect particulate onto filters for sampling by ICP-MS.

4.3.2 Equipment and Collection Media

Prior to the initiation of sampling for arsenic, confirm that the laboratory has provided the following items in the sampling kit:

- Sampler: cellulose ester membrane filter 0.8-µm pore size; or polyvinyl chloride membrane, 5.0-µm pore size; 37-mm diameter, in cassette filter holder.

- 16 Individual sampling pump, 1 to 4 L/min, with flexible connecting tubing
- Pre-printed sample labels
- Pre-printed chain-of-custody forms
- Packaging materials

4.3.3 Pre-sampling Procedures

Step 1: Review and prepare all documents attached (field kits, data sheets, field notes, sampling forms, etc.).

Step 2: Identify sampling locations on map.

Step 3: Check all sampling equipment.

4.3.4 Sampling Procedures

To collect each air sample for airborne particulate arsenic and antimony, do the following:

Step 1: Calibrate each personal sampling pump with a representative sampler in line.

Step 2: Sample at a flow rate between 1 and 4 L/min for a total sample size of 200 to 2000 L for time weighted average measurements.

Step 3: Identify the sample with the provided tag and use the provided plastic tie to connect the label to the canister. Please do not make any kind of mark on the canister.

Step 4: Complete appropriate chain-of-custody forms, master sample log entries, and canister tags for samples collected. Filters have a 7-day maximum hold time at room temperature.

4.4 Equipment, Collection Media, and Procedures for Arsine Gas

The following sections describe the sample collection procedures for samples for arsine gas.

4.4.1 General Sample Collection Procedures

- A total of 5 air samples per day, including replicate and trip blank samples, will be collected by Intertox and analyzed for arsenic and antimony by the contract laboratory.
- Individual pumps will collect through charcoal filters and measured by atomic absorption by NIOSH method 6001.

4.4.2 Equipment and Collection Media

Prior to the initiation of sampling for arsine gas, confirm that the laboratory has provided the following items in the sampling kit:

- 5 samplers: glass tube, 7 cm long, 6-mm OD, 4-mm ID, flame-sealed ends, containing two sections of activated (600 °C) coconut shell charcoal (front = 100 mg; back = 50 mg) separated by a 2-mm urethane foam plug. A silylated glass wool plug precedes the front section and a 3-mm urethane foam plug follows the back section. Pressure drop across the tube at 1 L/min airflow must be less than 3.4 kPa. Tubes are commercially available. NOTE: Use a cellulose ester membrane filter in front of the sampler if particulate arsenic is present.
- Personal sampling pump, 0.01 to 0.2 L/min,
- Pre-printed sample labels
- Pre-printed chain-of-custody forms
- Packaging materials

4.4.3 Pre-sampling Procedures

Step 1: Review and prepare all documents attached (field kits, data sheets, field notes, sampling forms, etc.).

Step 2: Identify sampling locations on map.

Step 3: Check that all sampling equipment is present.

4.4.4 Sampling Procedures

To collect each air samples for arsine gas, do the following:

Step 1. Check that each personal sampling pump was calibrated by the laboratory.

Step 2. Remove sampler caps immediately before sampling. Attach sampler to personal sampling pump with flexible tubing.

Step 3. Sample at an accurately known flow rate between 0.01 and 0.2 L/min for a total sample size of 1 to 2 L for arsine gas.

Step 4. Cap the sampler and pack securely for shipment.

4.5 Equipment, Collection Media, and Procedures for Odor Measurement

The following sections describe the sample collection procedures for samples for odor measurements.

4.5.1 General Sample Collection Procedures

- A total of 16 air samples per day, including replicate and trip blank samples, will be collected by Intertox and analyzed for odors by St. Croix Sensory.
- Nasal Ranger Field Olfactometer will be used to measure and quantify odor strength.

4.5.2 Equipment and Collection Media

Prior to the initiation of sampling for arsine gas confirm that the laboratory has provided the following items in the sampling kit:

- Nasal Ranger Field Olfactometer

4.5.3 Pre-sampling Procedures

Step 1: Review and prepare all documents attached (field kits, data sheets, field notes, sampling forms, etc.).

Step 2: Identify sampling locations on map.

Step 3: Check that all sampling equipment is present.

4.5.4 Sampling Procedures

To collect each air samples for odors, do the following:

Step 1. Turn the Nasal Ranger® Field Olfactometer on and position the Dilution to Threshold (D/T) dial at the first blank position located between 2-D/T and 60-D/T. Inhale at a NORMAL breathing rate through the Nasal Mask for 1 minute.

Step 2. Turn the dial to the 60-D/T position and inhale TWICE through the Nasal Mask at the target inhalation rate of 16-20 liters per minute (LPM).

Step 3. Turn the dial to the next blank position between 60-D/T and 30-D/T and resume a NORMAL breathing rate through the Nasal Mask. If an odor is detected by the operator, the test is concluded Test concluded, D/T > 60.

Step 4. If no odor is detected, turn the dial to the 30-D/T position and inhale TWICE through the Nasal Mask at the target inhalation rate of 16-20 LPM.

Step 5. Turn the dial to the next blank position between 30-D/T and 15-D/T and resume a NORMAL breathing rate through the Nasal Mask. If an odor is detected by the operator, the test is concluded Test concluded, 60 > D/T > 30.

Step 6. If no odor is detected, repeat the above steps with the 15, 7, 4, and 2 positions on the dial, remembering to rest the nose with the blank positions between each D/T value. After reaching the 2-D/T position. If an odor is detected by the operator, the test is concluded $4 > D/T > 2$.

Step 7. If no odor is detected, the test is concluded, $D/T < 2$.

4.6 Shipping and Packaging

Intertox will contact FedEx on the morning of the sampling day to schedule a pick-up for that day and to confirm drop off locations and closing times, in the event that sampling is not completed by the pick-up time. The samples will be sent according to the following:

- Ship the samples via standard FedEx (VOC samples have a 7-day holding time).
- Remove all old shipping labels and fill out new Air Bill and Shipping Labels.
- Ship samples (Standard) to the contract laboratory.

Prior to shipping, Intertox will call the laboratory and leave a message stating the airbill number, number of samples, and total number of boxes that will be shipped. This will enable the lab to take immediate action in the event the samples do not arrive on time or only a partial shipment is received.

5.0 SAMPLE PRESERVATION, STORAGE, AND CHAINS-OF-CUSTODY

Sample possession during all testing efforts must be traceable from the time of collection until the results are verified and reported. Sample custody procedures provide a mechanism for documentation of all information related to sample collection and handling to achieve sample integrity.

5.1 Sample Preservation and Storage Requirements

Immediately after sample collection is completed, the samples should be stored at room temperature. Direct sunlight should be avoided, however, refrigeration is not required. Table 5 shows the holding times for each of the sampling methods to be performed. None of the holding times exceed 14 days.

5.2 Chain-of-Custody Procedures

Chain-of-custody forms (example document can be found in Appendix C) will be completed by Intertox or Chartrand Environmental staff after the air samples are collected and will accompany the samples to the laboratory. When the laboratory receives the samples, they will verify that the chain-of-custody form accurately reflects the number and type of samples received. If any discrepancies are observed, the discrepancies will be recorded on the chain-of-custody form and Intertox and Chartrand Environmental will be notified to correct the problem.

6.0 LABORATORY ANALYTICAL METHODS

The following sections describe the laboratory methods that will be used by the contract laboratory to analyze the air samples for chemicals that are present in the ambient air at and near CHRLF. Results will be compared to concurrent odor testing and will be used to validate air modeling.

6.1 Volatile Organic Compounds

The contract laboratories will perform the analyses for VOCs. The method for collection and analysis of samples for VOCs will follow Modified EPA Method TO-15 as published in the "Compendium of Methods for the Determination for Toxic Organic Compounds in Air" (US EPA, 2019). This method is based on collection of whole air samples in SUMMA® passivated stainless-steel canisters. The VOCs are subsequently separated by gas chromatography and measured by mass-selective detector or multidetector techniques. Table 2 lists the VOCs and their detection limits. VOCs will be compared to toxicity guideline levels defined by state or federal regulatory agencies. These will be determined in coordination with other related efforts, specifically numerical modeling, and addressed in the Final Report.

In order to illustrate the level of detection for grab samples, we provided method detection, laboratory reporting limits, and ambient air quality benchmark levels (California's Ambient Air Quality Standards (CAAQS) in conjunction with the Occupational Safety and Health Administration exposure guidelines (OSHA) and the U.S. Center for Disease Control's (CDC) minimal risk levels (MRLs) for Hazardous Substances website (https://wwwn.cdc.gov/TSP/MRLS/mrlslisting.aspx). These values are illustrative of the low detection limits that the laboratory can attain for the numerous chemicals.[b]

[b] Some of the air guideline values are less than their detection limits. However, grab samples are not appropriate to compare to long-term exposure levels. This comparison will be done using residential air toxics guideline values to air dispersion modeling results.

It is acknowledged that some of the ambient air quality benchmarks are occupational standards as opposed to long-term exposure levels, which will be further discussed and addressed in the project deliverable. These limits are listed for context of the detection limits but will be further evaluated for applicability in the final deliverable.

Table 2. Volatile organic compounds (VOCs) in Method TO-15 and AP-42 showing Method Detection Limits (MDLs), Laboratory Reporting Limits and Ambient Air Quality Guidelines.

Compound Name	Method Detection Limit (ppm)	Laboratory Reporting Limit (ppm)*	Ambient Air Quality Guideline
o-Xylene	0.23	0.1	0.05 ppm (chronic, mixed)[a]
1,1,1-Trichloroethane	0.18	0.1	0.7 ppm (intermediate)[a]
1,1,2,2-Tetrachloroethane	0.15	TBD	TBD
1,1,2-Trichloroethane	0.18	0.1	2 ppb (intermediate)[a]
1,1-Dichloroethane	0.25	0.1	15 ppm (acute)[a]
1,1-Dichloroethene	0.25	0.1	0.6 ppm (chronic)[a]
1,2-Dibromoethane	0.14	0.1	20 ppm (8-hour)[a]
1,2–Dichlorobenzene	0.17	0.1	TBD
1,2-Dichloroethane	0.25	0.1	0.6 ppm (chronic)[a]
1,2-Dichloropropane	0.22	0.1	0.02 ppm (acute)[a]
1,3-Dichlorobenzene	0.17	0.1	TBD
1,4-Dichlorobenzene	0.17	0.1	0.01 ppm (chronic)[a]
2-Butanone	0.34	0.5	1 ppm (acute)[a]
2-Hexanone	0.24	0.5	TBD
2-Propanol	0.41	0.5	TBD
4-Methyl-2-pentanone	0.24	0.1	TBD
Acetone	0.42	1.0	13 ppm (chronic)[a]
Acrylonitrile	0.60	0.1	0.1 ppm (acute)[a]
Benzene	0.31	0.1	0.003 ppm (chronic)[a]
Bromodichloromethane	0.15	0.1	TBD
Bromoform	0.10	0.1	TBD
Bromomethane	0.26	0.1	0.001 ppm (chronic)[a]
Butane	0.42	TBD	TBD
Carbon Disulfide	0.32	0.5	0.05 ppm (chronic)[a]
Carbon monoxide	0.87	TBD	8 ppm (8-hour)[a]
Carbon Tetrachloride	0.16	TBD	0.03 ppm (chronic)[a]
Carbonyl sulfide	0.41	TBD	TBD
Chlorobenzene	0.22	0.1	TBD
Chlorodifluoromethane	0.28	0.1	TBD
Chloroethane	0.38	0.1	15 ppm (acute)[a]
Chloroform	0.20	0.1	0.02 ppm (chronic)[a]
Chloromethane	0.48	0.1	0.05 ppm (chronic)[a]
Cis-1,2-Dichloroethene	0.25	0.1	200 ppm (8-hour)[a]
Cis-1,3-Dichloropropane	0.22	0.1	TBD
Dibromochloromethane	0.12	0.1	TBD
Dichlorodifluoromethane	0.24	0.1	TBD
Dimethyl sulfide (methyl sulfide)	0.39	TBD	TBD
Ethane	0.81	TBD	TBD
Ethanol	0.53	0.5	TBD
Ethyl mercaptan (ethanethiol)	0.39	TBD	TBD
Ethylbenzene	0.23	0.1	0.06 ppm (chronic)[a]
Ethylene dibromide	0.13	0.1	TBD
Hexane	0.28	0.5	0.6 ppm (chronic)[a]
Hydrogen sulfide	0.72	TBD	0.02 ppm (intermediate)[a]
m- & p-Xylenes	0.23	0.1	0.05 ppm (chronic, mixed)[a]
Mercury, total	0.12	TBD	0.02 ppb (chronic)[a]
Methyl mercaptan	0.51	TBD	10.16 ppm (8-hour)[a]
Methyl tert-Butyl Ether	0.28	0.1	0.7 ppm (chronic)[a]
Methylene Chloride	0.29	0.2	0.3 ppm (chronic)[a]

Pentane	0.34	0.1	TBD
Propane	0.55	0.1	TBD
Styrene	0.23	0.1	0.2 ppm (chronic)[a]
t-1,2-dichloroethene	0.25	0.1	0.2 ppm (intermediate)[a]
Tetrachloroethene	0.15	0.1	0.006 ppm (chronic)[a]
Toluene	0.27	0.1	1 ppm (chronic)[a]
Trans-1,2-Dichloroethane	0.25	0.1	0.2 ppm (acute)[a]
Trans-1,3-Dichloropropene	0.22	0.1	0.007 ppm (chronic)[a]
Trichloroethene	0.19	0.1	0.37 ppm (annual)[b]
Trichlorofluoromethane	0.18	0.1	TBD
Trichlorotrifluoroethane	0.13	0.1	TBD
Vinyl Acetate	0.28	0.1	0.01 ppm (intermediate)[a]
Vinyl Chloride	0.39	0.1	0.004 ppm (24-hour)[b]

[a] CDC 2021
[b] California ARB 2016
*based on Eurofins, subject to change based on laboratory availability.
TBD = To be determined.
NOTE: The CDC defines: acute exposure ≤ 14 days; intermediate exposure 15 – 364 days; and chronic exposure ≥ 1 year.
Mixed refers to the combination of multiple isomers of the compound.

6.2 Arsenic and Antimony Particulate

The contract laboratories will perform the analyses for As and Sb particulates. The method for collection and analysis of samples for As and Sb will follow the NIOSH manual of analytical methods (NMAM) 7300 (NIOSH, 2003). This method is based on collection of whole air samples onto filters. The filters are subsequently separated by gas chromatography and measured by inductively coupled plasma atomic emission spectroscopy (ICP-AES) techniques. Table 3 lists the chemicals and their detection limits.

Table 3. As and Sb and their MDLs and Lab Reporting Limits

Chemical Name	MDL (ppb)	Estimated Lab Reporting Limit (ppb)	Toxicity Guideline (ppb)
Arsenic	0.15	5.6	3.3 (8-hour)[c]
Antimony	0.19	7.7	100 (8-hour)[d]

[c] CDC 2019a
[d] CDC 2019c
TBD = To be determined based on laboratory availability

6.3 Arsine Gas

The contract laboratories will perform the analyses for arsine gas. The method for collection and analysis of samples for arsine gas will be NIOSH 6001. This method is based on collection of gases into charcoal sorbent tubes. The chemical is subsequently measured by atomic absorption and graphite furnace. Table 4 lists the detection limits.

It is important to understand the distribution and fate of speciated arsenic potentially originating from the facility. Dr. Gregory Korshin of the University of Washington has proposed a hypothetic arsenic speciation cycle whereby the most predominant species is trimethylarsine, $As(CH_3)_3$, an organic arsenic, based in part on work done by Pinel-Raffaitin *et al.* 2007. This species of arsenic has been reported in mixtures of total volatile arsenic reported from sewage and landfill biomasses, with concentrations

frequently ranging between 16 and 48 μg/m^3 (Pinel-Raffaitin et al. 2007). Table 5 below shows examples of toxicity-based air quality guidelines for several species of inorganic and organic arsenic. This is intended to provide a toxicity-based perspective on any arsenic species that could be measured from leachate or landfill gases at the CHRLF facility. However, in this study, arsine gas is used as surrogate for organic arsenics.

Table 4. Gases and their MDLs and Lab Reporting Limits

Compound Name	Detection Limit (ppb)	Estimated Lab Reporting Limit (ppb)	Toxicity Guideline (ppb)
Arsine gas	0.15	TBD	50 (8-hour)[e]

[e] CDC 2019b
TBD = To be determined based on laboratory availability

Table 5. Examples of Toxicity-Based Air Quality Guidelines for Speciated Arsenic from Different Regulatory Agencies

Compound Name	NIOSH REL* (μg/m^3)	OSHA PEL** (μg/m^3)	WAC ASIL*** (μg/m^3)
Arsine gas (AsH_3 (g))	2	159.5	0.05
As and inorganic As compounds, NOS****	-	-	3.0E-04
As (inorganic compounds)	2	10	-
$AsCl_3$ (As (III) Trichloride)	2	-	3.0E-04

*NIOSH REL = National Institute for Occupational Safety and Health Recommended Exposure Limit
**OSHA PEL = Occupational Safety and Health Administration Permissible Exposure Limit
***WAC ASIL = Washington Administrative Code Acceptable Source Impact Level
****Not otherwise specified

7.0 QUALITY ASSURANCE AND QUALITY CONTROL REQUIREMENTS

Quality Assurance (QA) includes all procedures and activities used to ensure that the data collected will meet data quality specifications and to assess data quality. QA procedures will follow guidelines described by the US EPA, 1998 and ASQC, 1991.

7.1 Quality Control

Quality Control (QC) is the system designed to measure and control the quality of the data deliverable or product to ensure that it meets the data quality needs of the end users. As part of the sampling and analysis program, field and laboratory QC samples, as described below, will be analyzed. These data will be used to quantify precision and accuracy, identify problems or limitations in the associated sample results, and ensure that data of high quality are produced. Field QC samples will be documented on the chain-of-custody and submitted to the laboratory. Laboratory QC samples will be documented at the bench and reported with the analytical results. Table 6 lists the QC samples that will be obtained.

Table 6. Type and number of QC samples

Control Samples	VOCs	Arsenic and Antimony	Arsine gas
Equipment calibration standards	Conducted by lab	Conducted by lab	Conducted by lab
Quality control standard	Conducted by lab	Conducted by lab	Conducted by lab
Calibration during testing	1 every 24 hours	NA	NA
Method blanks	1 per 24 hours	1 per 24 hours	1 per 24 hours
Sample duplicates	1 per batch or 11 samples	1 per batch or 11 samples	1 per batch or 5 samples
Trip blank	1 per day	1 per day	1 per day
Field replicate	1 per day	1 per day	1 per day
Hold times	7 days	NA (stable)	6 days
Storage/shipping requirements	Return in box provided, room temp	None, room temp	Cooler with temperature <25F

N/A – Not Applicable

7.2 Field Quality Control Samples

Field replicates and trip blanks will be obtained during the sampling effort, as described below.

7.2.1 Field Replicate Samples

A replicate sample is a second sample collected at the same location and time with an original sample. Replicate sample results are used to assess precision, including variability associated with both the sample collection process and the laboratory analysis. Replicate samples are collected using identical recovery techniques, and treated in an identical manner during storage, transportation, and analysis, as other samples. One replicate sample will be collected per day (at the location described in Section 3.2).

7.2.2 Trip Blanks

One trip blank will be obtained per day. This trip blank will be subjected to the same handling conditions as all other samples except that no air sample will be taken. The trip blank sample will indicate sources of contamination to samples during handling or shipping. The laboratory will process the trip blank in the same manner as the ambient air samples.

7.3 Laboratory Quality Control Samples

Laboratory QC is necessary to control the analytical process, to assess the accuracy and precision of analytical results, and to identify assignable causes for atypical analytical results. The QC checks in the laboratory protocol are specific to the analytical method and include the use of replicate samples and blank samples as outlined in Table 6.

8.0 REPORTING REQUIREMENTS AND DATA VALIDATION

The entire Intertox team will ensure that the proper data quality and verification protocols are followed. Chemists from Herrera Environmental will perform a third-party data validation on all raw laboratory data to ensure that the data from the air sampling program are scientifically valid. Intertox will provide a copy of all field notes and chain of custody records regarding the sampling event in our final report. The contract labs will also provide all documentation regarding their analysis of the samples, including all sample and method blank data, analysis notes, and chain of custody records—these records will also be included with the final report. The Intertox team will adhere to the quality assurance guidelines designed by EPA (1998 and 2006) to ensure that all documentation is appropriately recorded and reported to all agencies and interested parties as required.

8.1 Data Quality Objectives

The purpose of this investigation is first to define the nature and extent of airborne contamination originating from the CHRLF site using the sampling and analysis procedures described in this SAP. The end-use of this data is to support human health, toxicology and risk assessment evaluations to determine which areas and which COIs on the facility would cause potential risk and potentially warrant future action. This SAP describes in detail the sampling design for data collection activities required to support decision making concerning airborne exposure and risk. To do so, EPA's seven-step DQO process (EPA 1993, EPA 2006) was used. Each of these seven steps is summarized in Table 7, below:

Table 6. Project Data Quality Objectives

1.	State problem	Historical and current use of the CHRLF facility which generates an array of potentially hazardous or toxic COIs, some of which are shown on Table 2. KCSWD is interested in defining potential problems, exposures, and risks to ensure that the best possible steps are taken to minimize or eliminate such risks. Affected areas need delineation prior to this evaluation, and this process should achieve that delineation.
2.	Identify decisions	Define the levels and distribution of metal, organic, and other COIs at the CHRLF facility.
3.	Identify inputs	Samples to be collected as specified in the SAP. Following data validation, data will be analyzed for the nature and extent of COI compounds shown on Table 2, 3, and 4 of the SAP, and subsequently analyzed for exposure and risk.
4.	Define boundaries of the project	The scope of the investigation is limited to the areas defined in the SAP, including both onsite, fence line, and offsite (neighborhood) areas, as shown on Table 1.
5.	Develop the decision rule	Analytical results will be compared against human health-based action levels to determine whether any specific COIs could constitute a concern for exposure and risk. These conclusions were used to evaluate the

		potential extent of follow up action that may be required at the facility.
6.	Specify limits on decision errors	The project is designed so that samples will be collected from all areas of suspected impact, so the data will represent the extent of impact at the Site. Generally speaking, a 95% level of certainty is the guideline recommended by EPA in environmental science.
7.	Optimize the design	Based on the foregoing six considerations, it was possible to refine and optimize the study design to achieve project DQOs, as well as to conduct data evaluation and risk assessment at the CHRLF facility.

9.0 SCHEDULE

The schedule of activities planned for the ambient air-sampling program is summarized in Table 8.

Table 7. Schedule of air sampling program events.

Activity	Date
Deliver draft Sampling and Analysis Plan (SAP) to King County	April 30, 2021
Ship equipment to Intertox from contract labs	TBD pending SAP approval
SAP approval by KC SWD	estimated June 9, 2021
Air Sampling	June 22-July 2, 2021
Ship samples to contract labs	June 22-July 2, 2021
Laboratory analysis	June 28-July 15, 2021
Laboratory reporting and EIS report/comment response preparation	September - October 2021

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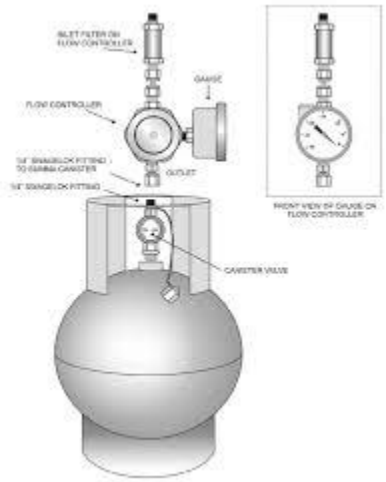
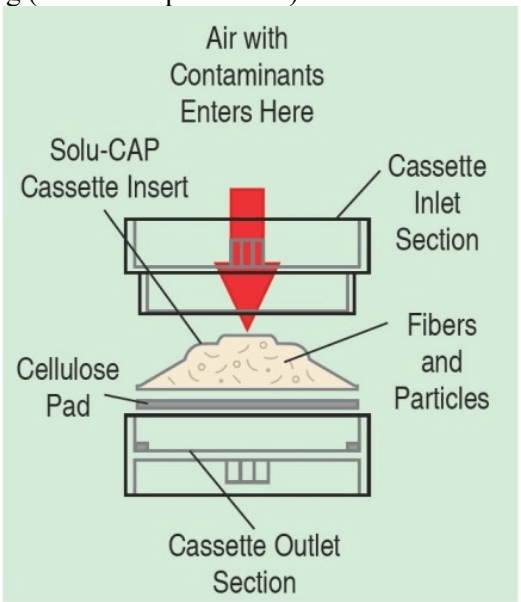
APPENDIX AA

Sampling Equipment Diagrams

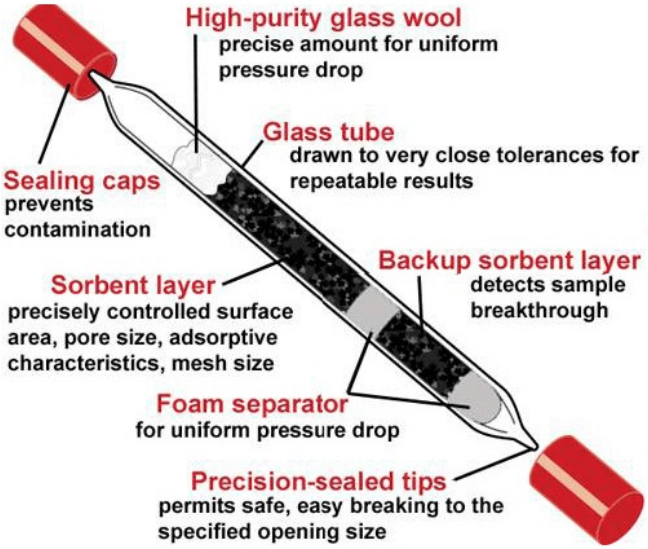
A. Summa Canister (VOCs)



B. Cassette Filter Sampling (As and Sb particulate)



C. Sorbent Tube Sampler (Arsine gas)



D. Nasal Ranger


Removable Nasal Mask with Check Valves and Comfort Seal
Power & Inhalation Rate LED Display
Dilution to threshold (D/T) Dial
Power Button
Shoulder Strap Connection
9-Volt Battery (Included) Compartment in Handle
Replaceable Carbon Filter Cartridges for Odor-Free Dilution Air
Serial Number Located on Underside of Battery Compartment Door

APPENDIX BB

Example Chain-of-Custody Form

Appendix CC

Project Sampling Log for CHRLF Air Quality Sampling May 2021

(should be kept in a three-ring binder and used by all sampling personnel)

Sample ID	coordinates		Time (duration)	Date	Suite of analytes	Weather conditions (ambient temp, cloudy/clear/rainy)	Meteorological Conditions (wind speed, direction)	Analytical Method #	Sampling height (ft)	Sampler's initials
	latitude	longitude								

APPENDIX DD

Approved Health and Safety Plan

SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR AIR QUALITY AND ODOR MONITORING

CEDAR HILLS REGIONAL LANDFILL
MAPLE VALLEY, WA

Prepared for
King County
Department of Natural Resources and Parks
Solid Waste Division

Prepared by

Chartrand Environmental LLC
King County Small Contractors and Suppliers (SCS) No. 2425
T 425.890.2163

and

INTERTOX, INC.
600 Stewart Street, Suite 1101
Seattle, WA 98101

206.443.2115 phone

HEALTH AND SAFETY PLAN REVIEW AND APPROVAL

Client:	King County Solid Waste Division	Site Name:	Cedar Hills Regional Landfill (CHRLF)
Project Name:	CHRLF 2020 Site Development Plan EIS and Facilities Relocation	Project No.:	14-05971-001, Task 500
Start Date:	May 2021	End Date:	June 2021
Plan Expiration Date:	30 June 2021		

(Last day of expected fieldwork or no longer than 3 months).

The following individuals have reviewed this Health and Safety Plan (HSP) and have approved its use for the dates specified.

Allan Chartrand

Project Manager & Site Health and Safety Officer (SHSO)	Signature	Date
Kelli Hackney		
Alternate SHSO & Project Scientist	Signature	Date
Lisa Corey		
Intertox Project Manager	Signature	Date
Anne Galyean		
Project Scientist	Signature	Date
Cameron Bellamoroso		
	Signature	Date

This HSP is based on federal (29 Code of Federal Regulations [CFR] Part 1910.120) and state (Chapter 296-843-120 Washington Administration Code [WAC]) regulations, which address practices conducted at sites associated with hazardous substances. This HSP is applicable only to employees of Chartrand Environmental LLC Consultants, subconsultants, and contractors. Other contractor personnel, who provide site-specific information, may review this HSP; however, Chartrand Environmental LLC assumes no responsibility or liability for the use of this document by other parties.

Due to the potentially hazardous nature of this site and the activity occurring thereon, it is not possible to discover, evaluate, and provide protection for all possible hazards that may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury at this site. The health and safety guidelines in this HSP were prepared specifically for this site based on site conditions, purposes, dates, and personnel specified, and must be amended if these conditions change. This HSP should not be used on any other site without prior research by trained health and safety specialists.

CONTENTS

ATTACHMENTS

ABBREVIATIONS AND ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
CFR	Code of Federal Regulations
CHRLF	Cedar Hills Regional Landfill Facility
CO	carbon monoxide
CPR	cardiopulmonary resuscitation
H_2S	hydrogen sulfide
HSP	health and safety plan
HAZWOPER	Hazardous Waste Operations
IDLH	immediately dangerous to life and health
KCSWD	King County Solid Waste Division
LEL	lower explosive limit
LFC	lowest feasible concentration
LFG	Landfill Gas
LOP	levels of protection
mg/m^3	milligrams per cubic meter
mg/kg	milligrams per kilogram
NIOSH	National Institute of Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PEL	permissible exposure limit
PPE	personal protective equipment
ppm	parts per million
REL	recommended exposure limit
SHSO	site health and safety officer
STEL	short-term exposure limit
TLV	threshold limit value
TWA	time weighted average
WAC	Washington Administrative Code

INTRODUCTION

This site-specific health and safety plan (HSP) applies to the field work associated with air quality and odor monitoring, set to take place starting on the 17th of May 2021 at King County Solid Waste Division's (KCSWD) Cedar Hills Regional Landfill (CHRLF) a site with documented releases of hazardous substance(s) to the environment. Chartrand Environmental LLC (Chartrand Env.) and Intertox, Inc. (Intertox) expects employees, for company-approved field work, will follow safety procedures and regulations set forth in this safety plan.

Safety Policy

Chartrand Env.'s Safety Policy is that the health and safety of its staff is of paramount importance. Activities performed under potentially hazardous conditions shall be acknowledged and planned to mitigate personal injury. Chartrand Env.'s Safety Policy shall apply during company-approved field work only.

Site Description and Scope of Work

CHRLF has operated for several decades as a Subtitle D landfill accepting municipal solid waste for disposal. King County recently received numerous comments from nearby residents regarding air quality and odor concerns in response to the CHRLF draft Environmental Impact Statement (DEIS). In response to these comments, Chartrand Env. and Intertox will be assessing potential exposures to nearby residents related to air, odor, noise (acoustics), vibration, surface water, stormwater, pest vectors, and other related issues as outlined in the approved Sampling and Analysis Plan (SAP).

Sampling will be conducted for odors and volatile organic compounds (VOCs), ambient air testing of arsenic (As) and antimony (Sb) as particulates, as well as arsine gas (speciated arsenic) and stibine gas (speciated antimony) as outlined in the approved SAP. The scope of work includes collection of thirteen odor, VOC, and metal particulates samples (As and Sb), in addition to five speciated metals samples (As and Sb). The proposed locations (latitude and longitude) and number and types of samples to be collected at each location are outlined in the approved SAP. The locations and time of sample collection are intended to encompass different meteorological conditions (i.e. high- and low-pressure systems), so as to accurately characterize potential exposure to nearby communities.

Potential Hazards Associated with Field Tasks

Potential Chemical, Physical and Biological Hazard Identification

Hazards may exist in multiple forms on the site and shall be classified among three general categories: chemical, physical, and biological. The following list is meant to convey the general hazard classes that may be encountered on the site. A Job Hazard Assessment (JHA) is provided in Attachment 3.

Chemical Hazards		Physical Hazards		Biological Hazards	
X	Asbestos	X	Motor Vehicle Driving	X	Coliform Bacteria
X	Flammable Liquids/Gases	X	Heavy Equipment Operations	X	Wastewater
X	Metals	X	Drilling Rigs	X	Hospital Waste
X	Polychlorinated Biphenyl	X	Heavy Lifting	X	Stinging/Poisonous Insects
X	Pesticides/Herbicides	X	Slips, Trips, or Falls	X	Bacterial/Viral Agents
X	Petroleum Hydrocarbons	X	Confined Space Entry	X	Rodents/Vermin
X	Volatiles	X	Electrical Hazards	X	Large Predatory Animals
X	Semi-Volatiles	X	Explosives		Poisonous Snakes
X	Toxic Liquids/Gases	X	Radioactive Isotopes		
	Dioxins/Furans	X	Traffic Hazards		
	Oxygen Deficiency	X	Water Hazards		

Potential Chemical Hazards

Chemical hazards will be evaluated by visual examination of site conditions. Visual indications of potential chemical hazards include evidence of dead or dying vegetation, dead animals, discolored vegetation, or soil.
Sampling at CHRLF has the potential for exposure to leachate and landfill gases (LFG). Following are general exposure hazards associated with exposure to both leachate and LFG:

- Leachate may contain metals such as ammonia, organic nitrogen, pesticides, solvents and other hydrocarbons, heavy metals, gasoline derivatives, chlorinated compounds, hydrocarbons, bacteria such as tetanus, or other hazardous or toxic constituents.

- LFG poses explosion and flammability hazards. LFG contains methane (CH_4) and carbon dioxide. These gases pose an asphyxiation hazard therefore all confined or potentially confined spaces are considered asphyxiation hazards. By volume, LFG is about 50 percent CH_4 and 50 percent carbon dioxide and water vapor. It also contains small amounts of nitrogen, oxygen, and hydrogen, less than 1 percent non-methane organic compounds (NMOCs), and trace amounts of inorganic compounds. Some of these compounds have strong, pungent odors (for example, hydrogen sulfide [H_2S]). NMOCs consist of certain hazardous air pollutants and volatile organic compounds.

Nearly 30 organic hazardous air pollutants have been identified in uncontrolled LFG, including benzene, toluene, ethyl benzene, xylenes, and vinyl chloride.

- CH_4 is heavier than air and can collect in low-lying, poorly ventilated areas such as manholes, wastewater lines and underground vaults. CH_4 will be monitored based on the percentage of the lower explosive limit (% LEL). The LEL is defined as the minimum concentration of a constituent at which ignition will occur when present in the air. The LEL for CH_4 is 5% by volume.

- H_2S is a colorless, flammable, and extremely hazardous gas with a "rotten egg" odor found in LFG. It occurs naturally and can also be produced by the breakdown of organic matter including solid waste. It is heavier than air and can collect in low-lying, poorly ventilated areas such as manholes, wastewater lines and underground vaults. H_2S can be smelled at low levels, but with continuous low-level exposure or at higher concentrations H_2S causes loss of smell even though it is still present. Smell should not be relied on for H_2S detection.

Regulatory Action Levels

The following table provides information regarding the relative toxicity of chemicals that may be found at the site based on established state or federal cleanup levels.

10.1.1.1.1.1 **Petroleum Products**			***10.1.1.1.1.2*** **Volatiles**		
Chemical	Matrix	Regulatory Action Level[1]	Chemical	Matrix	Regulatory Action Level[1]
-	-	-	Benzene	Air	1 ppm
-	-	-	Toluene	Air	100 ppm
-	-	-	Ethylbenzene	Air	100 ppm
-	-	-	Xylenes	Air	100 ppm
-	-	-	-	-	-
10.1.1.1.1.3 **Metals**			***10.1.1.1.1.4*** **Other**		
Chemical	Matrix	Regulatory Action Level[1]	Chemical	Matrix	Regulatory Action Level[1]
-	-	-	Hydrogen sulfide	Air	10 ppm
-	-	-	Methane	Air	1,000 ppm[2]

Notes:
1. References for regulatory action levels are NIOSH Pocket Guide to Chemical Hazards 2006; NIOSH short term exposure limit (STEL) and Washington Department of Labor and Industries Permissible Exposure Limits (PELs).
2. There is not a PEL for methane because it is a simple asphyxiant rather than a toxic chemical. The value listed is a NIOSH 8-hour exposure limit.

Exposure Pathways and Permissible Exposure Limits

The following is a list of potential exposure pathways, and the permissible exposure limits (PELs) and time weighted averages (TWAs) for chemical and biological hazards that may be encountered on the site.

The potential exposure pathways are not limited to those listed. Acute systems of exposure along with odor thresholds and descriptions are given when that information is known. Odor thresholds are not exact and vary with susceptibility or sensitivity involved and will be discussed in the daily safety briefing.

Predominant Potential Site Chemical Hazards

Chemical (or Class)	Exposure Limits (TWA)			Other Pertinent Limits	Warning Properties/ Description	Routes of Exposure Or Irritation	Acute Health Effects	Chronic Health Effects/Target Organs
	OSHA PEL	NIOSH REL	STEL					
Benzene	1 ppm	0.1 ppm Carcinogenic	OSHA = 1 ppm NIOSH = 5 ppm	IDLH = 500 ppm Carcinogenic	Aromatic odor	Inhalation, absorption, ingestion, skin and/or eye contact	Irritated eyes, skin, nose, and respiratory system; dizziness, headache, nausea, staggered gait, weakness, exhaustion, anorexia, dermatitis	Carcinogen A1 – Eyes, skin, respiratory system, blood, central nervous system, bone marrow (leukemia)
Ethyl benzene	100 ppm (435 mg/m^3)	100 ppm (435 mg/m^3)	125 ppm (545 mg/m^3)	IDLH = 800 ppm (10% lower explosive limit [LEL])	Aromatic odor	Inhalation, ingestion, skin and/or eye contact	Irritated eyes, skin, and mucous membranes; dermatitis, headache, narcosis, coma	Eyes, skin, respiratory system, central nervous system
Toluene	200 ppm	100 ppm (375 mg/m^3)	NIOSH = 150 ppm (560 mg/m^3)	IDLH = 500 ppm CEILING (OSHA) = 300 ppm; 500 ppm (10 min. max. peak)	Sweet, pungent, benzene-like odor	Inhalation, absorption, ingestion, skin and/or eye contact	Irritated eyes, nose, weakness, exhaustion, confusion, dizziness, headache, dilated pupils, discharge of tears, nervousness, anxiety, muscle fatigue, insomnia, paresthesia	Eyes, skin, respiratory system, central nervous system, liver, and kidney damage
Xylenes	100 ppm (435 mg/m^3)	100 ppm (435 mg/m^3)	150 ppm (655 mg/m^3)	IDLH = 900 ppm	Aromatic odor	Inhalation, absorption, ingestion, skin and/or eye contact	Irritated eyes, skin, nose, and throat; dizziness, excitement, drowsiness, incoordination, staggering gait, corneal vacuolization, anorexia, nausea, vomiting, abdominal pain, dermatitis	Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys

Chemical (or Class)	Exposure Limits (TWA)			Other Pertinent Limits	Warning Properties/ Description	Routes of Exposure Or Irritation	Acute Health Effects	Chronic Health Effects/Target Organs
	OSHA PEL	NIOSH REL	STEL					
Hydrogen sulfide	10 ppm	10 ppm	15 ppm	IDLH = 100 ppm CEILING (OSHA) = 20 ppm (50 ppm [10 min. max. peak]) CEILING (NIOSH) = 10 ppm (15 mg/m^3) (10 min.)	Colorless gas with a strong odor of rotten eggs, but with olfactory fatigue lack of odor does not mean it is not present	Inhalation, skin and/or eye contact	Irritated eyes, respiratory system; apnea, coma, convulsion; conjunctivitis (pink eye), eye pain, discharge of tears, abnormal visual intolerance of light, corneal vesiculation; dizziness, headache, weakness, exhaustion, irritability, insomnia; gastrointestinal disturbance; liquid - frostbite	Eyes, respiratory system, central nervous system
Methane	-	-	-	IDLH = 5,000 ppm (10% of the LEL) Explosive in concentrations between 5 and 15% ; WISHA requires shut down at 10% of the LEL, which is 5,000 ppm.	No warning properties; colorless, odorless, and flammable gas	Inhalation	Respiratory system – non-toxic gas, but can be asphyxiating in high concentrations as it displaces the available oxygen	-

PEL-TWA = Permissible Exposure Limit-Time Weighted Average (8 hours). Carcinogenicity Status (ACGIH)

REL-TWA = Recommended exposure limit – time weighted average. A1 - Confirmed human carcinogen

TLV-TWA = Threshold Limit Value-Time Weighted Average (8 hours).

STEL = Short Term Exposure Limit (15 minutes).

IDLH = Immediately Dangerous to Life or Health.

LFC = Lowest feasible concentration (no-effect exposure)

CEILING = Ceiling Limit (not to be exceeded, even instantaneously).

NIOSH = National Institute of Occupational Safety and Health

References:

ACGIH Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. 93-94.
NIOSH Pocket Guide to Chemical Hazards, U.S. Dept. of Health and Human Services, September 2005.
NIOSH Safety and Health Topic: Focus on Coal Mining – Safety Hazards, Health Hazards, and Mine Rescue, 200

Potential Physical Hazards

Potential physical hazards that may be encountered at the site and hazard control measures are summarized in the table below.

"X" If Applicable	Hazards	Hazard Control Measures
X	Motor Vehicle Driving	• Drive defensively. • If you need to place or receive a phone call, pull off the road to a safe location and stop the vehicle before using your cell phone. Allow voicemail to handle your calls. • Be aware of weather and road conditions when driving (i.e., heavy rain, snow; large puddles in roadway, black ice). • Driver and passengers must wear seatbelts.
X	Slips, Trips, Falls	• Be aware of obstacles, such as cords, tools, and other equipment that may be present on the ground in the work area. • Identify and mark areas that are potentially slippery (e.g., wet or oily surfaces) with spray paint or flagging and walk around them. • Use handholds. • Wear boots with good traction.
	Confined Space	• Ensure compliance with 29 CFR 1910.146. • Complete a confined space entry form. • Attach permit for confined space entry. • **Note: no confined space entries will be performed during this work by Chartrand Env. or Intertox personnel**
	Oxygen Deficiency	• Monitor oxygen level in work zone. • Do not enter area if oxygen level is less than 19.5 percent. • Use self-contained breathing apparatus (SCBA) if area has less than 19.5 percent oxygen.
X	Fire/ Explosion	• Inform personnel of the locations(s) of potential fire/explosion hazards. • Establish site-specific procedures for working and handling around flammables. • Ensure that appropriate fire suppression equipment and systems are available and in good working order. • Do not drive or park vehicles on dry vegetation during the dry season (April through October). • Define requirements for intrinsically safe equipment. • Identify special monitoring needs. • Remove ignition sources from flammable atmospheres (e.g., phones, pump motors, etc.). • Coordinate with local fire-fighting groups regarding potential fire/explosion conditions. • Establish contingency plans and review daily with team members.

Potential Biological Hazards

There is a potential for encounters with stinging/poisonous insects while in the field. This hazard will be discussed during the daily tailgate safety meeting to determine if any workers onsite have known allergies to stinging insects and emergency medical attention will be sought as necessary.

Initial Site Entry

- Will this be performed by Chartrand Env.?
  Yes: ☒ No: ☐

The SHSO and Project Managers have performed a site walk of CHRLF and will update staff on any specific procedures for initial site entry as needed

Traffic Control

- Does field work require traffic control around the work area, using barricades, traffic signs, and other traffic control devices?
  Yes: ☐ No: ☒

- Is a city/county/state road use permit required?
  Yes: ☐ No: ☒

- Is a traffic control plan required with the road use permit?
  Yes: ☐ No: ☒

Interior Work and Confined Spaces

- Will any field work be done inside an enclosure, building, or confined space?
  Yes: ☐ No: ☒

Confined space entry work, if required, will be performed by KCSWD Operation staff certified for such activities. Chartrand Env. and Intertox personnel will not enter confined spaces.

Sewers or Other Areas of Potentially Containing Explosive Gases or Vapors

- Will any field work be done in sewers or other areas containing explosive gas/vapors?
  Yes: ☐ No: ☒

Hazardous Materials

- Will any hazardous materials (chemicals) be used on site (including decontamination)?
  Yes: ☐ No: ☒

- Will any field work be done on a site with known or suspected release of hazardous materials?
  Yes: ☒ No: ☐

Refer to the above section

Potential Hazards Associated with Field Tasks for a complete review of potential exposure to hazardous material. All Chartrand Env. and Intertox personnel will follow the guidelines set forth in this document to mitigate the potential for exposure to hazardous material and wear proper Level D PPE.

Site Status

- Site Status: Occupied?
  Yes: ☒ No: ☐

The site is an active landfill accessible to KCSWD staff.

SITE MAP

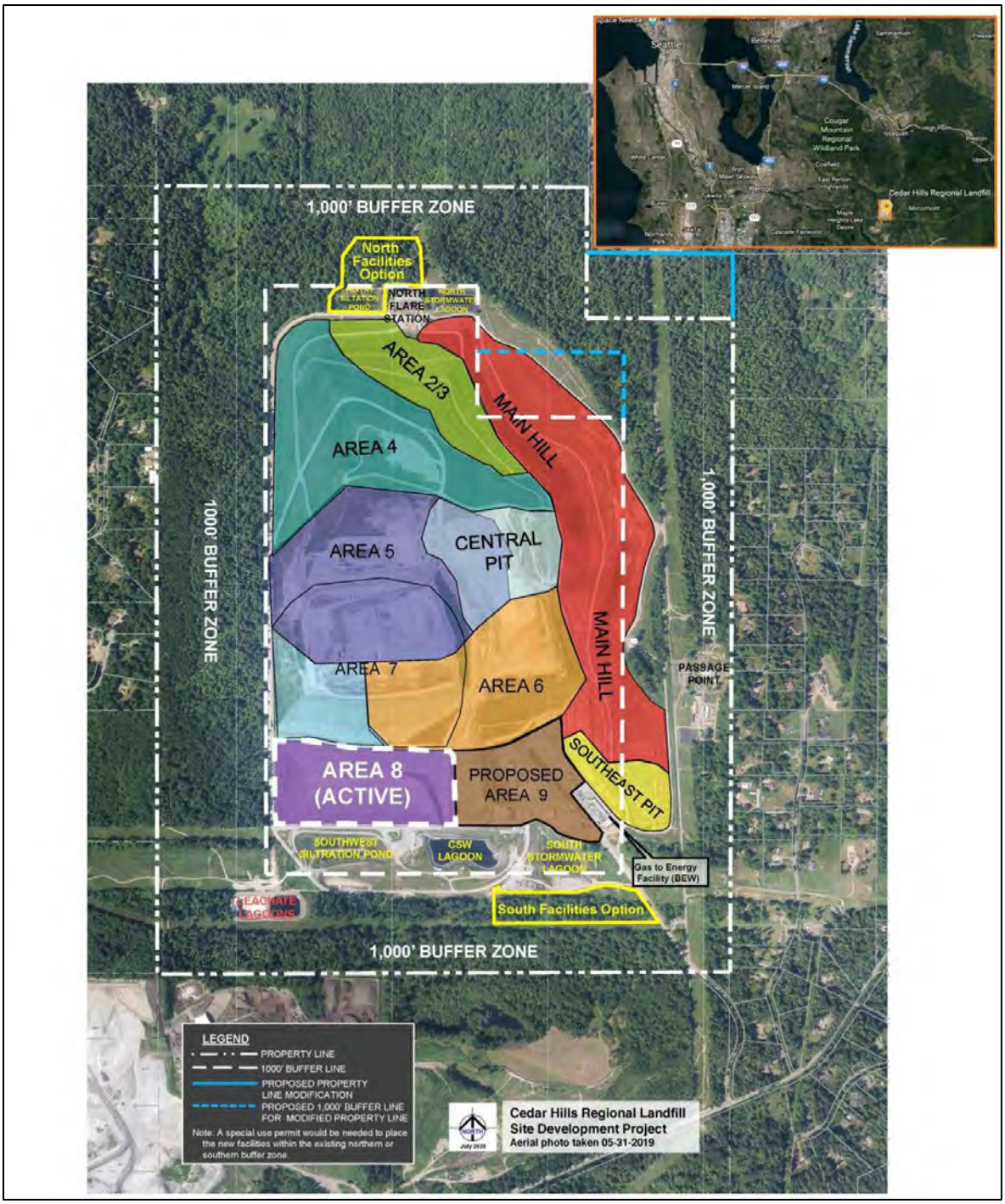


Figure 3: Satellite Image of CHRLF

Site Control and Security

- Any site access requirements and special considerations?
  Yes: ☒ No: ☐
  Workers must check in with KCSWD personnel at the facility prior to beginning field work each day.

- Work will be done in daylight hours?
  Yes: ☒ No: ☐
  Sampling will be done during daylight hours to the extent possible.

- Barricades, fencing, or other equipment to be used to mark the perimeter of the site?
  Yes: ☐ No: ☒

- Require work area security (on- and off-hours) to be used?
  Yes: ☒ No: ☐
  CHRLF has 24-hour security and is gated.

Site Background Information

CHRLF is located on a 940-acre site in south-central unincorporated King County, approximately 4 miles south of Issaquah and 6 miles east of Renton. CHRLF was developed for long-term disposal of King County's solid waste. Use of CHRLF is allowed under special use permit granted by King County in 1960. CHRLF has ten existing refuse disposal areas. Of these, six (the South Solid Waste Area, Main Hill, Southeast Pit, Central Pit, Area 2/3, and Area 4) have been permanently closed. Area 5, and Area 6 have received interim final closure and Area 7 is in the process of being closed. Area 8 is currently receiving solid waste and a ninth area is proposed for development (shown in Figure 1).
In addition to refuse disposal areas, the CHRLF site has various support facilities. To address surface water and wastewater generated onsite, CHRLF has siltation ponds, stormwater lagoons, a contaminated surface water lagoon, leachate lagoons, and erosion and sediment control facilities. Operations facilities are in the southeastern portion of the side and include a scale plaza, administration offices, personnel facilities, equipment maintenance shop, fueling, truck wash, and equipment and vehicle storage areas. CHRLF is adjacent to the Cedar Grove Composting Facility and a prior Superfund Site, Queen City Farms.

LOCAL EMERGENCY AND PROJECT TELEPHONE NUMBERS

Site Address and Phone Number

Site Address:	16645 228th Avenue Southeast, Maple Valley, WA 98038
Site Phone Number:	[redacted]

On-Site Contact Phone Numbers

Role	Name	Telephone Number
	Jeff Dye	[redacted]
	Sterling Bath	[redacted]
	Laura Belt	[redacted]
	Kris McArthur	[redacted]

Local Emergency Phone Numbers

Agency	Name	Telephone Number
Hospital	Valley Medical Center	[redacted]
Ambulance	Tri Med Ambulance	[redacted]
Police	Maple Valley Police Department	[redacted]
Fire	King County District 43	[redacted]
King County Site Safety Officer	Kris McArthur	[redacted]

Project Personnel Phone Numbers

Role	Name	Telephone Number
Site Health and Safety Officer (SHSO) and Project Manager	Allan Chartrand	[redacted]
Alternate SHSO and Project Scientist	Kelli Hackney	[redacted]
Intertox Project Manager	Lisa Corey/Rick Pleus	[redacted]
Project Scientist	Anne Galyean	[redacted]
	Cameron Bellamoroso	[redacted]
Prime Contact / Project Manager	Phil Coughlan	[redacted]

EMERGENCY ROUTES

Prior to field work, conduct a drive-by from the work area to the hospital to check for any obstacles (i.e., road closure due to construction, etc.) and change the emergency route(s) to the hospital accordingly.

Hospital Name:	Valley Medical Center
Hospital Address:	400 S. 43rd St., Renton, WA 98055
Hospital Phone Number:	(425) 228-3450

Refer to the following page for the route to the Hospital.

Head SE on 228th Ave SE, turn RIGHT at Cedar Grove Rd. SE.
Turn RIGHT at SE Renton-Maple Valley Rd. / WA-169
Turn left at Sunset Blvd N/SR-900 and take the ramp to I-405 South
Take Exit 2A and merge onto WA-167 toward Kent/Auburn
Take E Valley Rd./SW 41st St. exit toward S 180th St
Turn LEFT at Rainier Ave S/E Valley Rd (signs for E Valley Rd.)
Turn LEFT at S. 180th St./SW 43rd St. (Hospital is on the Left)

HOSPITAL LOCATION AND ROUTE MAP

Valley Medical Center

400 S. 43rd St., Renton, WA 98055

EMERGENCY RESPONSE PLAN

Injury or Exposure

If an injury or exposure occurs, take the following actions:

- Get first aid for the person immediately.
- Notify the Site Health and Safety Officer (SHSO). The SHSO is responsible for immediately notifying the Project Manager and preparing and submitting an Injury/Exposure Report (Attachment 1) to the Corporate Health and Safety Officer within 24 hours, as well as notifying the employee's supervisor and Principal-in-Charge. If a subcontractor employee is injured, the Subcontractor Field Supervisor will also complete an injury/exposure investigation and submit a copy to the Corporate Health and Safety Officer as well.
- The SHSO will assume charge during a medical emergency.

Site Incident

If an incident (e.g., theft, car accident, property damage) occurs, take the following action:

- Notify the SHSO immediately. The SHSO is responsible for immediately notifying the Project Manager and preparing and submitting a Site Incident Report (Attachment 1) to the Prime- and subcontractor Corporate Health and Safety Officer within 24 hours.

GENERAL SITE REQUIREMENTS AND BACKGROUND INFORMATION

HSP Organization and Responsibilities

Project Manager

The Project Manager provides technical support to the SHSO for health and safety decision-making. Prior to beginning onsite work, the Project Manager will ensure that employee training and medical clearance is current and up-to-date, and that site-specific safety and health concerns, have been addressed prior to field work. It is the responsibility of the Project Manager or designate to take reasonable steps to verify the following:

- Employee training is current and up-to-date
- Each participant is informed of the known risks and physical requirements
- Each participant is shown where remote communication devices are kept (e.g., mobile phones, radios)
- Each participant has read this HSP
- Has determined what safety clothing and equipment is appropriate for this project
- Company and personal equipment taken into the field is thoroughly checked for safety and in good working condition by a qualified person before it is used
- Each participant is instructed in field safety, wearing of safety clothing (e.g., chemical resistant personal protective equipment (PPE), high-visibility reflective clothing, etc.), and safe use of equipment
- Site-specific health and safety concerns (including but not limited to: known or suspected chemical hazards, etc.) have been addressed prior to field work

Site Health and Safety Officer

The SHSO shall be responsible for coordinating emergency response measures during this project. Workers shall report to the SHSO in the event of an emergency. Within 24 hours of the end of fieldwork, the SHSO will submit the completed (signed) HSP to the King County Health and Safety Officer. The SHSO will oversee the overall HSP. The SHSO has the authority to stop work or prohibit any personnel from working on the site at any time for not complying with any aspect of the HSP.

Field Lead

Depending on the activity (i.e., installation, monitoring, sampling, demobilization), one member of the field team will be designated as Field Lead for each field task. The Field Lead is responsible for preventing unauthorized entry onto the site, ensuring all appropriate equipment is available and ready for use, and knowing who is on site while activities are occurring.

Onsite Personnel

Persons on the site are responsible for their own health and safety, as well as assisting others in carrying out the HSP. Any person observed to be in violation of the HSP should be encouraged to comply with the HSP, or reported to the Project Manager or SHSO.

Any site personnel may shut down field activities if there is a real or perceived immediate danger to life or health.

Minimum Training, Immunization, and Medical Surveillance Requirements for Site Personnel

Training

Field staff have received health and safety training as required by Occupational Safety and Health Administration (OSHA) (29 Code of Federal Regulations [CFR] 1910.120) and Washington State Division of Occupational Safety and Health (Chapter 296-843-200 WAC), including 40-hours of Hazardous Waste Operations training (HAZWOPER) (including annual 8-hour HAZWOPER refresher training as needed). It is acknowledged by all field staff that the need for respirator fit testing may arise on site.

Medical Surveillance and Immunizations

The nature of the field setting described in this HSP is only intended to extend for one week or less of sampling, therefore it has been determined that medical surveillance and immunizations are not a necessary component of this HSP.

GENERAL FIELD SAFETY

The SHSO is responsible for establishing and coordinating procedures for evacuation of onsite personnel prior to commencement of work. This plan will be reviewed at the site safety meeting conducted at the beginning of the first day of work (and at subsequent site safety meetings as warranted by changing conditions and addition of new site workers). A Daily Tailgate Health and Safety Meeting Form is to be completed and signed by personnel who attended the site safety meetings (see Attachment 2).
In the event of a potential emergency, as determined by any onsite worker, the SHSO will be notified and site personnel assembled at an area designated during the site safety meeting. The Project Manager, with the aid of the SHSO and other site workers, will decide the appropriate response depending on site conditions.

General Field Safety Requirements

- Prior to working on site, a general inspection of hazards will be made by the SHSO. SHSO is responsible for preventing unauthorized entry onto the site and for knowing who is onsite.
- Onsite field personnel must have a mobile phone capable of connecting to an emergency contact (i.e. Project manager, SHSO, local emergency service).
- Designate at least one vehicle for emergency use.
- High-visibility reflective safety vests, shirt, or jacket that is fluorescent yellow-green, orange-red, or red in color; sturdy boots; and hard hats will be worn.

Work Limitations and Restrictions

- Field personnel will use the "buddy system" to the extent possible, which requires at least two people, when there is potential for contact with leachate, landfill gas or other releases, or working around heavy equipment.

PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

Level of Protection

Based on the current understanding of the nature of the sampling and monitoring requested and requirements as laid out in the approved SAP, sampling personnel will be required to wear Level D PPE, for which the specifications are laid out below. It is further acknowledged that the level of PPE required for onsite sampling may be changed if other hazards arise to ensure sufficient personal protection, for which descriptions also listed below.

- **Level B**: SCBA or supplied-air respirator with an escape bottle, chemically resistant suit.
- **Level C**: Full-face air-purifying respirator with organic vapor and acid gas cartridges, chemically resistant PPE.

- **Level D**: No respiratory protection. Safety glasses, hard hat, sturdy boots, long-sleeved shirt and pants. Hearing protection, gloves (an inner disposable nitrile glove and outer chemical resistant glove), and other PPE as required.

To protect workers from potential contaminants in sample media, protective clothing will be worn during sampling activities, including protective eyewear, and chemical resistant boots and gloves. Protective clothing will be discarded or decontaminated between uses.

Level D PPE has been selected for each work task based on an evaluation of the potential or known hazards, the routes of potential hazard, and performance specifications of the PPE. Onsite monitoring results and other information obtained from onsite activities will be used to modify levels of protection (LOPs) and PPE as necessary to ensure sufficient personal protection.

Personal Protective Equipment

Personnel who perform work on site will be minimally required to meet the protective clothing and safety equipment requirements for Level D (minimum required PPE for Level D in the following table is marked by an "*"). Level D status will apply to fieldwork on the site unless the trigger mechanism(s) to Level C are activated. The SHSO must notify the King County Health and Safety Officer prior to work if Level "C" is warranted.

PPE	Task 1
Protective face mask per COVID-19 precautions	X
*Safety glasses/goggles	X
*Cotton coveralls/long-sleeved shirt and pants	X
Rain gear or Tyvek suit for splash protection	
*Hard hat (required at all construction sites)	X
*Steel-toed safety boots (as per ANSI Z41)	X
*Work gloves	X
Neoprene safety boots (as per ANSI Z41	
Solvex or nitrile gloves (for sample handling)	X
Ear plugs/muffs	
Reflective safety vest	X
Inner gloves: ☐ Cotton ☒ Nitrile ☐ Other:	X

***** Represents minimum required PPE for Level D work.

Safety Equipment

The safety equipment in the following table that is marked by an "X" indicates safety equipment needed for each work task.

Safety Equipment	Task 1
*First-aid kit	X
*Emergency eye wash	X
*Fire extinguisher (Class A, B, C)	X
*Photoionization detector	
*Explosimeter and 4-gas monitor	
Blower, fan, or vactor truck	

***** Represents minimum required safety equipment.

DECONTAMINATION

Following are the decontamination procedures that will be employed to prevent contamination of personnel and to prevent cross contamination of sampling equipment during the collection of samples.

Personnel Decontamination

Decontamination Solutions:	Hand sanitizer
Decontamination Method:	Remove protective gear; remove and dispose of gloves; thoroughly wash hands and face with hand sanitizer and wipe dry with paper towel.
Exposure Monitoring:	None
Level of Protection:	D
Location:	Support zone

Sampling Equipment Decontamination

A decontamination station shall be set up daily during sampling activities. The location of the decontamination station may vary based on the location of sampling activities. Bucket used for sample collection will be decontaminated. The station shall include one or more of the following items:

- Hand sanitizer for hands and face after disposable gloves and rain gear is removed.
- A bucket or tub with a Liquinox soap/water solution and a brush for scrubbing boots and other non-disposable PPE
- A second bucket or tub filled with tap or deionized water for rinsing
- Sprayer with potable water used for final rinse.

WASTE GENERATION

During field operations, air quality and odor will be sampled using Summa Canisters, Cassette Filter Samplers, Sorbent Tube Samplers, and the Nasal Ranger. Therefore, the only investigation derived waste (IDW) intended to be generated on site will be for decontamination activities (i.e. decontamination wash water, paper towels). IDWs will be disposed of in a sealed barrel after daily decontamination procedures.

HEALTH AND SAFETY PLAN — ACKNOWLEDGEMENT AND AGREEMENT FORM

The following field personnel have read this HSP and understand the potential and actual hazards present on the site and shall abide by its strictures.

Allan Chartrand						
Name		Signature		Company		Date
Kelli Hackney						
Name		Signature		Company		Date
Lisa Corey						
Name		Signature		Company		Date
Anne Galyean						
Name		Signature		Company		Date
Name		Signature		Company		Date
Name		Signature		Company		Date
Name		Signature		Company		Date

ATTACHMENT 1

Injury/Exposure Report and Site Incident Report

ATTACHMENT 2

Daily Tailgate Health and Safety Meeting Form

ATTACHMENT 3

Job Hazard Assessment

ACTIVITY	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
• Air and odor sampling and monitoring • Particulate and gas sampling • Support tasks	• Contact with potentially contaminated media or LFG • Slips, trips, falls • Overhead piping • Wildlife and stinging or biting insect encounters • Motor vehicle/heavy equipment accidents	• Wear appropriate PPE, including high-visibility vests, rain gear, nitrile gloves, safety glasses or splash goggles, and safety shoes or boots • Be aware of ground surface and above grade piping when moving around site • Remain upwind whenever possible • Be aware of vehicles and equipment and heed all warning alarms and signage • Be aware of ground surface during mobilization and de-mobilization from site • Conduct thorough decontamination whenever leaving the site • Be aware of the potential presence of insects and wildlife

ATTACHMENT 4

COVID-19 Protocols

COVID-19 protocols will be followed in accordance with the Washington State Governor's and King County's COVID-19 safety guidelines. All on site personnel will wear face masks, regularly wash and/or sanitize hands and keep 6 feet of distance from one another in accordance with these guidelines.

APPENDIX B

METEOROLOGICAL DATA

Table B-1. June 22, 2021

Location	Sample Date	Temp	Relative Humidity	Barometric Pressure	Wind Speed	Heat Index	Dew Point	Cross wind	Head wind	Compass Magnetic Direction	Compass True Direction
Day 1		*°C*	*%*	*mb*	*km/h*	*°C*	*°C*	*km/h*	*km/h*	*Deg*	*Deg*
S13	6/22/2021	17.3	73.6	1012.3	6.4	16.7	12.6	1.4	-6.2	175	176
S12	6/22/2021	18.7	69.2	1013.5	4.3	18.0	12.9	1.3	-3.9	172	172
S11	6/22/2021	20.5	63.4	1013.0	3.7	20.2	13.3	3.3	-1.1	106	106
S1	6/22/2021	19.8	65.7	1011.6	1.6	19.4	13.2	0.6	-1.0	220	220
S2	6/22/2021	19.3	67.2	1012.0	0.9	18.7	13.1	0.9	0.2	173	174
S3	6/22/2021	18.9	68.2	1011.0	0.0	18.2	12.9	0.0	0.0	100	101
S4	6/22/2021	20.3	65.9	1012.0	3.6	20.0	13.7	2.4	-2.6	225	226
S8	6/22/2021	19.2	64.9	1012.5	2.5	18.5	12.5	0.7	-2.2	172	173
S9	6/22/2021	23.7	55.9	1013.3	2.2	23.5	14.3	1.9	0.1	69	70
Ref1	6/22/2021	22.7	56.6	1013.5	0.4	22.4	13.6	0.3	0.2	163	164
S10	6/22/2021	22.3	60.3	1010.6	5.1	22.2	14.2	2.5	-3.1	213	214
S5	6/22/2021	24.2	55.2	1011.0	2.4	23.8	14.6	0.6	-2.3	199	199
S6	6/22/2021	24.0	55.6	1011.4	2.0	23.7	14.6	1.7	-0.1	276	277
S7	6/22/2021	22.8	60.2	1013.0	3.3	22.7	14.7	1.8	-2.3	191	191

Table B-2. June 23, 2021

Location	Sample Date	Temp	Relative Humidity	Barometric Pressure	Wind Speed	Heat Index	Dew Point	Cross wind	Head wind	Compass Magnetic Direction	Compass True Direction
Day 1		*°C*	*%*	*mb*	*km/h*	*°C*	*°C*	*km/h*	*km/h*	*Deg*	*Deg*
S13	6/23/2021	13.1	84.0	1013.2	7.1	13.1	10.5	4.5	-5.5	219	219
S12	6/23/2021	13.8	83.6	1013.8	4.5	13.7	11.0	2.3	-3.8	211	212
S11	6/23/2021	14.0	81.4	1013.9	4.5	13.8	10.9	3.1	-3.0	187	187
S1	6/23/2021	15.1	79.0	1013.9	0.0	14.8	11.5	0.0	0.0	292	293
S2	6/23/2021	15.2	79.8	1014.4	0.0	14.9	11.7	0.0	0.0	185	185
S3	6/23/2021	14.8	80.6	1014.3	0.0	14.6	11.5	0.0	0.0	56	57
S4	6/23/2021	14.8	79.8	1014.8	0.8	14.6	11.4	0.5	-0.5	262	263
S8	6/23/2021	15.5	75.5	1015.2	1.1	15.0	11.1	1.0	0.5	297	298
S9	6/23/2021	16.3	76.2	1014.3	0.0	15.9	12.1	0.0	0.0	334	335
Ref1	6/23/2021	16.0	77.4	1015.9	0.5	15.6	12.0	0.1	0.5	345	345
S10	6/23/2021	15.3	80.0	1013.9	6.7	15.0	11.8	1.3	-6.5	186	187
S5	6/23/2021	16.7	75.0	1016.3	2.7	16.2	12.2	1.1	-2.5	201	201
S6	6/23/2021	16.4	74.9	1015.2	1.3	15.9	11.9	0.3	-1.3	175	175
S7	6/23/2021	17.8	70.4	1012.5	0.6	17.1	12.3	0.6	-0.1	89	89

Table B-3. July 7, 2021

Location	Sample Date	Temp	Relative Humidity	Barometric Pressure	Wind Speed	Heat Index	Dew Point	Cross wind	Head wind	Compass Magnetic Direction	Compass True Direction
Day 1		*°C*	*%*	*mb*	*km/h*	*°C*	*°C*	*km/h*	*km/h*	*Deg*	*Deg*
S13	7/7/2021	13.9	88.1	1017.2	9.2	14.0	11.9	2.3	-8.7	165	166
S12	7/7/2021	14.2	86.6	1020.5	9.3	14.3	12.0	2.9	-8.7	161	162
S11	7/7/2021	14.6	85.6	1017.6	2.6	14.5	12.2	1.7	-1.9	196	196
S1	7/7/2021	14.3	86.9	1014.5	7.4	14.3	12.1	1.8	-7.1	169	169
S2	7/7/2021	15.6	82.0	1018.7	0.0	15.5	12.6	0.0	0.0	77	78
S3	7/7/2021	15.6	82.0	1017.8	0.0	15.5	12.6	0.0	0.0	182	182
S4	7/7/2021	14.9	84.8	1017.3	0.7	14.8	12.3	0.2	-0.7	216	216
S8	7/7/2021	15.0	83.6	1017.8	0.9	15.0	12.2	0.2	-0.8	157	158
S9	7/7/2021	15.3	83.5	1018.1	3.5	15.2	12.5	0.4	-2.9	226	227
Ref1	7/7/2021	17.7	77.0	1019.3	0.0	17.3	13.6	0.0	0.0	263	264
S10	7/7/2021	15.7	83.1	1017.8	0.0	15.7	12.9	0.0	0.0	195	195
S5	*7/7/2021*	*17.2*	*77.0*	*1018.2*	*1.7*	*16.8*	*13.1*	*0.5*	*-1.6*	*154*	*155*
S6	7/7/2021	17.0	77.0	1016.3	1.0	16.7	13.0	0.1	-1.0	243	243
S7	7/7/2021	17.6	75.9	1014.5	1.8	17.2	13.3	0.7	-1.7	168	169

Table B-4. July 8, 2021

Location	Sample Date	Temp	Relative Humidity	Barometric Pressure	Wind Speed	Heat Index	Dew Point	Cross wind	Head wind	Compass Magnetic Direction	Compass True Direction
Day 1		*°C*	*%*	*mb*	*km/h*	*°C*	*°C*	*km/h*	*km/h*	*Deg*	*Deg*
S13	7/8/2021	13.1	82.9	989.8	1.9	13.0	10.3	1.4	0.7	146	146
S12	7/8/2021	13.5	79.0	997.8	1.4	13.2	9.9	1.1	0.9	216	217
S11	7/8/2021	13.9	78.9	998.6	0.0	13.5	10.3	0.0	0.0	319	319
S1	7/8/2021	14.6	78.8	996.0	0.0	14.4	11.0	0.0	0.0	158	159
S2	7/8/2021	14.1	81.0	993.7	1.1	13.9	10.9	0.8	-0.7	125	126
S3	7/8/2021	14.7	78.2	995.0	0.0	14.4	10.9	0.0	0.0	93	94
S4	7/8/2021	14.6	79.5	998.2	0.0	14.3	11.1	0.0	0.0	289	289
S8	7/8/2021	14.1	78.0	999.7	0.0	13.8	10.3	0.0	0.0	260	260
S9	7/8/2021	14.0	78.1	999.3	0.5	13.7	10.2	0.2	0.5	238	238
Ref1	7/8/2021	14.7	78.2	1000.3	0.0	14.4	10.9	0.0	0.0	15	16
S10	7/8/2021	14.2	82.0	995.3	1.0	14.0	11.1	0.9	0.4	69	69
S5	7/8/2021	13.9	77.5	995.8	0.0	13.5	10.0	0.0	0.0	108	108
S6	7/8/2021	15.1	73.3	995.9	0.4	14.5	10.3	0.0	-0.4	179	179
S7	7/8/2021	12.4	84.6	997.1	0.9	12.3	9.8	0.5	-0.8	198	198

APPENDIX C
ALS GLOBAL ANALYTICAL LABORATORY

ANALYTICAL REPORT

Report Date: July 02, 2021

Gavin Bell
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600 Stewart St, Suite 1101
Seattle, WA 98101

Phone: 206-443-2115

E-mail: gbell@intertox.com

Workorder: **34-2117835**
Client Project ID: 211082
Purchase Order: 211082
Project Manager: Paul Pope

Analytical Results

Sample ID: **S2** Collected: 06/22/2021
Lab ID: 2117835001 Sampling Location: 211082 Received: 06/25/2021

Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume 300 L **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0015	0.45	1.5
Arsenic	<0.75	<0.0025	0.75	2.5

Sample ID: **S9** Collected: 06/22/2021
Lab ID: 2117835002 Sampling Location: 211082 Received: 06/25/2021

Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume 300 L **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0015	0.45	1.5
Arsenic	<0.75	<0.0025	0.75	2.5

Sample ID: **S12** Collected: 06/22/2021
Lab ID: 2117835003 Sampling Location: 211082 Received: 06/25/2021

Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume 300 L **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0015	0.45	1.5
Arsenic	<0.75	<0.0025	0.75	2.5

ANALYTICAL REPORT

Workorder: **34-2117835**
Client Project ID: 211082
Purchase Order: 211082
Project Manager: Paul Pope

Analytical Results

Sample ID: **S1** | Collected: 06/22/2021
Lab ID: 2117835004 | Sampling Location: 211082 | Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE | **Media:** MCE Filter | **Instrument:** ICP13
Dilution: 1 | **Sampling Parameter:** Air Volume 300 L | **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0015	0.45	1.5
Arsenic	<0.75	<0.0025	0.75	2.5

Sample ID: **S11** | Collected: 06/22/2021
Lab ID: 2117835005 | Sampling Location: 211082 | Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE | **Media:** MCE Filter | **Instrument:** ICP13
Dilution: 1 | **Sampling Parameter:** Air Volume 300 L | **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0015	0.45	1.5
Arsenic	<0.75	<0.0025	0.75	2.5

Sample ID: **S4** | Collected: 06/22/2021
Lab ID: 2117835006 | Sampling Location: 211082 | Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE | **Media:** MCE Filter | **Instrument:** ICP13
Dilution: 1 | **Sampling Parameter:** Air Volume 300 L | **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0015	0.45	1.5
Arsenic	<0.75	<0.0025	0.75	2.5

Sample ID: **S3** | Collected: 06/22/2021
Lab ID: 2117835007 | Sampling Location: 211082 | Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE | **Media:** MCE Filter | **Instrument:** ICP13
Dilution: 1 | **Sampling Parameter:** Air Volume 300 L | **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0015	0.45	1.5
Arsenic	<0.75	<0.0025	0.75	2.5

ANALYTICAL REPORT

Workorder: **34-2117835**
Client Project ID: 211082
Purchase Order: 211082
Project Manager: Paul Pope

Analytical Results

Sample ID: **S8** | Collected: 06/22/2021
Lab ID: 2117835008 | Sampling Location: 211082 | Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE | **Media:** MCE Filter | **Instrument:** ICP13
Dilution: 1 | **Sampling Parameter:** Air Volume 300 L | **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0015	0.45	1.5
Arsenic	<0.75	<0.0025	0.75	2.5

Sample ID: **S5** | Collected: 06/22/2021
Lab ID: 2117835009 | Sampling Location: 211082 | Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE | **Media:** MCE Filter | **Instrument:** ICP13
Dilution: 1 | **Sampling Parameter:** Air Volume 300 L | **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0015	0.45	1.5
Arsenic	<0.75	<0.0025	0.75	2.5

Sample ID: **S6** | Collected: 06/22/2021
Lab ID: 2117835010 | Sampling Location: 211082 | Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE | **Media:** MCE Filter | **Instrument:** ICP13
Dilution: 1 | **Sampling Parameter:** Air Volume 300 L | **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0015	0.45	1.5
Arsenic	<0.75	<0.0025	0.75	2.5

Sample ID: **S13** | Collected: 06/22/2021
Lab ID: 2117835011 | Sampling Location: 211082 | Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE | **Media:** MCE Filter | **Instrument:** ICP13
Dilution: 1 | **Sampling Parameter:** Air Volume 300 L | **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0015	0.45	1.5
Arsenic	<0.75	<0.0025	0.75	2.5

ANALYTICAL REPORT

Workorder: **34-2117835**
Client Project ID: 211082
Purchase Order: 211082
Project Manager: Paul Pope

Analytical Results

Sample ID: **S10** Collected: 06/22/2021
Lab ID: 2117835012 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume 300 L **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0015	0.45	1.5
Arsenic	<0.75	<0.0025	0.75	2.5

Sample ID: **Ref 1**
Lab ID: 2117835013 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume Not Provided **Prepared:** 06/30/2021 (281331)
Analyzed: 07/02/2021 (281439)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	NA	0.45	1.5
Arsenic	<0.75	NA	0.75	2.5

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method (Analysis Batch)	Analyst	Peer Review
NIOSH 7300 Mod., MCE (281434)	/S/ Peter P. Steen 07/01/2021 13:24	/S/ Kristie F. Bitner 07/01/2021 15:16
NIOSH 7300 Mod., MCE (281439)	/S/ Joanna C. Sanchez 07/02/2021 11:15	/S/ Kristie F. Bitner 07/02/2021 12:41

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ANALYTICAL REPORT

Workorder: **34-2117835**
Client Project ID: 211082
Purchase Order: 211082
Project Manager: Paul Pope

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
The following was provided by the client: Sample ID, Collection Date, Sampling Location, Media Type, Sampling Parameter.
Collection Date, Media Type, and Sampling Parameter can potentially affect the validity of the results.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L20-57	http://www.pjlabs.com
	PJLA (ISO 17025)	L20-58	http://www.pjlabs.com
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L20-59	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L20-58	http://www.pjlabs.com

Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.
LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.
ND = Not Detected, Testing result not detected above the LOD or LOQ.
NA = Not Applicable.
** No result could be reported, see sample comments for details.
< Means this testing result is less than the numerical value.
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ANALYTICAL REPORT

Report Date: July 01, 2021

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Workorder: **34-2117836**
Client Project ID: 211082
Purchase Order: 211082
Project Manager: Paul Pope

Analytical Results

Sample ID: **S2** Collected: 06/23/2021
Lab ID: 2117836001 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume Not Provided **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	NA	0.45	1.5
Arsenic	<0.75	NA	0.75	2.5

Sample ID: **S7** Collected: 06/23/2021
Lab ID: 2117836002 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume Not Provided **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	NA	0.45	1.5
Arsenic	<0.75	NA	0.75	2.5

Sample ID: **S11** Collected: 06/23/2021
Lab ID: 2117836003 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume Not Provided **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	NA	0.45	1.5
Arsenic	<0.75	NA	0.75	2.5

ANALYTICAL REPORT

Workorder: **34-2117836**
Client Project ID: 211082
Purchase Order: 211082
Project Manager: Paul Pope

Analytical Results

Sample ID: **S12** Collected: 06/23/2021
Lab ID: 2117836004 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume Not Provided **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	NA	0.45	1.5
Arsenic	<0.75	NA	0.75	2.5

Sample ID: **Ref 1** Collected: 06/23/2021
Lab ID: 2117836005 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume Not Provided **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	NA	0.45	1.5
Arsenic	<0.75	NA	0.75	2.5

Sample ID: **S13** Collected: 06/23/2021
Lab ID: 2117836006 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume Not Provided **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	NA	0.45	1.5
Arsenic	<0.75	NA	0.75	2.5

Sample ID: **S1** Collected: 06/23/2021
Lab ID: 2117836007 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume Not Provided **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	NA	0.45	1.5
Arsenic	<0.75	NA	0.75	2.5

ANALYTICAL REPORT

Workorder: **34-2117836**
Client Project ID: 211082
Purchase Order: 211082
Project Manager: Paul Pope

Analytical Results

Sample ID: **S5** Collected: 06/23/2021
Lab ID: 2117836008 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume Not Provided **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	NA	0.45	1.5
Arsenic	<0.75	NA	0.75	2.5

Sample ID: **S8** Collected: 06/23/2021
Lab ID: 2117836009 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume Not Provided **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	NA	0.45	1.5
Arsenic	<0.75	NA	0.75	2.5

Sample ID: **S6** Collected: 06/23/2021
Lab ID: 2117836010 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume Not Provided **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	NA	0.45	1.5
Arsenic	<0.75	NA	0.75	2.5

Sample ID: **S11 Dupl** Collected: 06/23/2021
Lab ID: 2117836011 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume Not Provided **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	NA	0.45	1.5
Arsenic	<0.75	NA	0.75	2.5

ANALYTICAL REPORT

Workorder: **34-2117836**
Client Project ID: 211082
Purchase Order: 211082
Project Manager: Paul Pope

Analytical Results

Sample ID: **S4** Collected: 06/23/2021
Lab ID: 2117836012 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume Not Provided **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	NA	0.45	1.5
Arsenic	<0.75	NA	0.75	2.5

Sample ID: **S9** Collected: 06/23/2021
Lab ID: 2117836013 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume Not Provided **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	NA	0.45	1.5
Arsenic	<0.75	NA	0.75	2.5

Sample ID: **S10** Collected: 06/23/2021
Lab ID: 2117836014 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume Not Provided **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	NA	0.45	1.5
Arsenic	<0.75	NA	0.75	2.5

Sample ID: **S3** Collected: 06/23/2021
Lab ID: 2117836015 Sampling Location: 211082 Received: 06/25/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP13
Dilution: 1 **Sampling Parameter:** Air Volume Not Provided **Prepared:** 06/29/2021 (281270)
Analyzed: 07/01/2021 (281434)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	NA	0.45	1.5
Arsenic	<0.75	NA	0.75	2.5

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method (Analysis Batch)	Analyst	Peer Review
NIOSH 7300 Mod., MCE (281434)	/S/ Peter P. Steen 07/01/2021 13:24	/S/ Kristie F. Bitner 07/01/2021 15:16

ANALYTICAL REPORT

Workorder: **34-2117836**
Client Project ID: 211082
Purchase Order: 211082
Project Manager: Paul Pope

Laboratory Contact Information

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General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
The following was provided by the client: Sample ID, Collection Date, Sampling Location, Media Type, Sampling Parameter.
Collection Date, Media Type, and Sampling Parameter can potentially affect the validity of the results.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L20-57	http://www.pjlabs.com
	PJLA (ISO 17025)	L20-58	http://www.pjlabs.com
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L20-59	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L20-58	http://www.pjlabs.com

Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.
LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.
ND = Not Detected, Testing result not detected above the LOD or LOQ.
NA = Not Applicable.
** No result could be reported, see sample comments for details.
< Means this testing result is less than the numerical value.
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ANALYTICAL REPORT

Report Date: July 15, 2021

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Workorder: **34-2119313**
Client Project ID: CHRLF 070721
Purchase Order: 211082
Project Manager: Paul Pope

Analytical Results

Sample ID: **S2** Collected: 07/07/2021
Lab ID: 2119313002 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 220 L **Prepared:** 07/14/2021 (281931)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0020	0.45	1.5
Arsenic	<0.75	<0.0034	0.75	2.5

Sample ID: **S3** Collected: 07/07/2021
Lab ID: 2119313003 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 221 L **Prepared:** 07/14/2021 (281931)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0020	0.45	1.5
Arsenic	<0.75	<0.0034	0.75	2.5

Sample ID: **S4** Collected: 07/07/2021
Lab ID: 2119313004 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 209 L **Prepared:** 07/14/2021 (281931)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0022	0.45	1.5
Arsenic	<0.75	<0.0036	0.75	2.5

ANALYTICAL REPORT

Workorder: **34-2119313**
Client Project ID: CHRLF 070721
Purchase Order: 211082
Project Manager: Paul Pope

Analytical Results

Sample ID: **S5** Collected: 07/07/2021
Lab ID: 2119313005 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 248 L **Prepared:** 07/14/2021 (281931)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0018	0.45	1.5
Arsenic	<0.75	<0.0030	0.75	2.5

Sample ID: **S6** Collected: 07/07/2021
Lab ID: 2119313006 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 201 L **Prepared:** 07/14/2021 (281931)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0022	0.45	1.5
Arsenic	<0.75	<0.0037	0.75	2.5

Sample ID: **S7** Collected: 07/07/2021
Lab ID: 2119313007 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 200 L **Prepared:** 07/14/2021 (281931)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0023	0.45	1.5
Arsenic	<0.75	<0.0038	0.75	2.5

Sample ID: **S8** Collected: 07/07/2021
Lab ID: 2119313008 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 239 L **Prepared:** 07/14/2021 (281931)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0019	0.45	1.5
Arsenic	<0.75	<0.0031	0.75	2.5

ANALYTICAL REPORT

Workorder: **34-2119313**
Client Project ID: CHRLF 070721
Purchase Order: 211082
Project Manager: Paul Pope

Analytical Results

Sample ID: **S9** Collected: 07/07/2021
Lab ID: 2119313009 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 240 L **Prepared:** 07/14/2021 (281931)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0019	0.45	1.5
Arsenic	<0.75	<0.0031	0.75	2.5

Sample ID: **S10** Collected: 07/07/2021
Lab ID: 2119313010 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 261 L **Prepared:** 07/14/2021 (281931)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0017	0.45	1.5
Arsenic	<0.75	<0.0029	0.75	2.5

Sample ID: **S11** Collected: 07/07/2021
Lab ID: 2119313011 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 264 L **Prepared:** 07/14/2021 (281931)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0017	0.45	1.5
Arsenic	<0.75	<0.0028	0.75	2.5

Sample ID: **S12** Collected: 07/07/2021
Lab ID: 2119313012 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 256 L **Prepared:** 07/14/2021 (281931)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0018	0.45	1.5
Arsenic	<0.75	<0.0029	0.75	2.5

ANALYTICAL REPORT

Workorder: **34-2119313**
Client Project ID: CHRLF 070721
Purchase Order: 211082
Project Manager: Paul Pope

Analytical Results

Sample ID: **S13** Collected: 07/07/2021
Lab ID: 2119313013 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 269 L **Prepared:** 07/14/2021 (281931)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0017	0.45	1.5
Arsenic	<0.75	<0.0028	0.75	2.5

Sample ID: **Ref 1** Collected: 07/07/2021
Lab ID: 2119313014 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 221 L **Prepared:** 07/14/2021 (281931)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0020	0.45	1.5
Arsenic	<0.75	<0.0034	0.75	2.5

Comments

Workorder: 2119313

Sample 001 was not received.

NIOSH 7300 MOD: Samples 2119313003-006, 008, 011-014 had visible staining on the backup pad, indicative of backwards sampling. All samples had the MCE filter and the backup pad taken for digestion. LMB 750501, LCS 750502, LCSD 750503, and RLVS 750504 were also prepared with backup pads and MCE filters.

Quality Control: NIOSH 7300 Mod., MCE Prep - (HBN: 281931)

The silver recoveries for MCE plus backup pad LCS 750502 and LCSD 750503 are low outside current LCS limits. Silver has been known to fall out of solution when spiked onto backup pad matrix so the data is reported as is without further comment.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method (Analysis Batch)	Analyst	Peer Review
NIOSH 7300 Mod., MCE (282038)	/S/ Rex Bagley 07/15/2021 13:06	/S/ Kristie F. Bitner 07/15/2021 15:33

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ANALYTICAL REPORT

Workorder: **34-2119313**
Client Project ID: CHRLF 070721
Purchase Order: 211082
Project Manager: Paul Pope

General Lab Comments

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	PJLA (ISO 17025)	L20-58	http://www.pjlabs.com
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L20-59	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L20-58	http://www.pjlabs.com

Definitions

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LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.
ND = Not Detected, Testing result not detected above the LOD or LOQ.
NA = Not Applicable.
** No result could be reported, see sample comments for details.
< Means this testing result is less than the numerical value.
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ANALYTICAL REPORT

Report Date: July 15, 2021

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Workorder: **34-2119314**
Client Project ID: CHRLF 070821
Purchase Order: 211082
Project Manager: Paul Pope

Analytical Results

Sample ID: **S2** Collected: 07/08/2021
Lab ID: 2119314002 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 200 L **Prepared:** 07/14/2021 (281933)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0023	0.45	1.5
Arsenic	<0.75	<0.0038	0.75	2.5

Sample ID: **S3** Collected: 07/08/2021
Lab ID: 2119314003 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 200 L **Prepared:** 07/14/2021 (281933)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0023	0.45	1.5
Arsenic	<0.75	<0.0038	0.75	2.5

Sample ID: **S4** Collected: 07/08/2021
Lab ID: 2119314004 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 200 L **Prepared:** 07/14/2021 (281933)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0023	0.45	1.5
Arsenic	<0.75	<0.0038	0.75	2.5

ANALYTICAL REPORT

Workorder: **34-2119314**
Client Project ID: CHRLF 070821
Purchase Order: 211082
Project Manager: Paul Pope

Analytical Results

Sample ID: **S5** Collected: 07/08/2021
Lab ID: 2119314005 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 203 L **Prepared:** 07/14/2021 (281933)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0022	0.45	1.5
Arsenic	<0.75	<0.0037	0.75	2.5

Sample ID: **S6** Collected: 07/08/2021
Lab ID: 2119314006 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 2023 L **Prepared:** 07/14/2021 (281933)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.00022	0.45	1.5
Arsenic	<0.75	<0.00037	0.75	2.5

Sample ID: **S7** Collected: 07/08/2021
Lab ID: 2119314007 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 201 L **Prepared:** 07/14/2021 (281933)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0022	0.45	1.5
Arsenic	<0.75	<0.0037	0.75	2.5

Sample ID: **S8** Collected: 07/08/2021
Lab ID: 2119314008 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 200 L **Prepared:** 07/14/2021 (281933)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0023	0.45	1.5
Arsenic	<0.75	<0.0038	0.75	2.5

ANALYTICAL REPORT

Workorder: **34-2119314**
Client Project ID: CHRLF 070821
Purchase Order: 211082
Project Manager: Paul Pope

Analytical Results

Sample ID: **S9** Collected: 07/08/2021
Lab ID: 2119314009 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 203 L **Prepared:** 07/14/2021 (281933)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0022	0.45	1.5
Arsenic	<0.75	<0.0037	0.75	2.5

Sample ID: **S10** Collected: 07/08/2021
Lab ID: 2119314010 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 203 L **Prepared:** 07/14/2021 (281933)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0022	0.45	1.5
Arsenic	<0.75	<0.0037	0.75	2.5

Sample ID: **S11** Collected: 07/08/2021
Lab ID: 2119314011 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 200 L **Prepared:** 07/14/2021 (281933)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0023	0.45	1.5
Arsenic	<0.75	<0.0038	0.75	2.5

Sample ID: **S12** Collected: 07/08/2021
Lab ID: 2119314012 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 201 L **Prepared:** 07/14/2021 (281933)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0022	0.45	1.5
Arsenic	<0.75	<0.0037	0.75	2.5

ANALYTICAL REPORT

Workorder: **34-2119314**
Client Project ID: CHRLF 070821
Purchase Order: 211082
Project Manager: Paul Pope

Analytical Results

Sample ID: **S13** Collected: 07/08/2021
Lab ID: 2119314013 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 205 L **Prepared:** 07/14/2021 (281933)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0022	0.45	1.5
Arsenic	<0.75	<0.0037	0.75	2.5

Sample ID: **Ref 1** Collected: 07/08/2021
Lab ID: 2119314014 Sampling Location: CHRLF Received: 07/10/2021
Method: NIOSH 7300 Mod., MCE **Media:** MCE Filter **Instrument:** ICP12
Dilution: 1 **Sampling Parameter:** Air Volume 202 L **Prepared:** 07/14/2021 (281933)
Analyzed: 07/15/2021 (282038)

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Antimony	<0.45	<0.0022	0.45	1.5
Arsenic	<0.75	<0.0037	0.75	2.5

Comments

Workorder: 2119314

Sample #1 was not received

NIOSH 7300 MOD: Samples 2119314002-003, 007-009, 011-013 had visible staining on the backup pad, indicative of backwards sampling. All samples had the MCE filter and the backup pad taken for digestion. LMB 750512, LCS 750513, LCSD 750514, and RLVS 750515 were also prepared with backup pads and MCE filters.

Quality Control: NIOSH 7300 Mod., MCE Prep - (HBN: 281933)

The MCE plus backup pad LMB 750512 was above the reporting limit for calcium and sodium; so the LCS 750513, LCSD 750514, and RLVS 750515 results have been media blank corrected for calcium and sodium with LMB 750512.

The silver recoveries for MCE plus backup pad LCS 750513 and LCSD 750514 are low outside current LCS limits. Silver has been known to fall out of solution when spiked onto backup pad matrix so the data is reported as is without further comment.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method (Analysis Batch)	Analyst	Peer Review
NIOSH 7300 Mod., MCE (282038)	/S/ Rex Bagley 07/15/2021 13:06	/S/ Kristie F. Bitner 07/15/2021 15:33

Laboratory Contact Information

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Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: **34-2119314**
Client Project ID: CHRLF 070821
Purchase Order: 211082
Project Manager: Paul Pope

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
The following was provided by the client: Sample ID, Collection Date, Sampling Location, Media Type, Sampling Parameter.
Collection Date, Media Type, and Sampling Parameter can potentially affect the validity of the results.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L20-57	http://www.pjlabs.com
	PJLA (ISO 17025)	L20-58	http://www.pjlabs.com
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L20-59	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L20-58	http://www.pjlabs.com

Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.
LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.
ND = Not Detected, Testing result not detected above the LOD or LOQ.
NA = Not Applicable.
** No result could be reported, see sample comments for details.
< Means this testing result is less than the numerical value.
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

21-Jul-2021

Lisa Corey
Intertox, Incorporated
600 Stewart St, Suite 1101
Seattle, WA 98101

Re: **CHRCF Arsine** Work Order: **21070300**

Dear Lisa,

ALS Environmental received 9 samples on 10-Jul-2021 09:49 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 10.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Rob Nieman

Electronically approved by: Rob Nieman

Rob Nieman
Project Manager

Report of Laboratory Analysis

ALS Environmental

Date: 21-Jul-21

Client: Intertox, Incorporated
Project: CHRCF Arsine
Work Order: **21070300**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
21070300-01	S12-7/7	Air		7/7/2021	7/10/2021 09:49	☐
21070300-02	S8-7/7	Air		7/7/2021	7/10/2021 09:49	☐
21070300-03	S13-7/7	Air		7/7/2021	7/10/2021 09:49	☐
21070300-04	S1-7/7	Air		7/7/2021	7/10/2021 09:49	☐
21070300-05	S2-7/7	Air		7/7/2021	7/10/2021 09:49	☐
21070300-06	S1-7/8	Air		7/8/2021	7/10/2021 09:49	☐
21070300-07	S2-7/8	Air		7/8/2021	7/10/2021 09:49	☐
21070300-08	S12-7/8	Air		7/8/2021	7/10/2021 09:49	☐
21070300-09	S13-7/8	Air		7/8/2021	7/10/2021 09:49	☐

Client:	Intertox, Incorporated
Project:	CHRCF Arsine
Work Order:	21070300

Case Narrative

The sample condition upon receipt was acceptable except where noted.

Results relate only to the items tested and are not blank corrected unless indicated.

ALS is an EPA recognized NLLAP laboratory for lead paint, soil, and dust wipe analyses under its AIHA-LAP accreditation.

All sampling information was provided by the client.

ALS Environmental

Date: *21-Jul-21*

Client: Intertox, Incorporated
Project: CHRCF Arsine

Work Order: 21070300

Analytical Results

Lab ID: 21070300-01A
Collection Date: 7/7/2021
Client Sample ID: S12-7/7
Matrix: AIR

Analyses

ARSINE BY NIOSH 6001 MOD.		Method: **N6001**	Air Volume (L): **51.2**	Analyst: **AZ**
Date Analyzed: 7/14/2021 13:20		Reporting Limit		
	µg/sample	µg/sample	mg/m3	
Arsine	ND	1.0	<0.020	

Lab ID: 21070300-02A
Collection Date: 7/7/2021
Client Sample ID: S8-7/7
Matrix: AIR

Analyses

ARSINE BY NIOSH 6001 MOD.		Method: **N6001**	Air Volume (L): **47.8**	Analyst: **AZ**
Date Analyzed: 7/14/2021 13:24		Reporting Limit		
	µg/sample	µg/sample	mg/m3	
Arsine	ND	1.0	<0.022	

Lab ID: 21070300-03A
Collection Date: 7/7/2021
Client Sample ID: S13-7/7
Matrix: AIR

Analyses

ARSINE BY NIOSH 6001 MOD.		Method: **N6001**	Air Volume (L): **53.8**	Analyst: **AZ**
Date Analyzed: 7/14/2021 13:28		Reporting Limit		
	µg/sample	µg/sample	mg/m3	
Arsine	ND	1.0	<0.019	

Lab ID: 21070300-04A
Collection Date: 7/7/2021
Client Sample ID: S1-7/7
Matrix: AIR

Analyses

ARSINE BY NIOSH 6001 MOD.		Method: **N6001**	Air Volume (L): **49.2**	Analyst: **AZ**
Date Analyzed: 7/14/2021 13:32		Reporting Limit		
	µg/sample	µg/sample	mg/m3	
Arsine	ND	1.0	<0.021	

Note:

Client: Intertox, Incorporated **Work Order:** 21070300
Project: CHRCF Arsine

Analytical Results

Lab ID: 21070300-05A **Collection Date:** 7/7/2021
Client Sample ID: S2-7/7 **Matrix:** AIR

Analyses

ARSINE BY NIOSH 6001 MOD.		Method: **N6001**	Air Volume (L): **44.2**	Analyst: **AZ**
Date Analyzed: 7/14/2021 13:36		Reporting Limit		
	µg/sample	µg/sample	mg/m3	
Arsine	ND	1.0	<0.024	

Lab ID: 21070300-06A **Collection Date:** 7/8/2021
Client Sample ID: S1-7/8 **Matrix:** AIR

Analyses

ARSINE BY NIOSH 6001 MOD.		Method: **N6001**	Air Volume (L): **40**	Analyst: **AZ**
Date Analyzed: 7/14/2021 13:40		Reporting Limit		
	µg/sample	µg/sample	mg/m3	
Arsine	ND	1.0	<0.026	

Lab ID: 21070300-07A **Collection Date:** 7/8/2021
Client Sample ID: S2-7/8 **Matrix:** AIR

Analyses

ARSINE BY NIOSH 6001 MOD.		Method: **N6001**	Air Volume (L): **40**	Analyst: **AZ**
Date Analyzed: 7/14/2021 13:52		Reporting Limit		
	µg/sample	µg/sample	mg/m3	
Arsine	ND	1.0	<0.026	

Lab ID: 21070300-08A **Collection Date:** 7/8/2021
Client Sample ID: S12-7/8 **Matrix:** AIR

Analyses

ARSINE BY NIOSH 6001 MOD.		Method: **N6001**	Air Volume (L): **40.2**	Analyst: **AZ**
Date Analyzed: 7/14/2021 13:56		Reporting Limit		
	µg/sample	µg/sample	mg/m3	
Arsine	ND	1.0	<0.026	

Note:

ALS Environmental

Date: *21-Jul-21*

Client: Intertox, Incorporated
Project: CHRCF Arsine

Work Order: 21070300

Analytical Results

Lab ID: 21070300-09A
Client Sample ID: S13-7/8

Collection Date: 7/8/2021
Matrix: AIR

Analyses

ARSINE BY NIOSH 6001 MOD.		Method: **N6001**	Air Volume (L): **41**	Analyst: **AZ**
Date Analyzed: 7/14/2021 14:00		Reporting Limit		
	µg/sample	µg/sample	mg/m3	
Arsine	ND	1.0	<0.025	

Note:

ALS Environmental

Date: 21-Jul-21

Client: Intertox, Incorporated

Work Order: 21070300

Project: CHRCF Arsine

QC BATCH REPORT

Batch ID: **75883** Instrument ID: **ICP1** Method: **N6001**

MBLK Sample ID: **MBLK-75883-75883** Units: **µg/sample** Analysis Date: **7/14/2021 01:04 PM**

Client ID: Run ID: **ICP1_210714A** SeqNo: **2516190** Prep Date: **7/13/2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsine	ND	1.0								

LCS Sample ID: **LCS-75883-75883** Units: **µg/sample** Analysis Date: **7/14/2021 01:12 PM**

Client ID: Run ID: **ICP1_210714A** SeqNo: **2516192** Prep Date: **7/13/2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsine	4.857	1.0	5.2	0	93.4	80-120	0			

LCSD Sample ID: **LCSD-75883-75883** Units: **µg/sample** Analysis Date: **7/14/2021 01:16 PM**

Client ID: Run ID: **ICP1_210714A** SeqNo: **2516193** Prep Date: **7/13/2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsine	5.705	1.0	5.2	0	110	80-120	4.857	16.1	20	

The following samples were analyzed in this batch:

21070300-01A	21070300-02A	21070300-03A
21070300-04A	21070300-05A	21070300-06A
21070300-07A	21070300-08A	21070300-09A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Intertox, Incorporated
Project: CHRCF Arsine
WorkOrder: **21070300**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
E	EPA Method
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SDL	Sample Detection Limit
SW	SW-846 Method

Units Reported	Description
µg/sample	

ALS Environmental

Sample Receipt Checklist

Client Name: **INTERTOX-SEATTLE** Date/Time Received: **10-Jul-21 09:49**

Work Order: **21070300** Received by: **AB**

Checklist completed by: Alec Bolender (eSignature) 10-Jul-21 (Date) Reviewed by: Rob Nieman (eSignature) 13-Jul-21 (Date)

Matrices:

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☐	No ☑	
Temperature(s)/Thermometer(s):			
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:			
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS | Environmental
4388 Glendale Milford Rd.
Cincinnati, Ohio 45242
Phone: (800) 458-1493 or
(513) 733-5336
Fax: (513) 733-5347

ANALYTICAL REQUEST FORM

43138

☒ REGULAR Status MB 21070300

☐ RUSH Status Required - ADDITIONAL CHARGE

RESULTS REQUIRED BY _____ DATE

CONTACT ALS LABORATORY GROUP PRIOR TO SENDING SAMPLES

Page _____ of _____

Date 7/9/21 Purchase Order No. 211082

Company Name Intertox

Address 600 Stewart St #1101

City Seattle State WA Zip 98101

Send Report To Lisa Lore

Email Address lcore@intertox.com

Telephone (206) 443 2115

Alt. Contact Name ALLAN CHARTRAND

Alt. Contact Info 425 890 2163

Quote No. _____

Sampling Site CHRCF

Date/Time of Collection 7/7 + 7/8 2021

Project No. _____

Billing Address (if different) Same

FedEx Billing 181873108

Lab Use Only	Client Sample Number	Media Type	Sample Volume (L)	Sample Time (min.)	ANALYSES REQUESTED - Use Method Number if Known
1	S12	coconut	(256	NIOSH 6001 mod (arsine GFS)	
2	S8	charcoal	239	"	"
3	S13	tubes	269	"	"
4	S1		246	"	"
5	S2		221	"	"
1	S1		200	NIOSH 6001 mod (arsine GFS)	
2	S2		200	"	"
3	S12		201	"	"
4	S13		205	"	"

7/7

7/8

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

Relinquished by: (Signature) ALLAN B CHARTRAND	Date / Time 7/9/21	Received by: (Signature)	Date / Time 7/10 9:49
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time

ALS LAB USE ONLY						DELIVERY METHOD:	CLIENT	DROP BOX	FEDEX	UPS
COOLER TEMP:	°C	Taken with IR#:				STD MAIL	PRTY MAIL	ALS	COURIER	OTHER:
						CUSTODY SEALS:	COOLER	PACKAGE	SAMPLES	NOT REQUIRED
COOLING METHOD:	NONE	COOLER	WET ICE	DRY ICE	ICE PACK	EQUIP. RETURNED:				

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

LABORATORY REPORT

July 26, 2021

Lisa Corey
Intertox, Incorporated
600 Stewart Street, Suite 1101
Seattle, WA 98101

RE: KCLF AIR

Dear Lisa:

Enclosed are the results of the samples submitted to our laboratory on June 24, 2021. For your reference, these analyses have been assigned our service request number P2103416.

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

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

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 4:24 pm, Jul 26, 2021

Sue Anderson
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: Intertox, Incorporated
Project: KCLF AIR

Service Request No: P2103416

CASE NARRATIVE

The samples were received intact under chain of custody on June 24, 2021 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.

Butane and Pentane Analysis

The samples were analyzed per modified EPA Method TO-3 for butane and pentane using a gas chromatograph equipped with a flame ionization detector (FID). This procedure is described in laboratory SOP VOA-TO3C1C6. This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP accreditation.

Carbon Monoxide and Total Gaseous Non-Methane Organics as Hexane Analysis

The samples were also analyzed for carbon monoxide and total gaseous non-methane organics as hexane according to modified EPA Method 25C. The analyses included a single sample injection (method modification) analyzed by gas chromatography using flame ionization detection/total combustion analysis. This method is not included on the laboratory's NELAP or DoD-ELAP scope of accreditation.

Ethane and Propane Analysis

The samples were also analyzed per modified EPA Method TO-3 for ethane and propane using a gas chromatograph equipped with a flame ionization detector (FID). This procedure is described in laboratory SOP VOA-TO3C1C6. This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP accreditation.

Sulfur Analysis

The samples were also analyzed for six sulfur compounds per ASTM D 5504-12 using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). All compounds with the exception of hydrogen sulfide and carbonyl sulfide are quantitated against the initial calibration curve for methyl mercaptan. This method is included on the laboratory's NELAP scope of accreditation, however it is not part of the DoD-ELAP accreditation.

Volatile Organic Compound Analysis

The samples were also analyzed for volatile organic compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. This procedure is described in laboratory SOP VOA-TO15. The analytical system was comprised of a gas chromatograph /

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www.alsglobal.com

Client: Intertox, Incorporated
Project: KCLF AIR

Service Request No: P2103416

CASE NARRATIVE

mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the NELAP or DoD-ELAP accreditation.

The containers were cleaned, prior to sampling, down to the method reporting limit (MRL) reported for this project. For projects requiring DoD QSM 5.3 compliance canisters were cleaned to <1/2 the MRL. Please note, projects which require reporting below the MRL could have results between the MRL and method detection limit (MDL) that are biased high.

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www.alsglobal.com

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

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

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

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Intertox, Incorporated
Project ID: KCLF AIR

Service Request: P2103416

Date Received: 6/24/2021
Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pfl (psig)	TO-3 Modified - C1C6+ Can	TO-3 Modified - MEEPP Can	ASTM D 5504-12 - Sulfur Can	25C Modified - TGNMO+ 1X Can	TO-15 - VOC Cans
S13	P2103416-001	Air	6/22/2021	06:15	AS00724	-3.07	3.88	X	X	X	X	X
S12	P2103416-002	Air	6/22/2021	07:29	AS00150	-1.99	3.54	X	X	X	X	X
S11	P2103416-003	Air	6/22/2021	07:47	AS01417	-2.49	4.43	X	X	X	X	X
S11D	P2103416-004	Air	6/22/2021	08:01	AS01127	-1.86	3.96	X	X	X	X	X
S8	P2103416-005	Air	6/22/2021	08:21	AS01015	-1.39	4.35	X	X	X	X	X
S4	P2103416-006	Air	6/22/2021	08:40	AS01296	-0.84	3.67	X	X	X	X	X
S1	P2103416-007	Air	6/22/2021	08:56	AS00584	-1.35	4.21	X	X	X	X	X
S3	P2103416-008	Air	6/22/2021	09:17	AS00682	-1.71	3.68	X	X	X	X	X
S2	P2103416-009	Air	6/22/2021	09:36	AS01554	-2.22	3.98	X	X	X	X	X
S9	P2103416-010	Air	6/22/2021	10:09	AS01558	-2.15	3.95	X	X	X	X	X
S10	P2103416-011	Air	6/22/2021	10:32	AS01530	-2.51	3.91	X	X	X	X	X
REF 1	P2103416-012	Air	6/22/2021	11:09	AS01344	-2.12	3.94	X	X	X	X	X

Air - Chain of Custody Record & Analytical Service Request

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

Page 1 of 31

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard

ALS Project No. P2103416

Company Name & Address (Reporting Information): Intertox / Intertox / KCLF.

Project Name: KCLF AIR

Project Number:

Project Manager: Dr. Lisa Corey

P.O. # / Billing Information:

Phone: 2066795786 Fax:

Email Address for Result Reporting: rcpleus@intertox.com

Sampler (Print & Sign): Kelli Hackney Kelli Hackney

ALS Contact:

Analysis Method

Comments e.g. Actual Preservative or specific instructions

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
S13		6/22	6:15AM	AS00724		-29	-5	
S12		6/22	7:29AM	AS00150		-29	-6	
S11		6/22	7:47	AS01417		-29.5	-6	
S11		6/22	8:01	AS01127		-29.2	-6	
S8		6/22	8:21	AS01015		-29.8	-5	
S4		6/22	8:40	AS01296		-29	-3	
S1		6/22	8:56	AS00584		-29.8	-5	
S3		6/22	9:17	AS0682		-29	-6	
S2		6/22	9:36	AS01554		-29.5	-6	
S9		6/22	10:09	AS01558		-29.9	-5	
S10		6/22	10:32	AS01530		-29.7	-6	
Ref 1		6/22	10:09	AS01344		-29.6	-6	
~~S7~~		6/22	~~12:35~~	~~AS01160~~		~~-28.6~~	~~-4~~	
~~S6~~		6/22	~~12:47~~	~~AS00826~~		~~-29.2~~	~~-5~~	

Report Tier Levels - please select

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

EDD required Yes / No
Type: _____ Units: _____

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
				6-24-21	0930
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank Temperature ____°C

ALS Environmental
Sample Acceptance Check Form

Client: Intertox, Incorporated Work order: P2103416
Project: KCLF AIR
Sample(s) received on: 6/24/21 Date opened: 6/24/21 by: DENISE.POSADA

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	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
8	Were **custody seals** on outside of cooler/Box/Container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
9	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?	☐	☐	☒
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**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
P2103416-001.01	6.0 L Silonite Can					
P2103416-002.01	6.0 L Silonite Can					
P2103416-003.01	6.0 L Silonite Can					
P2103416-004.01	6.0 L Silonite Can					Per client ID = S11D
P2103416-005.01	6.0 L Silonite Can					
P2103416-006.01	6.0 L Silonite Can					
P2103416-007.01	6.0 L Silonite Can					
P2103416-008.01	6.0 L Silonite Can					
P2103416-009.01	6.0 L Silonite Can					
P2103416-010.01	6.0 L Silonite Can					
P2103416-011.01	6.0 L Silonite Can					
P2103416-012.01	6.0 L Silonite Can					

Explain any discrepancies: (include lab sample ID numbers):
Sample -003 is listed S11 on the COC and was labeled S12.

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P2103416-001

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00724

Date Collected: 6/22/21
Date Received: 6/24/21
Date Analyzed: 6/29/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -3.07 Final Pressure (psig): 3.88

Container Dilution Factor: 1.60

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.80	0.070	
n-Pentane	ND	0.80	0.078	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-002

Test Code: EPA TO-3 Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC8/FID Date Received: 6/24/21
Analyst: Gilbert Gutierrez Date Analyzed: 6/29/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS00150

Initial Pressure (psig): -1.99 Final Pressure (psig): 3.54

Container Dilution Factor: 1.44

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.72	0.063	
n-Pentane	ND	0.72	0.071	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-003

Test Code: EPA TO-3 Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC8/FID Date Received: 6/24/21
Analyst: Gilbert Gutierrez Date Analyzed: 6/29/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01417

Initial Pressure (psig): -2.49 Final Pressure (psig): 4.43

Container Dilution Factor: 1.57

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.79	0.069	
n-Pentane	ND	0.79	0.077	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-004

Test Code: EPA TO-3 Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC8/FID Date Received: 6/24/21
Analyst: Gilbert Gutierrez Date Analyzed: 6/29/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01127

Initial Pressure (psig): -1.86 Final Pressure (psig): 3.96

Container Dilution Factor: 1.45

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.73	0.064	
n-Pentane	ND	0.73	0.071	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-005

Test Code: EPA TO-3 Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC8/FID Date Received: 6/24/21
Analyst: Gilbert Gutierrez Date Analyzed: 6/29/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01015

Initial Pressure (psig): -1.39 Final Pressure (psig): 4.35

Container Dilution Factor: 1.43

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.72	0.063	
n-Pentane	ND	0.72	0.070	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P2103416-006

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01296

Date Collected: 6/22/21
Date Received: 6/24/21
Date Analyzed: 6/29/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -0.84 Final Pressure (psig): 3.67

Container Dilution Factor: 1.33

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.67	0.059	
n-Pentane	ND	0.67	0.065	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P2103416-007

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00584

Date Collected: 6/22/21
Date Received: 6/24/21
Date Analyzed: 6/29/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.35 Final Pressure (psig): 4.21

Container Dilution Factor: 1.42

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.71	0.062	
n-Pentane	ND	0.71	0.070	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P2103416-008

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00682

Date Collected: 6/22/21
Date Received: 6/24/21
Date Analyzed: 6/29/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.71 Final Pressure (psig): 3.68

Container Dilution Factor: 1.41

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.71	0.062	
n-Pentane	ND	0.71	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P2103416-009

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01554

Date Collected: 6/22/21
Date Received: 6/24/21
Date Analyzed: 6/29/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.22 Final Pressure (psig): 3.98

Container Dilution Factor: 1.50

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.75	0.066	
n-Pentane	ND	0.75	0.074	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P2103416-010

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01558

Date Collected: 6/22/21
Date Received: 6/24/21
Date Analyzed: 6/29/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.15 Final Pressure (psig): 3.95

Container Dilution Factor: 1.49

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.75	0.066	
n-Pentane	ND	0.75	0.073	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-011

Test Code: EPA TO-3 Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC8/FID Date Received: 6/24/21
Analyst: Gilbert Gutierrez Date Analyzed: 6/29/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01530

Initial Pressure (psig): -2.51 Final Pressure (psig): 3.91

Container Dilution Factor: 1.53

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.77	0.067	
n-Pentane	ND	0.77	0.075	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF 1** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-012

Test Code: EPA TO-3 Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC8/FID Date Received: 6/24/21
Analyst: Gilbert Gutierrez Date Analyzed: 6/29/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01344

Initial Pressure (psig): -2.12 Final Pressure (psig): 3.94

Container Dilution Factor: 1.48

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.74	0.065	
n-Pentane	ND	0.74	0.073	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P210629-MB

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890 II/GC8/FID Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 6/29/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.50	0.044	
n-Pentane	ND	0.50	0.049	

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

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P210629-DLCS

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 6/29/21
Volume(s) Analyzed: NA ml(s)

Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
n-Butane	1,000	1,020	1,030	**102**	**103**	91-121	1	6	
n-Pentane	1,000	1,010	1,020	**101**	**102**	89-118	1	6	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-001

Test Code: EPA Method 25C Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00724

Initial Pressure (psig): -3.07 Final Pressure (psig): 3.88

Container Dilution Factor: 1.60

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	8.0	0.85	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.27	0.12	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-002

Test Code: EPA Method 25C Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00150

Initial Pressure (psig): -1.99 Final Pressure (psig): 3.54

Container Dilution Factor: 1.44

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.2	0.76	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.24	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-003

Test Code: EPA Method 25C Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01417

Initial Pressure (psig): -2.49 Final Pressure (psig): 4.43

Container Dilution Factor: 1.57

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.9	0.83	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.27	0.12	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-004

Test Code: EPA Method 25C Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01127

Initial Pressure (psig): -1.86 Final Pressure (psig): 3.96

Container Dilution Factor: 1.45

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.3	0.77	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.25	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-005

Test Code: EPA Method 25C Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01015

Initial Pressure (psig): -1.39 Final Pressure (psig): 4.35

Container Dilution Factor: 1.43

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.2	0.76	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.24	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-006

Test Code: EPA Method 25C Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01296

Initial Pressure (psig): -0.84 Final Pressure (psig): 3.67

Container Dilution Factor: 1.33

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	6.7	0.70	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.23	0.10	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-007

Test Code: EPA Method 25C Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00584

Initial Pressure (psig): -1.35 Final Pressure (psig): 4.21

Container Dilution Factor: 1.42

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.1	0.75	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.24	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-008

Test Code: EPA Method 25C Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00682

Initial Pressure (psig): -1.71 Final Pressure (psig): 3.68

Container Dilution Factor: 1.41

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.1	0.75	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.24	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-009

Test Code: EPA Method 25C Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01554

Initial Pressure (psig): -2.22 Final Pressure (psig): 3.98

Container Dilution Factor: 1.50

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.5	0.80	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.26	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-010

Test Code: EPA Method 25C Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01558

Initial Pressure (psig): -2.15 Final Pressure (psig): 3.95

Container Dilution Factor: 1.49

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.5	0.79	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.25	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-011

Test Code: EPA Method 25C Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01530

Initial Pressure (psig): -2.51 Final Pressure (psig): 3.91

Container Dilution Factor: 1.53

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.7	0.81	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.26	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF 1** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-012

Test Code: EPA Method 25C Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01344

Initial Pressure (psig): -2.12 Final Pressure (psig): 3.94

Container Dilution Factor: 1.48

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.4	0.78	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.25	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P210708-MB

Test Code: EPA Method 25C Modified Date Collected: NA
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: NA
Analyst: Connor Barrett Date Analyzed: 7/08/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	5.0	0.53	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.17	0.075	

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

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P210708-DLCS

Test Code: EPA Method 25C Modified Date Collected: NA
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: NA
Analyst: Connor Barrett Date Analyzed: 7/08/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
Carbon Monoxide	400	458	454	**115**	**114**	90-123	0.9	11	
Total Gaseous Nonmethane Organics (TGNMO) as Methane	400	444	455	**111**	**114**	86-121	3	13	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P2103416-001

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00724

Date Collected: 6/22/21
Date Received: 6/24/21
Date Analyzed: 7/8/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -3.07 Final Pressure (psig): 3.88

Container Dilution Factor: 1.60

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.59	0.083	ND	0.48	0.067	
74-98-6	Propane	ND	0.87	0.13	ND	0.48	0.074	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-002

Test Code: EPA TO-3 Modified Date Collected: 6/22/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00150

Initial Pressure (psig): -1.99 Final Pressure (psig): 3.54

Container Dilution Factor: 1.44

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.53	0.075	ND	0.43	0.060	
74-98-6	Propane	ND	0.78	0.12	ND	0.43	0.066	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P2103416-003

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01417

Date Collected: 6/22/21
Date Received: 6/24/21
Date Analyzed: 7/8/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -2.49 Final Pressure (psig): 4.43

Container Dilution Factor: 1.57

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.58	0.082	ND	0.47	0.066	
74-98-6	Propane	ND	0.85	0.13	ND	0.47	0.072	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-004

Test Code: EPA TO-3 Modified Date Collected: 6/22/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01127

Initial Pressure (psig): -1.86 Final Pressure (psig): 3.96

Container Dilution Factor: 1.45

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.53	0.075	ND	0.44	0.061	
74-98-6	Propane	ND	0.78	0.12	ND	0.44	0.067	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-005

Test Code: EPA TO-3 Modified Date Collected: 6/22/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01015

Initial Pressure (psig): -1.39 Final Pressure (psig): 4.35

Container Dilution Factor: 1.43

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.53	0.074	ND	0.43	0.060	
74-98-6	Propane	ND	0.77	0.12	ND	0.43	0.066	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-006

Test Code: EPA TO-3 Modified Date Collected: 6/22/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01296

Initial Pressure (psig): -0.84 Final Pressure (psig): 3.67

Container Dilution Factor: 1.33

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.49	0.069	ND	0.40	0.056	
74-98-6	Propane	ND	0.72	0.11	ND	0.40	0.061	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-007

Test Code: EPA TO-3 Modified Date Collected: 6/22/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00584

Initial Pressure (psig): -1.35 Final Pressure (psig): 4.21

Container Dilution Factor: 1.42

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.52	0.074	ND	0.43	0.060	
74-98-6	Propane	ND	0.77	0.12	ND	0.43	0.065	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P2103416-008

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00682

Date Collected: 6/22/21
Date Received: 6/24/21
Date Analyzed: 7/8/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -1.71 Final Pressure (psig): 3.68

Container Dilution Factor: 1.41

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.52	0.073	ND	0.42	0.059	
74-98-6	Propane	ND	0.76	0.12	ND	0.42	0.065	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-009

Test Code: EPA TO-3 Modified Date Collected: 6/22/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01554

Initial Pressure (psig): -2.22 Final Pressure (psig): 3.98

Container Dilution Factor: 1.50

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.55	0.078	ND	0.45	0.063	
74-98-6	Propane	ND	0.81	0.12	ND	0.45	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P2103416-010

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01558

Date Collected: 6/22/21
Date Received: 6/24/21
Date Analyzed: 7/8/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -2.15 Final Pressure (psig): 3.95

Container Dilution Factor: 1.49

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.55	0.077	ND	0.45	0.063	
74-98-6	Propane	ND	0.81	0.12	ND	0.45	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-011

Test Code: EPA TO-3 Modified Date Collected: 6/22/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01530

Initial Pressure (psig): -2.51 Final Pressure (psig): 3.91

Container Dilution Factor: 1.53

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.56	0.080	ND	0.46	0.064	
74-98-6	Propane	ND	0.83	0.13	ND	0.46	0.070	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF 1** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-012

Test Code: EPA TO-3 Modified Date Collected: 6/22/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/24/21
Analyst: Connor Barrett Date Analyzed: 7/8/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01344

Initial Pressure (psig): -2.12 Final Pressure (psig): 3.94

Container Dilution Factor: 1.48

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.55	0.077	ND	0.44	0.062	
74-98-6	Propane	ND	0.80	0.12	ND	0.44	0.068	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P210708-MB

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Connor Barrett Date Analyzed: 7/08/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.37	0.052	ND	0.30	0.042	
74-98-6	Propane	ND	0.54	0.082	ND	0.30	0.046	

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

ALS ENVIRONMENTAL

DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P210708-DLCS

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Connor Barrett Date Analyzed: 7/08/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-84-0	Ethane	1.50	1.55	1.55	**103**	**103**	70-130	0	15	
74-98-6	Propane	1.50	1.56	1.56	**104**	**104**	70-130	0	15	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P2103416-001

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00724

Date Collected: 6/22/21
Time Collected: 06:15
Date Received: 6/24/21
Date Analyzed: 6/29/21
Time Analyzed: 06:43
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -3.07 Final Pressure (psig): 3.88

Container Dilution Factor: 1.60

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	11	3.3	ND	8.0	2.4	
463-58-1	Carbonyl Sulfide	ND	20	7.5	ND	8.0	3.0	
74-93-1	Methyl Mercaptan	ND	16	6.3	ND	8.0	3.2	
75-08-1	Ethyl Mercaptan	ND	20	8.1	ND	8.0	3.2	
75-18-3	Dimethyl Sulfide	ND	20	8.1	ND	8.0	3.2	
75-15-0	Carbon Disulfide	ND	12	5.0	ND	4.0	1.6	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P2103416-002

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00150

Date Collected: 6/22/21
Time Collected: 07:29
Date Received: 6/24/21
Date Analyzed: 6/29/21
Time Analyzed: 07:01
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.99 Final Pressure (psig): 3.54

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.0	ND	7.2	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.7	ND	7.2	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.7	ND	7.2	2.9	
75-08-1	Ethyl Mercaptan	ND	18	7.3	ND	7.2	2.9	
75-18-3	Dimethyl Sulfide	ND	18	7.3	ND	7.2	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.6	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P2103416-003

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01417

Date Collected: 6/22/21
Time Collected: 07:47
Date Received: 6/24/21
Date Analyzed: 6/29/21
Time Analyzed: 07:18
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.49 Final Pressure (psig): 4.43

Container Dilution Factor: 1.57

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	11	3.3	ND	7.9	2.4	
463-58-1	Carbonyl Sulfide	ND	19	7.3	ND	7.9	3.0	
74-93-1	Methyl Mercaptan	ND	15	6.2	ND	7.9	3.1	
75-08-1	Ethyl Mercaptan	ND	20	8.0	ND	7.9	3.1	
75-18-3	Dimethyl Sulfide	ND	20	8.0	ND	7.9	3.1	
75-15-0	Carbon Disulfide	ND	12	4.9	ND	3.9	1.6	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-004

Test Code:	ASTM D 5504-12	Date Collected:	6/22/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	08:01
Analyst:	Gilbert Gutierrez	Date Received:	6/24/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	6/29/21
Test Notes:		Time Analyzed:	07:36
Container ID:	AS01127	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.86 Final Pressure (psig): 3.96

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.0	ND	7.3	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.8	ND	7.3	2.8	
74-93-1	Methyl Mercaptan	ND	14	5.7	ND	7.3	2.9	
75-08-1	Ethyl Mercaptan	ND	18	7.4	ND	7.3	2.9	
75-18-3	Dimethyl Sulfide	ND	18	7.4	ND	7.3	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.6	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-005

Test Code:	ASTM D 5504-12	Date Collected:	6/22/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	08:21
Analyst:	Gilbert Gutierrez	Date Received:	6/24/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	6/29/21
Test Notes:		Time Analyzed:	07:56
Container ID:	AS01015	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.39 Final Pressure (psig): 4.35

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.0	ND	7.2	2.1	
463-58-1	Carbonyl Sulfide	ND	18	6.7	ND	7.2	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.6	ND	7.2	2.9	
75-08-1	Ethyl Mercaptan	ND	18	7.3	ND	7.2	2.9	
75-18-3	Dimethyl Sulfide	ND	18	7.3	ND	7.2	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.6	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-006

Test Code:	ASTM D 5504-12	Date Collected:	6/22/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	08:40
Analyst:	Gilbert Gutierrez	Date Received:	6/24/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	6/29/21
Test Notes:		Time Analyzed:	08:15
Container ID:	AS01296	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -0.84 Final Pressure (psig): 3.67

Container Dilution Factor: 1.33

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.3	2.8	ND	6.7	2.0	
463-58-1	Carbonyl Sulfide	ND	16	6.2	ND	6.7	2.5	
74-93-1	Methyl Mercaptan	ND	13	5.2	ND	6.7	2.7	
75-08-1	Ethyl Mercaptan	ND	17	6.8	ND	6.7	2.7	
75-18-3	Dimethyl Sulfide	ND	17	6.8	ND	6.7	2.7	
75-15-0	Carbon Disulfide	ND	10	4.1	ND	3.3	1.3	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P2103416-007

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00584

Date Collected: 6/22/21
Time Collected: 08:56
Date Received: 6/24/21
Date Analyzed: 6/29/21
Time Analyzed: 08:33
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.35 Final Pressure (psig): 4.21

Container Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.9	3.0	ND	7.1	2.1	
463-58-1	Carbonyl Sulfide	ND	17	6.6	ND	7.1	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.6	ND	7.1	2.8	
75-08-1	Ethyl Mercaptan	ND	18	7.2	ND	7.1	2.8	
75-18-3	Dimethyl Sulfide	ND	18	7.2	ND	7.1	2.8	
75-15-0	Carbon Disulfide	ND	11	4.4	ND	3.6	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-008

Test Code:	ASTM D 5504-12	Date Collected:	6/22/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	09:17
Analyst:	Gilbert Gutierrez	Date Received:	6/24/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	6/29/21
Test Notes:		Time Analyzed:	08:51
Container ID:	AS00682	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.71 Final Pressure (psig): 3.68

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.8	2.9	ND	7.1	2.1	
463-58-1	Carbonyl Sulfide	ND	17	6.6	ND	7.1	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.5	ND	7.1	2.8	
75-08-1	Ethyl Mercaptan	ND	18	7.2	ND	7.1	2.8	
75-18-3	Dimethyl Sulfide	ND	18	7.2	ND	7.1	2.8	
75-15-0	Carbon Disulfide	ND	11	4.4	ND	3.5	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-009

Test Code:	ASTM D 5504-12	Date Collected:	6/22/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	09:36
Analyst:	Gilbert Gutierrez	Date Received:	6/24/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	6/29/21
Test Notes:		Time Analyzed:	09:11
Container ID:	AS01554	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -2.22 Final Pressure (psig): 3.98

Container Dilution Factor: 1.50

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.1	ND	7.5	2.3	
463-58-1	Carbonyl Sulfide	ND	18	7.0	ND	7.5	2.9	
74-93-1	Methyl Mercaptan	ND	15	5.9	ND	7.5	3.0	
75-08-1	Ethyl Mercaptan	ND	19	7.6	ND	7.5	3.0	
75-18-3	Dimethyl Sulfide	ND	19	7.6	ND	7.5	3.0	
75-15-0	Carbon Disulfide	ND	12	4.7	ND	3.8	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P2103416-010

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01558

Date Collected: 6/22/21
Time Collected: 10:09
Date Received: 6/24/21
Date Analyzed: 6/29/21
Time Analyzed: 09:35
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.15 Final Pressure (psig): 3.95

Container Dilution Factor: 1.49

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.1	ND	7.5	2.2	
463-58-1	Carbonyl Sulfide	ND	18	7.0	ND	7.5	2.8	
74-93-1	Methyl Mercaptan	ND	15	5.9	ND	7.5	3.0	
75-08-1	Ethyl Mercaptan	ND	19	7.6	ND	7.5	3.0	
75-18-3	Dimethyl Sulfide	ND	19	7.6	ND	7.5	3.0	
75-15-0	Carbon Disulfide	ND	12	4.6	ND	3.7	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P2103416-011

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01530

Date Collected: 6/22/21
Time Collected: 10:32
Date Received: 6/24/21
Date Analyzed: 6/29/21
Time Analyzed: 10:04
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.51 Final Pressure (psig): 3.91

Container Dilution Factor: 1.53

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	11	3.2	ND	7.7	2.3	
463-58-1	Carbonyl Sulfide	ND	19	7.1	ND	7.7	2.9	
74-93-1	Methyl Mercaptan	ND	15	6.0	ND	7.7	3.1	
75-08-1	Ethyl Mercaptan	ND	19	7.8	ND	7.7	3.1	
75-18-3	Dimethyl Sulfide	ND	19	7.8	ND	7.7	3.1	
75-15-0	Carbon Disulfide	ND	12	4.8	ND	3.8	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF 1** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-012

Test Code:	ASTM D 5504-12	Date Collected:	6/22/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	11:09
Analyst:	Gilbert Gutierrez	Date Received:	6/24/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	6/29/21
Test Notes:		Time Analyzed:	10:23
Container ID:	AS01344	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -2.12 Final Pressure (psig): 3.94

Container Dilution Factor: 1.48

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.1	ND	7.4	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.9	ND	7.4	2.8	
74-93-1	Methyl Mercaptan	ND	15	5.8	ND	7.4	3.0	
75-08-1	Ethyl Mercaptan	ND	19	7.5	ND	7.4	3.0	
75-18-3	Dimethyl Sulfide	ND	19	7.5	ND	7.4	3.0	
75-15-0	Carbon Disulfide	ND	12	4.6	ND	3.7	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P210629-MB

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Time Collected: NA
Date Received: NA
Date Analyzed: 6/29/21
Time Analyzed: 06:26
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	2.1	ND	5.0	1.5	
463-58-1	Carbonyl Sulfide	ND	12	4.7	ND	5.0	1.9	
74-93-1	Methyl Mercaptan	ND	9.8	3.9	ND	5.0	2.0	
75-08-1	Ethyl Mercaptan	ND	13	5.1	ND	5.0	2.0	
75-18-3	Dimethyl Sulfide	ND	13	5.1	ND	5.0	2.0	
75-15-0	Carbon Disulfide	ND	7.8	3.1	ND	2.5	1.0	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank**
Client Project ID: **KCLF AIR**

ALS Project ID: P2103416
ALS Sample ID: P210629-MB

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Time Collected: NA
Date Received: NA
Date Analyzed: 6/29/21
Time Analyzed: 06:26
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	2.1	ND	5.0	1.5	
463-58-1	Carbonyl Sulfide	ND	12	4.7	ND	5.0	1.9	
74-93-1	Methyl Mercaptan	ND	9.8	3.9	ND	5.0	2.0	
75-08-1	Ethyl Mercaptan	ND	13	5.1	ND	5.0	2.0	
75-18-3	Dimethyl Sulfide	ND	13	5.1	ND	5.0	2.0	
75-15-0	Carbon Disulfide	ND	7.8	3.1	ND	2.5	1.0	

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

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P210629-DLCS

Test Code: ASTM D 5504-12 Date Collected: NA
Instrument ID: Agilent 7890A/GC22/SCD Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 6/29/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ppbV	Result LCS ppbV	Result DLCS ppbV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
7783-06-4	Hydrogen Sulfide	989	1,030	1,030	**104**	**104**	72-122	0	18	
463-58-1	Carbonyl Sulfide	1,050	1,020	1,010	**97**	**96**	72-121	1	17	
74-93-1	Methyl Mercaptan	1,050	1,090	1,080	**104**	**103**	74-127	1.0	18	

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P210629-DLCS

Test Code: ASTM D 5504-12 Date Collected: NA
Instrument ID: Agilent 7890A/GC22/SCD Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 6/29/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ppbV	Result LCS ppbV	Result DLCS ppbV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
7783-06-4	Hydrogen Sulfide	989	1,030	1,030	**104**	**104**	72-122	0	18	
463-58-1	Carbonyl Sulfide	1,050	1,020	1,010	**97**	**96**	72-121	1	17	
74-93-1	Methyl Mercaptan	1,050	1,090	1,080	**104**	**103**	74-127	1.0	18	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-001

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Wida Ang Date Analyzed: 7/15/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00724

Initial Pressure (psig): -3.07 Final Pressure (psig): 3.88

Container Dilution Factor: 1.60

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.3**	0.83	0.14	**0.47**	0.17	0.028	
74-87-3	Chloromethane	ND	0.83	0.14	ND	0.40	0.067	
75-01-4	Vinyl Chloride	ND	0.85	0.091	ND	0.33	0.036	
75-00-3	Chloroethane	ND	0.83	0.11	ND	0.32	0.040	
64-17-5	Ethanol	**35**	8.5	0.59	**18**	4.5	0.31	
67-64-1	Acetone	**17**	8.3	1.9	**7.1**	3.5	0.81	
75-69-4	Trichlorofluoromethane	**1.3**	0.82	0.13	**0.23**	0.15	0.023	
67-63-0	2-Propanol (Isopropyl Alcohol)	**1.2**	1.6	0.35	**0.50**	0.65	0.14	**J**
107-13-1	Acrylonitrile	ND	1.6	0.18	ND	0.74	0.081	
75-35-4	1,1-Dichloroethene	ND	0.83	0.12	ND	0.21	0.030	
75-09-2	Methylene Chloride	**0.48**	0.83	0.24	**0.14**	0.24	0.069	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.85	0.12	ND	0.21	0.030	
75-34-3	1,1-Dichloroethane	ND	0.86	0.12	ND	0.21	0.031	
78-93-3	2-Butanone (MEK)	**4.2**	1.6	0.18	**1.4**	0.54	0.060	
110-54-3	n-Hexane	**0.27**	0.83	0.18	**0.076**	0.24	0.050	**J**
67-66-3	Chloroform	**0.60**	0.85	0.11	**0.12**	0.17	0.023	**J**
107-06-2	1,2-Dichloroethane	ND	0.83	0.094	ND	0.21	0.023	
71-55-6	1,1,1-Trichloroethane	ND	0.83	0.11	ND	0.15	0.019	
71-43-2	Benzene	**4.3**	0.83	0.12	**1.3**	0.26	0.039	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Intertox, Incorporated**
Client Sample ID: **S13** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-001

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Wida Ang Date Analyzed: 7/15/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00724

Initial Pressure (psig): -3.07 Final Pressure (psig): 3.88

Container Dilution Factor: 1.60

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.40**	0.82	0.12	**0.064**	0.13	0.019	**J**
78-87-5	1,2-Dichloropropane	ND	0.83	0.11	ND	0.18	0.023	
75-27-4	Bromodichloromethane	**0.21**	0.83	0.12	**0.032**	0.12	0.018	**J**
79-01-6	Trichloroethene	ND	0.82	0.12	ND	0.15	0.021	
108-10-1	4-Methyl-2-pentanone	**0.13**	1.6	0.12	**0.032**	0.39	0.029	**J**
108-88-3	Toluene	**1.2**	0.83	0.10	**0.31**	0.22	0.028	
106-93-4	1,2-Dibromoethane	ND	0.83	0.099	ND	0.11	0.013	
127-18-4	Tetrachloroethene	**0.28**	0.83	0.11	**0.042**	0.12	0.016	**J**
108-90-7	Chlorobenzene	ND	0.83	0.11	ND	0.18	0.025	
100-41-4	Ethylbenzene	**0.17**	0.83	0.12	**0.038**	0.19	0.028	**J**
179601-23-1	m,p-Xylenes	**0.54**	1.6	0.22	**0.12**	0.37	0.052	**J**
95-47-6	o-Xylene	**0.20**	0.85	0.12	**0.046**	0.20	0.028	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.85	0.12	ND	0.12	0.017	
541-73-1	1,3-Dichlorobenzene	ND	0.85	0.13	ND	0.14	0.021	
106-46-7	1,4-Dichlorobenzene	ND	0.83	0.13	ND	0.14	0.022	
95-50-1	1,2-Dichlorobenzene	ND	0.85	0.13	ND	0.14	0.021	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.80	0.40	ND	0.23	0.11	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.80	0.38	ND	0.19	0.091	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-002

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Wida Ang Date Analyzed: 7/15/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00150

Initial Pressure (psig): -1.99 Final Pressure (psig): 3.54

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.4**	0.75	0.13	**0.49**	0.15	0.025	
74-87-3	Chloromethane	**0.13**	0.75	0.12	**0.061**	0.36	0.060	**J**
75-01-4	Vinyl Chloride	ND	0.76	0.082	ND	0.30	0.032	
75-00-3	Chloroethane	ND	0.75	0.095	ND	0.28	0.036	
64-17-5	Ethanol	**47**	7.6	0.53	**25**	4.1	0.28	
67-64-1	Acetone	**15**	7.5	1.7	**6.1**	3.2	0.73	
75-69-4	Trichlorofluoromethane	**1.6**	0.73	0.12	**0.29**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**1.9**	1.4	0.32	**0.77**	0.59	0.13	
107-13-1	Acrylonitrile	ND	1.4	0.16	ND	0.66	0.073	
75-35-4	1,1-Dichloroethene	ND	0.75	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**1.0**	0.75	0.22	**0.30**	0.22	0.062	
156-60-5	trans-1,2-Dichloroethene	ND	0.76	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.78	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	**4.2**	1.4	0.16	**1.4**	0.49	0.054	
110-54-3	n-Hexane	**0.58**	0.75	0.16	**0.16**	0.21	0.045	**J**
67-66-3	Chloroform	**0.39**	0.76	0.10	**0.079**	0.16	0.021	**J**
107-06-2	1,2-Dichloroethane	**0.14**	0.75	0.085	**0.034**	0.19	0.021	**J**
71-55-6	1,1,1-Trichloroethane	ND	0.75	0.095	ND	0.14	0.017	
71-43-2	Benzene	**0.19**	0.75	0.11	**0.061**	0.23	0.035	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-002

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Wida Ang Date Analyzed: 7/15/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00150

Initial Pressure (psig): -1.99 Final Pressure (psig): 3.54

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.44**	0.73	0.11	**0.070**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.75	0.095	ND	0.16	0.021	
75-27-4	Bromodichloromethane	**0.14**	0.75	0.11	**0.020**	0.11	0.017	**J**
79-01-6	Trichloroethene	ND	0.73	0.10	ND	0.14	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.11	ND	0.35	0.026	
108-88-3	Toluene	**1.8**	0.75	0.094	**0.48**	0.20	0.025	
106-93-4	1,2-Dibromoethane	ND	0.75	0.089	ND	0.097	0.012	
127-18-4	Tetrachloroethene	**0.69**	0.75	0.099	**0.10**	0.11	0.015	**J**
108-90-7	Chlorobenzene	ND	0.75	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	**0.25**	0.75	0.11	**0.057**	0.17	0.025	**J**
179601-23-1	m,p-Xylenes	**0.75**	1.4	0.20	**0.17**	0.33	0.046	**J**
95-47-6	o-Xylene	**0.27**	0.76	0.11	**0.061**	0.18	0.026	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.76	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.76	0.12	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.75	0.12	ND	0.12	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.76	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.72	0.36	ND	0.20	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.72	0.35	ND	0.17	0.082	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-003

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Wida Ang Date Analyzed: 7/15/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01417

Initial Pressure (psig): -2.49 Final Pressure (psig): 4.43

Container Dilution Factor: 1.57

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.3**	0.82	0.14	**0.47**	0.17	0.028	
74-87-3	Chloromethane	ND	0.82	0.14	ND	0.40	0.065	
75-01-4	Vinyl Chloride	ND	0.83	0.089	ND	0.33	0.035	
75-00-3	Chloroethane	ND	0.82	0.10	ND	0.31	0.039	
64-17-5	Ethanol	**19**	8.3	0.58	**10**	4.4	0.31	
67-64-1	Acetone	**41**	8.2	1.9	**17**	3.4	0.79	
75-69-4	Trichlorofluoromethane	**1.2**	0.80	0.13	**0.22**	0.14	0.023	
67-63-0	2-Propanol (Isopropyl Alcohol)	**7.3**	1.6	0.35	**3.0**	0.64	0.14	
107-13-1	Acrylonitrile	ND	1.6	0.17	ND	0.72	0.080	
75-35-4	1,1-Dichloroethene	ND	0.82	0.12	ND	0.21	0.029	
75-09-2	Methylene Chloride	**0.35**	0.82	0.24	**0.10**	0.24	0.068	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.83	0.12	ND	0.21	0.029	
75-34-3	1,1-Dichloroethane	ND	0.85	0.12	ND	0.21	0.030	
78-93-3	2-Butanone (MEK)	**33**	1.6	0.17	**11**	0.53	0.059	
110-54-3	n-Hexane	ND	0.82	0.17	ND	0.23	0.049	
67-66-3	Chloroform	**0.55**	0.83	0.11	**0.11**	0.17	0.023	**J**
107-06-2	1,2-Dichloroethane	ND	0.82	0.093	ND	0.20	0.023	
71-55-6	1,1,1-Trichloroethane	ND	0.82	0.10	ND	0.15	0.019	
71-43-2	Benzene	**0.17**	0.82	0.12	**0.052**	0.26	0.038	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-003

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Wida Ang Date Analyzed: 7/15/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01417

Initial Pressure (psig): -2.49 Final Pressure (psig): 4.43

Container Dilution Factor: 1.57

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.41**	0.80	0.12	**0.066**	0.13	0.018	**J**
78-87-5	1,2-Dichloropropane	ND	0.82	0.10	ND	0.18	0.022	
75-27-4	Bromodichloromethane	**0.19**	0.82	0.12	**0.029**	0.12	0.018	**J**
79-01-6	Trichloroethene	ND	0.80	0.11	ND	0.15	0.021	
108-10-1	4-Methyl-2-pentanone	**0.27**	1.6	0.11	**0.067**	0.38	0.028	**J**
108-88-3	Toluene	**1.1**	0.82	0.10	**0.31**	0.22	0.027	
106-93-4	1,2-Dibromoethane	ND	0.82	0.097	ND	0.11	0.013	
127-18-4	Tetrachloroethene	**0.12**	0.82	0.11	**0.017**	0.12	0.016	**J**
108-90-7	Chlorobenzene	ND	0.82	0.11	ND	0.18	0.024	
100-41-4	Ethylbenzene	ND	0.82	0.12	ND	0.19	0.027	
179601-23-1	m,p-Xylenes	ND	1.6	0.22	ND	0.36	0.051	
95-47-6	o-Xylene	ND	0.83	0.12	ND	0.19	0.028	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.83	0.12	ND	0.12	0.017	
541-73-1	1,3-Dichlorobenzene	ND	0.83	0.13	ND	0.14	0.021	
106-46-7	1,4-Dichlorobenzene	ND	0.82	0.13	ND	0.14	0.021	
95-50-1	1,2-Dichlorobenzene	ND	0.83	0.12	ND	0.14	0.021	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.79	0.39	ND	0.22	0.11	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.79	0.38	ND	0.19	0.090	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-004

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Wida Ang Date Analyzed: 7/15/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01127

Initial Pressure (psig): -1.86 Final Pressure (psig): 3.96

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.3**	0.75	0.13	**0.47**	0.15	0.026	
74-87-3	Chloromethane	ND	0.75	0.12	ND	0.37	0.060	
75-01-4	Vinyl Chloride	ND	0.77	0.083	ND	0.30	0.032	
75-00-3	Chloroethane	ND	0.75	0.096	ND	0.29	0.036	
64-17-5	Ethanol	**19**	7.7	0.54	**10**	4.1	0.28	
67-64-1	Acetone	**31**	7.5	1.7	**13**	3.2	0.73	
75-69-4	Trichlorofluoromethane	**1.3**	0.74	0.12	**0.22**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**8.0**	1.5	0.32	**3.3**	0.59	0.13	
107-13-1	Acrylonitrile	ND	1.5	0.16	ND	0.67	0.074	
75-35-4	1,1-Dichloroethene	ND	0.75	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**1.2**	0.75	0.22	**0.35**	0.22	0.063	
156-60-5	trans-1,2-Dichloroethene	ND	0.77	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.78	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	**27**	1.5	0.16	**9.1**	0.49	0.054	
110-54-3	n-Hexane	ND	0.75	0.16	ND	0.21	0.045	
67-66-3	Chloroform	**0.32**	0.77	0.10	**0.067**	0.16	0.021	**J**
107-06-2	1,2-Dichloroethane	ND	0.75	0.086	ND	0.19	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.75	0.096	ND	0.14	0.018	
71-43-2	Benzene	**0.17**	0.75	0.11	**0.053**	0.24	0.035	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-004

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Wida Ang Date Analyzed: 7/15/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01127

Initial Pressure (psig): -1.86 Final Pressure (psig): 3.96

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.43**	0.74	0.11	**0.069**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.75	0.096	ND	0.16	0.021	
75-27-4	Bromodichloromethane	ND	0.75	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.74	0.10	ND	0.14	0.019	
108-10-1	4-Methyl-2-pentanone	**0.29**	1.5	0.11	**0.071**	0.35	0.026	**J**
108-88-3	Toluene	**2.3**	0.75	0.094	**0.62**	0.20	0.025	
106-93-4	1,2-Dibromoethane	ND	0.75	0.090	ND	0.098	0.012	
127-18-4	Tetrachloroethene	ND	0.75	0.10	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.75	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	**0.19**	0.75	0.11	**0.045**	0.17	0.025	**J**
179601-23-1	m,p-Xylenes	**0.43**	1.5	0.20	**0.099**	0.33	0.047	**J**
95-47-6	o-Xylene	**0.20**	0.77	0.11	**0.046**	0.18	0.026	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.77	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.77	0.12	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.75	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.77	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.73	0.36	ND	0.21	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.73	0.35	ND	0.17	0.083	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-005

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Wida Ang Date Analyzed: 7/15/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01015

Initial Pressure (psig): -1.39 Final Pressure (psig): 4.35

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.5**	0.74	0.12	**0.51**	0.15	0.025	
74-87-3	Chloromethane	**0.16**	0.74	0.12	**0.078**	0.36	0.060	**J**
75-01-4	Vinyl Chloride	ND	0.76	0.082	ND	0.30	0.032	
75-00-3	Chloroethane	ND	0.74	0.094	ND	0.28	0.036	
64-17-5	Ethanol	**10**	7.6	0.53	**5.4**	4.0	0.28	
67-64-1	Acetone	**7.0**	7.4	1.7	**3.0**	3.1	0.72	**J**
75-69-4	Trichlorofluoromethane	**1.3**	0.73	0.12	**0.23**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.81**	1.4	0.31	**0.33**	0.58	0.13	**J**
107-13-1	Acrylonitrile	ND	1.4	0.16	ND	0.66	0.073	
75-35-4	1,1-Dichloroethene	ND	0.74	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.26**	0.74	0.21	**0.074**	0.21	0.062	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.76	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.77	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	**2.8**	1.4	0.16	**0.94**	0.49	0.053	
110-54-3	n-Hexane	ND	0.74	0.16	ND	0.21	0.045	
67-66-3	Chloroform	**0.39**	0.76	0.10	**0.081**	0.16	0.021	**J**
107-06-2	1,2-Dichloroethane	ND	0.74	0.084	ND	0.18	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.74	0.094	ND	0.14	0.017	
71-43-2	Benzene	**0.11**	0.74	0.11	**0.035**	0.23	0.034	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-005

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Wida Ang Date Analyzed: 7/15/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01015

Initial Pressure (psig): -1.39 Final Pressure (psig): 4.35

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.46**	0.73	0.11	**0.073**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.74	0.094	ND	0.16	0.020	
75-27-4	Bromodichloromethane	**0.13**	0.74	0.11	**0.019**	0.11	0.016	**J**
79-01-6	Trichloroethene	ND	0.73	0.10	ND	0.14	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.35	0.025	
108-88-3	Toluene	**0.35**	0.74	0.093	**0.092**	0.20	0.025	**J**
106-93-4	1,2-Dibromoethane	ND	0.74	0.089	ND	0.097	0.012	
127-18-4	Tetrachloroethene	ND	0.74	0.099	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.74	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.74	0.11	ND	0.17	0.025	
179601-23-1	m,p-Xylenes	ND	1.4	0.20	ND	0.33	0.046	
95-47-6	o-Xylene	ND	0.76	0.11	ND	0.17	0.025	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.76	0.11	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.76	0.11	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.74	0.12	ND	0.12	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.76	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	**0.43**	0.72	0.36	**0.12**	0.20	0.10	**J, X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.72	0.34	ND	0.17	0.082	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-006

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Simon Cao Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01296

Initial Pressure (psig): -0.84 Final Pressure (psig): 3.67

Container Dilution Factor: 1.33

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.7**	0.69	0.12	**0.54**	0.14	0.023	
74-87-3	Chloromethane	ND	0.69	0.11	ND	0.34	0.055	
75-01-4	Vinyl Chloride	ND	0.70	0.076	ND	0.28	0.030	
75-00-3	Chloroethane	ND	0.69	0.088	ND	0.26	0.033	
64-17-5	Ethanol	**20**	7.0	0.49	**11**	3.7	0.26	
67-64-1	Acetone	**8.7**	6.9	1.6	**3.6**	2.9	0.67	
75-69-4	Trichlorofluoromethane	**1.4**	0.68	0.11	**0.25**	0.12	0.019	
67-63-0	2-Propanol (Isopropyl Alcohol)	**1.1**	1.3	0.29	**0.44**	0.54	0.12	**J, B**
107-13-1	Acrylonitrile	ND	1.3	0.15	ND	0.61	0.067	
75-35-4	1,1-Dichloroethene	ND	0.69	0.098	ND	0.17	0.025	
75-09-2	Methylene Chloride	**0.25**	0.69	0.20	**0.072**	0.20	0.057	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.70	0.098	ND	0.18	0.025	
75-34-3	1,1-Dichloroethane	ND	0.72	0.10	ND	0.18	0.026	
78-93-3	2-Butanone (MEK)	**4.7**	1.3	0.15	**1.6**	0.45	0.050	
110-54-3	n-Hexane	ND	0.69	0.15	ND	0.20	0.042	
67-66-3	Chloroform	**0.33**	0.70	0.094	**0.068**	0.14	0.019	**J**
107-06-2	1,2-Dichloroethane	ND	0.69	0.078	ND	0.17	0.019	
71-55-6	1,1,1-Trichloroethane	ND	0.69	0.088	ND	0.13	0.016	
71-43-2	Benzene	**0.12**	0.69	0.10	**0.037**	0.22	0.032	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
B = Analyte detected in both the sample and the associated method blank.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-006

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Simon Cao Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01296

Initial Pressure (psig): -0.84 Final Pressure (psig): 3.67

Container Dilution Factor: 1.33

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.49**	0.68	0.098	**0.078**	0.11	0.016	**J**
78-87-5	1,2-Dichloropropane	ND	0.69	0.088	ND	0.15	0.019	
75-27-4	Bromodichloromethane	**0.11**	0.69	0.10	**0.016**	0.10	0.015	**J**
79-01-6	Trichloroethene	ND	0.68	0.096	ND	0.13	0.018	
108-10-1	4-Methyl-2-pentanone	ND	1.3	0.097	ND	0.32	0.024	
108-88-3	Toluene	**0.36**	0.69	0.086	**0.096**	0.18	0.023	**J**
106-93-4	1,2-Dibromoethane	ND	0.69	0.082	ND	0.090	0.011	
127-18-4	Tetrachloroethene	ND	0.69	0.092	ND	0.10	0.014	
108-90-7	Chlorobenzene	ND	0.69	0.094	ND	0.15	0.021	
100-41-4	Ethylbenzene	ND	0.69	0.10	ND	0.16	0.023	
179601-23-1	m,p-Xylenes	ND	1.3	0.19	ND	0.31	0.043	
95-47-6	o-Xylene	ND	0.70	0.10	ND	0.16	0.024	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.70	0.098	ND	0.10	0.014	
541-73-1	1,3-Dichlorobenzene	ND	0.70	0.11	ND	0.12	0.018	
106-46-7	1,4-Dichlorobenzene	ND	0.69	0.11	ND	0.12	0.018	
95-50-1	1,2-Dichlorobenzene	ND	0.70	0.11	ND	0.12	0.017	
75-45-6	Chlorodifluoromethane (CFC 22)	**0.38**	0.67	0.33	**0.11**	0.19	0.094	**J, X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.67	0.32	ND	0.16	0.076	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-007

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Simon Cao Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00584

Initial Pressure (psig): -1.35 Final Pressure (psig): 4.21

Container Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.9**	0.74	0.12	**0.58**	0.15	0.025	
74-87-3	Chloromethane	**0.13**	0.74	0.12	**0.065**	0.36	0.059	**J**
75-01-4	Vinyl Chloride	ND	0.75	0.081	ND	0.29	0.032	
75-00-3	Chloroethane	ND	0.74	0.094	ND	0.28	0.036	
64-17-5	Ethanol	**4.7**	7.5	0.53	**2.5**	4.0	0.28	**J**
67-64-1	Acetone	**6.3**	7.4	1.7	**2.7**	3.1	0.72	**J**
75-69-4	Trichlorofluoromethane	**1.5**	0.72	0.12	**0.27**	0.13	0.020	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.75**	1.4	0.31	**0.30**	0.58	0.13	**J, B**
107-13-1	Acrylonitrile	ND	1.4	0.16	ND	0.65	0.072	
75-35-4	1,1-Dichloroethene	ND	0.74	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.25**	0.74	0.21	**0.072**	0.21	0.061	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.75	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.77	0.11	ND	0.19	0.027	
78-93-3	2-Butanone (MEK)	**0.85**	1.4	0.16	**0.29**	0.48	0.053	**J**
110-54-3	n-Hexane	ND	0.74	0.16	ND	0.21	0.044	
67-66-3	Chloroform	**0.35**	0.75	0.10	**0.072**	0.15	0.021	**J**
107-06-2	1,2-Dichloroethane	ND	0.74	0.084	ND	0.18	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.74	0.094	ND	0.14	0.017	
71-43-2	Benzene	**0.18**	0.74	0.11	**0.057**	0.23	0.034	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
B = Analyte detected in both the sample and the associated method blank.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-007

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Simon Cao Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00584

Initial Pressure (psig): -1.35 Final Pressure (psig): 4.21

Container Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.54**	0.72	0.11	**0.086**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.74	0.094	ND	0.16	0.020	
75-27-4	Bromodichloromethane	**0.11**	0.74	0.11	**0.017**	0.11	0.016	**J**
79-01-6	Trichloroethene	ND	0.72	0.10	ND	0.13	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.35	0.025	
108-88-3	Toluene	**0.32**	0.74	0.092	**0.086**	0.20	0.025	**J**
106-93-4	1,2-Dibromoethane	ND	0.74	0.088	ND	0.096	0.011	
127-18-4	Tetrachloroethene	ND	0.74	0.098	ND	0.11	0.014	
108-90-7	Chlorobenzene	ND	0.74	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.74	0.11	ND	0.17	0.025	
179601-23-1	m,p-Xylenes	ND	1.4	0.20	ND	0.33	0.046	
95-47-6	o-Xylene	ND	0.75	0.11	ND	0.17	0.025	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.75	0.11	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.75	0.11	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.74	0.12	ND	0.12	0.019	
95-50-1	1,2-Dichlorobenzene	ND	0.75	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	**0.45**	0.71	0.36	**0.13**	0.20	0.10	**J, X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.71	0.34	ND	0.17	0.081	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-008

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Simon Cao Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00682

Initial Pressure (psig): -1.71 Final Pressure (psig): 3.68

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.7**	0.73	0.12	**0.56**	0.15	0.025	
74-87-3	Chloromethane	ND	0.73	0.12	ND	0.36	0.059	
75-01-4	Vinyl Chloride	ND	0.75	0.080	ND	0.29	0.031	
75-00-3	Chloroethane	ND	0.73	0.093	ND	0.28	0.035	
64-17-5	Ethanol	**5.4**	7.5	0.52	**2.9**	4.0	0.28	**J**
67-64-1	Acetone	**5.9**	7.3	1.7	**2.5**	3.1	0.71	**J**
75-69-4	Trichlorofluoromethane	**1.5**	0.72	0.11	**0.26**	0.13	0.020	
67-63-0	2-Propanol (Isopropyl Alcohol)	**1.1**	1.4	0.31	**0.43**	0.57	0.13	**J, B**
107-13-1	Acrylonitrile	ND	1.4	0.16	ND	0.65	0.071	
75-35-4	1,1-Dichloroethene	ND	0.73	0.10	ND	0.19	0.026	
75-09-2	Methylene Chloride	**1.2**	0.73	0.21	**0.34**	0.21	0.061	
156-60-5	trans-1,2-Dichloroethene	ND	0.75	0.10	ND	0.19	0.026	
75-34-3	1,1-Dichloroethane	ND	0.76	0.11	ND	0.19	0.027	
78-93-3	2-Butanone (MEK)	**0.39**	1.4	0.16	**0.13**	0.48	0.053	**J**
110-54-3	n-Hexane	ND	0.73	0.16	ND	0.21	0.044	
67-66-3	Chloroform	**0.32**	0.75	0.10	**0.065**	0.15	0.021	**J**
107-06-2	1,2-Dichloroethane	ND	0.73	0.083	ND	0.18	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.73	0.093	ND	0.13	0.017	
71-43-2	Benzene	**0.70**	0.73	0.11	**0.22**	0.23	0.034	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
B = Analyte detected in both the sample and the associated method blank.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-008

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Simon Cao Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00682

Initial Pressure (psig): -1.71 Final Pressure (psig): 3.68

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.53**	0.72	0.10	**0.085**	0.11	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.73	0.093	ND	0.16	0.020	
75-27-4	Bromodichloromethane	ND	0.73	0.11	ND	0.11	0.016	
79-01-6	Trichloroethene	ND	0.72	0.10	ND	0.13	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.34	0.025	
108-88-3	Toluene	**1.3**	0.73	0.092	**0.33**	0.19	0.024	
106-93-4	1,2-Dibromoethane	ND	0.73	0.087	ND	0.095	0.011	
127-18-4	Tetrachloroethene	ND	0.73	0.097	ND	0.11	0.014	
108-90-7	Chlorobenzene	ND	0.73	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	**0.16**	0.73	0.11	**0.036**	0.17	0.024	**J**
179601-23-1	m,p-Xylenes	**0.38**	1.4	0.20	**0.088**	0.32	0.045	**J**
95-47-6	o-Xylene	**0.17**	0.75	0.11	**0.039**	0.17	0.025	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.75	0.10	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.75	0.11	ND	0.12	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.73	0.12	ND	0.12	0.019	
95-50-1	1,2-Dichlorobenzene	ND	0.75	0.11	ND	0.12	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	**0.41**	0.71	0.35	**0.12**	0.20	0.10	**J, X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.71	0.34	ND	0.17	0.080	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-009

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Simon Cao Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01554

Initial Pressure (psig): -2.22 Final Pressure (psig): 3.98

Container Dilution Factor: 1.50

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.8**	0.78	0.13	**0.56**	0.16	0.026	
74-87-3	Chloromethane	**0.14**	0.78	0.13	**0.068**	0.38	0.062	**J**
75-01-4	Vinyl Chloride	ND	0.80	0.086	ND	0.31	0.033	
75-00-3	Chloroethane	ND	0.78	0.099	ND	0.30	0.038	
64-17-5	Ethanol	**6.0**	8.0	0.56	**3.2**	4.2	0.29	**J**
67-64-1	Acetone	**11**	7.8	1.8	**4.5**	3.3	0.76	
75-69-4	Trichlorofluoromethane	**1.5**	0.77	0.12	**0.27**	0.14	0.022	
67-63-0	2-Propanol (Isopropyl Alcohol)	**44**	1.5	0.33	**18**	0.61	0.13	**B**
107-13-1	Acrylonitrile	ND	1.5	0.17	ND	0.69	0.076	
75-35-4	1,1-Dichloroethene	ND	0.78	0.11	ND	0.20	0.028	
75-09-2	Methylene Chloride	**0.28**	0.78	0.23	**0.079**	0.22	0.065	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.80	0.11	ND	0.20	0.028	
75-34-3	1,1-Dichloroethane	ND	0.81	0.12	ND	0.20	0.029	
78-93-3	2-Butanone (MEK)	**0.48**	1.5	0.17	**0.16**	0.51	0.056	**J**
110-54-3	n-Hexane	ND	0.78	0.17	ND	0.22	0.047	
67-66-3	Chloroform	**0.31**	0.80	0.11	**0.063**	0.16	0.022	**J**
107-06-2	1,2-Dichloroethane	ND	0.78	0.089	ND	0.19	0.022	
71-55-6	1,1,1-Trichloroethane	ND	0.78	0.099	ND	0.14	0.018	
71-43-2	Benzene	**0.14**	0.78	0.12	**0.045**	0.24	0.036	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
B = Analyte detected in both the sample and the associated method blank.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-009

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Simon Cao Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01554

Initial Pressure (psig): -2.22 Final Pressure (psig): 3.98

Container Dilution Factor: 1.50

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.50**	0.77	0.11	**0.079**	0.12	0.018	**J**
78-87-5	1,2-Dichloropropane	ND	0.78	0.099	ND	0.17	0.021	
75-27-4	Bromodichloromethane	ND	0.78	0.12	ND	0.12	0.017	
79-01-6	Trichloroethene	ND	0.77	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.37	0.027	
108-88-3	Toluene	**0.37**	0.78	0.098	**0.099**	0.21	0.026	**J**
106-93-4	1,2-Dibromoethane	ND	0.78	0.093	ND	0.10	0.012	
127-18-4	Tetrachloroethene	ND	0.78	0.10	ND	0.12	0.015	
108-90-7	Chlorobenzene	ND	0.78	0.11	ND	0.17	0.023	
100-41-4	Ethylbenzene	ND	0.78	0.11	ND	0.18	0.026	
179601-23-1	m,p-Xylenes	ND	1.5	0.21	ND	0.35	0.048	
95-47-6	o-Xylene	ND	0.80	0.12	ND	0.18	0.027	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.80	0.11	ND	0.12	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.80	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.78	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.80	0.12	ND	0.13	0.020	
75-45-6	Chlorodifluoromethane (CFC 22)	**0.50**	0.75	0.38	**0.14**	0.21	0.11	**J, X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.75	0.36	ND	0.18	0.086	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-010

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Simon Cao Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01558

Initial Pressure (psig): -2.15 Final Pressure (psig): 3.95

Container Dilution Factor: 1.49

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.8**	0.77	0.13	**0.58**	0.16	0.026	
74-87-3	Chloromethane	**0.15**	0.77	0.13	**0.071**	0.38	0.062	**J**
75-01-4	Vinyl Chloride	ND	0.79	0.085	ND	0.31	0.033	
75-00-3	Chloroethane	ND	0.77	0.098	ND	0.29	0.037	
64-17-5	Ethanol	**100**	7.9	0.55	**54**	4.2	0.29	
67-64-1	Acetone	**10**	7.7	1.8	**4.3**	3.3	0.75	
75-69-4	Trichlorofluoromethane	**1.5**	0.76	0.12	**0.27**	0.14	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**7.0**	1.5	0.33	**2.9**	0.61	0.13	**B**
107-13-1	Acrylonitrile	ND	1.5	0.16	ND	0.69	0.076	
75-35-4	1,1-Dichloroethene	ND	0.77	0.11	ND	0.20	0.028	
75-09-2	Methylene Chloride	**0.36**	0.77	0.22	**0.10**	0.22	0.064	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.79	0.11	ND	0.20	0.028	
75-34-3	1,1-Dichloroethane	ND	0.80	0.12	ND	0.20	0.029	
78-93-3	2-Butanone (MEK)	**0.67**	1.5	0.16	**0.23**	0.51	0.056	**J**
110-54-3	n-Hexane	**0.20**	0.77	0.16	**0.058**	0.22	0.047	**J**
67-66-3	Chloroform	**0.11**	0.79	0.11	**0.023**	0.16	0.022	**J**
107-06-2	1,2-Dichloroethane	ND	0.77	0.088	ND	0.19	0.022	
71-55-6	1,1,1-Trichloroethane	ND	0.77	0.098	ND	0.14	0.018	
71-43-2	Benzene	**0.16**	0.77	0.11	**0.050**	0.24	0.036	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
B = Analyte detected in both the sample and the associated method blank.

Client: **Intertox, Incorporated**
Client Sample ID: **S9** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-010

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Simon Cao Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01558

Initial Pressure (psig): -2.15 Final Pressure (psig): 3.95

Container Dilution Factor: 1.49

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.52**	0.76	0.11	**0.083**	0.12	0.018	**J**
78-87-5	1,2-Dichloropropane	ND	0.77	0.098	ND	0.17	0.021	
75-27-4	Bromodichloromethane	ND	0.77	0.11	ND	0.12	0.017	
79-01-6	Trichloroethene	ND	0.76	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.36	0.027	
108-88-3	Toluene	**0.49**	0.77	0.097	**0.13**	0.21	0.026	**J**
106-93-4	1,2-Dibromoethane	ND	0.77	0.092	ND	0.10	0.012	
127-18-4	Tetrachloroethene	ND	0.77	0.10	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.77	0.11	ND	0.17	0.023	
100-41-4	Ethylbenzene	ND	0.77	0.11	ND	0.18	0.026	
179601-23-1	m,p-Xylenes	ND	1.5	0.21	ND	0.34	0.048	
95-47-6	o-Xylene	ND	0.79	0.11	ND	0.18	0.026	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.79	0.11	ND	0.12	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.79	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.77	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.79	0.12	ND	0.13	0.020	
75-45-6	Chlorodifluoromethane (CFC 22)	**0.44**	0.75	0.37	**0.12**	0.21	0.11	**J, X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.75	0.36	ND	0.18	0.085	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-011

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Simon Cao Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01530

Initial Pressure (psig): -2.51 Final Pressure (psig): 3.91

Container Dilution Factor: 1.53

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.9**	0.80	0.13	**0.58**	0.16	0.027	
74-87-3	Chloromethane	**0.15**	0.80	0.13	**0.071**	0.39	0.064	**J**
75-01-4	Vinyl Chloride	ND	0.81	0.087	ND	0.32	0.034	
75-00-3	Chloroethane	ND	0.80	0.10	ND	0.30	0.038	
64-17-5	Ethanol	**15**	8.1	0.57	**7.8**	4.3	0.30	
67-64-1	Acetone	**6.7**	8.0	1.8	**2.8**	3.4	0.77	**J**
75-69-4	Trichlorofluoromethane	**1.5**	0.78	0.12	**0.27**	0.14	0.022	
67-63-0	2-Propanol (Isopropyl Alcohol)	**1.5**	1.5	0.34	**0.61**	0.62	0.14	**J, B**
107-13-1	Acrylonitrile	ND	1.5	0.17	ND	0.71	0.078	
75-35-4	1,1-Dichloroethene	ND	0.80	0.11	ND	0.20	0.029	
75-09-2	Methylene Chloride	**0.26**	0.80	0.23	**0.075**	0.23	0.066	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.81	0.11	ND	0.20	0.029	
75-34-3	1,1-Dichloroethane	ND	0.83	0.12	ND	0.20	0.029	
78-93-3	2-Butanone (MEK)	**0.46**	1.5	0.17	**0.16**	0.52	0.057	**J**
110-54-3	n-Hexane	ND	0.80	0.17	ND	0.23	0.048	
67-66-3	Chloroform	ND	0.81	0.11	ND	0.17	0.022	
107-06-2	1,2-Dichloroethane	ND	0.80	0.090	ND	0.20	0.022	
71-55-6	1,1,1-Trichloroethane	ND	0.80	0.10	ND	0.15	0.019	
71-43-2	Benzene	**0.12**	0.80	0.12	**0.037**	0.25	0.037	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
B = Analyte detected in both the sample and the associated method blank.

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-011

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Simon Cao Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01530

Initial Pressure (psig): -2.51 Final Pressure (psig): 3.91

Container Dilution Factor: 1.53

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.54**	0.78	0.11	**0.087**	0.12	0.018	**J**
78-87-5	1,2-Dichloropropane	ND	0.80	0.10	ND	0.17	0.022	
75-27-4	Bromodichloromethane	ND	0.80	0.12	ND	0.12	0.018	
79-01-6	Trichloroethene	ND	0.78	0.11	ND	0.15	0.021	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.37	0.027	
108-88-3	Toluene	**0.33**	0.80	0.099	**0.088**	0.21	0.026	**J**
106-93-4	1,2-Dibromoethane	ND	0.80	0.095	ND	0.10	0.012	
127-18-4	Tetrachloroethene	ND	0.80	0.11	ND	0.12	0.016	
108-90-7	Chlorobenzene	ND	0.80	0.11	ND	0.17	0.024	
100-41-4	Ethylbenzene	ND	0.80	0.11	ND	0.18	0.026	
179601-23-1	m,p-Xylenes	ND	1.5	0.21	ND	0.35	0.049	
95-47-6	o-Xylene	ND	0.81	0.12	ND	0.19	0.027	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.81	0.11	ND	0.12	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.81	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.80	0.13	ND	0.13	0.021	
95-50-1	1,2-Dichlorobenzene	ND	0.81	0.12	ND	0.13	0.020	
75-45-6	Chlorodifluoromethane (CFC 22)	**0.55**	0.77	0.38	**0.15**	0.22	0.11	**J, X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.77	0.37	ND	0.18	0.087	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF 1** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-012

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Simon Cao Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01344

Initial Pressure (psig): -2.12 Final Pressure (psig): 3.94

Container Dilution Factor: 1.48

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.8**	0.77	0.13	**0.58**	0.16	0.026	
74-87-3	Chloromethane	**0.16**	0.77	0.13	**0.076**	0.37	0.062	**J**
75-01-4	Vinyl Chloride	ND	0.78	0.084	ND	0.31	0.033	
75-00-3	Chloroethane	ND	0.77	0.098	ND	0.29	0.037	
64-17-5	Ethanol	**11**	7.8	0.55	**6.0**	4.2	0.29	
67-64-1	Acetone	**8.2**	7.7	1.8	**3.5**	3.2	0.75	
75-69-4	Trichlorofluoromethane	**1.6**	0.75	0.12	**0.28**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**2.0**	1.5	0.33	**0.81**	0.60	0.13	**B**
107-13-1	Acrylonitrile	ND	1.5	0.16	ND	0.68	0.075	
75-35-4	1,1-Dichloroethene	ND	0.77	0.11	ND	0.19	0.028	
75-09-2	Methylene Chloride	**0.23**	0.77	0.22	**0.066**	0.22	0.064	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.78	0.11	ND	0.20	0.028	
75-34-3	1,1-Dichloroethane	ND	0.80	0.12	ND	0.20	0.029	
78-93-3	2-Butanone (MEK)	**0.39**	1.5	0.16	**0.13**	0.50	0.055	**J**
110-54-3	n-Hexane	ND	0.77	0.16	ND	0.22	0.046	
67-66-3	Chloroform	**0.11**	0.78	0.11	**0.022**	0.16	0.022	**J**
107-06-2	1,2-Dichloroethane	ND	0.77	0.087	ND	0.19	0.022	
71-55-6	1,1,1-Trichloroethane	ND	0.77	0.098	ND	0.14	0.018	
71-43-2	Benzene	ND	0.77	0.11	ND	0.24	0.036	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
B = Analyte detected in both the sample and the associated method blank.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF 1** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-012

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Simon Cao Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01344

Initial Pressure (psig): -2.12 Final Pressure (psig): 3.94

Container Dilution Factor: 1.48

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.50**	0.75	0.11	**0.079**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.77	0.098	ND	0.17	0.021	
75-27-4	Bromodichloromethane	ND	0.77	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.75	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.36	0.026	
108-88-3	Toluene	**0.27**	0.77	0.096	**0.073**	0.20	0.026	**J**
106-93-4	1,2-Dibromoethane	ND	0.77	0.092	ND	0.10	0.012	
127-18-4	Tetrachloroethene	ND	0.77	0.10	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.77	0.11	ND	0.17	0.023	
100-41-4	Ethylbenzene	ND	0.77	0.11	ND	0.18	0.026	
179601-23-1	m,p-Xylenes	ND	1.5	0.21	ND	0.34	0.048	
95-47-6	o-Xylene	ND	0.78	0.11	ND	0.18	0.026	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.78	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.78	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.77	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.78	0.12	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	**0.48**	0.74	0.37	**0.14**	0.21	0.10	**J, X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.74	0.36	ND	0.18	0.084	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P210714-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/14/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.52	0.087	ND	0.11	0.018	
74-87-3	Chloromethane	ND	0.52	0.086	ND	0.25	0.042	
75-01-4	Vinyl Chloride	ND	0.53	0.057	ND	0.21	0.022	
75-00-3	Chloroethane	ND	0.52	0.066	ND	0.20	0.025	
64-17-5	Ethanol	ND	5.3	0.37	ND	2.8	0.20	
67-64-1	Acetone	ND	5.2	1.2	ND	2.2	0.51	
75-69-4	Trichlorofluoromethane	ND	0.51	0.081	ND	0.091	0.014	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.0	0.22	ND	0.41	0.090	
107-13-1	Acrylonitrile	ND	1.0	0.11	ND	0.46	0.051	
75-35-4	1,1-Dichloroethene	ND	0.52	0.074	ND	0.13	0.019	
75-09-2	Methylene Chloride	ND	0.52	0.15	ND	0.15	0.043	
156-60-5	trans-1,2-Dichloroethene	ND	0.53	0.074	ND	0.13	0.019	
75-34-3	1,1-Dichloroethane	ND	0.54	0.078	ND	0.13	0.019	
78-93-3	2-Butanone (MEK)	ND	1.0	0.11	ND	0.34	0.037	
110-54-3	n-Hexane	ND	0.52	0.11	ND	0.15	0.031	
67-66-3	Chloroform	ND	0.53	0.071	ND	0.11	0.015	
107-06-2	1,2-Dichloroethane	ND	0.52	0.059	ND	0.13	0.015	
71-55-6	1,1,1-Trichloroethane	ND	0.52	0.066	ND	0.095	0.012	
71-43-2	Benzene	ND	0.52	0.077	ND	0.16	0.024	

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

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P210714-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/14/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	ND	0.51	0.074	ND	0.081	0.012	
78-87-5	1,2-Dichloropropane	ND	0.52	0.066	ND	0.11	0.014	
75-27-4	Bromodichloromethane	ND	0.52	0.077	ND	0.078	0.011	
79-01-6	Trichloroethene	ND	0.51	0.072	ND	0.095	0.013	
108-10-1	4-Methyl-2-pentanone	ND	1.0	0.073	ND	0.24	0.018	
108-88-3	Toluene	ND	0.52	0.065	ND	0.14	0.017	
106-93-4	1,2-Dibromoethane	ND	0.52	0.062	ND	0.068	0.0081	
127-18-4	Tetrachloroethene	ND	0.52	0.069	ND	0.077	0.010	
108-90-7	Chlorobenzene	ND	0.52	0.071	ND	0.11	0.015	
100-41-4	Ethylbenzene	ND	0.52	0.075	ND	0.12	0.017	
179601-23-1	m,p-Xylenes	ND	1.0	0.14	ND	0.23	0.032	
95-47-6	o-Xylene	ND	0.53	0.077	ND	0.12	0.018	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.53	0.074	ND	0.077	0.011	
541-73-1	1,3-Dichlorobenzene	ND	0.53	0.080	ND	0.088	0.013	
106-46-7	1,4-Dichlorobenzene	ND	0.52	0.082	ND	0.087	0.014	
95-50-1	1,2-Dichlorobenzene	ND	0.53	0.079	ND	0.088	0.013	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.50	0.25	ND	0.14	0.071	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.50	0.24	ND	0.12	0.057	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
X = See case narrative.

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P210716-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/16/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.52	0.087	ND	0.11	0.018	
74-87-3	Chloromethane	ND	0.52	0.086	ND	0.25	0.042	
75-01-4	Vinyl Chloride	ND	0.53	0.057	ND	0.21	0.022	
75-00-3	Chloroethane	ND	0.52	0.066	ND	0.20	0.025	
64-17-5	Ethanol	ND	5.3	0.37	ND	2.8	0.20	
67-64-1	Acetone	ND	5.2	1.2	ND	2.2	0.51	
75-69-4	Trichlorofluoromethane	ND	0.51	0.081	ND	0.091	0.014	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.50**	1.0	0.22	**0.21**	0.41	0.090	**J**
107-13-1	Acrylonitrile	ND	1.0	0.11	ND	0.46	0.051	
75-35-4	1,1-Dichloroethene	ND	0.52	0.074	ND	0.13	0.019	
75-09-2	Methylene Chloride	ND	0.52	0.15	ND	0.15	0.043	
156-60-5	trans-1,2-Dichloroethene	ND	0.53	0.074	ND	0.13	0.019	
75-34-3	1,1-Dichloroethane	ND	0.54	0.078	ND	0.13	0.019	
78-93-3	2-Butanone (MEK)	ND	1.0	0.11	ND	0.34	0.037	
110-54-3	n-Hexane	ND	0.52	0.11	ND	0.15	0.031	
67-66-3	Chloroform	ND	0.53	0.071	ND	0.11	0.015	
107-06-2	1,2-Dichloroethane	ND	0.52	0.059	ND	0.13	0.015	
71-55-6	1,1,1-Trichloroethane	ND	0.52	0.066	ND	0.095	0.012	
71-43-2	Benzene	ND	0.52	0.077	ND	0.16	0.024	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P210716-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/16/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	ND	0.51	0.074	ND	0.081	0.012	
78-87-5	1,2-Dichloropropane	ND	0.52	0.066	ND	0.11	0.014	
75-27-4	Bromodichloromethane	ND	0.52	0.077	ND	0.078	0.011	
79-01-6	Trichloroethene	ND	0.51	0.072	ND	0.095	0.013	
108-10-1	4-Methyl-2-pentanone	ND	1.0	0.073	ND	0.24	0.018	
108-88-3	Toluene	ND	0.52	0.065	ND	0.14	0.017	
106-93-4	1,2-Dibromoethane	ND	0.52	0.062	ND	0.068	0.0081	
127-18-4	Tetrachloroethene	ND	0.52	0.069	ND	0.077	0.010	
108-90-7	Chlorobenzene	ND	0.52	0.071	ND	0.11	0.015	
100-41-4	Ethylbenzene	ND	0.52	0.075	ND	0.12	0.017	
179601-23-1	m,p-Xylenes	ND	1.0	0.14	ND	0.23	0.032	
95-47-6	o-Xylene	ND	0.53	0.077	ND	0.12	0.018	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.53	0.074	ND	0.077	0.011	
541-73-1	1,3-Dichlorobenzene	ND	0.53	0.080	ND	0.088	0.013	
106-46-7	1,4-Dichlorobenzene	ND	0.52	0.082	ND	0.087	0.014	
95-50-1	1,2-Dichlorobenzene	ND	0.53	0.079	ND	0.088	0.013	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.50	0.25	ND	0.14	0.071	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.50	0.24	ND	0.12	0.057	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
X = See case narrative.

ALS ENVIRONMENTAL

SURROGATE SPIKE RECOVERY RESULTS

Client: **Intertox, Incorporated**
Client Project ID: **KCLF AIR** ALS Project ID: P2103416

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date(s) Collected: 6/22/21
Analyst: Simon Cao/Wida Ang Date(s) Received: 6/24/21
Sample Type: 6.0 L Silonite Canister(s) Date(s) Analyzed: 7/14 - 7/17/21
Test Notes:

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4 Percent Recovered	Toluene-d8 Percent Recovered	Bromofluorobenzene Percent Recovered	Acceptance Limits	Data Qualifier
Method Blank	P210714-MB	**101**	**93**	**101**	70-130	
Method Blank	P210716-MB	**110**	**87**	**98**	70-130	
Lab Control Sample	P210714-LCS	**101**	**92**	**103**	70-130	
Lab Control Sample	P210716-LCS	**111**	**85**	**99**	70-130	
Duplicate Lab Control Sample	P210714-DLCS	**100**	**92**	**103**	70-130	
Duplicate Lab Control Sample	P210716-DLCS	**109**	**86**	**97**	70-130	
S13	P2103416-001	**100**	**96**	**100**	70-130	
S12	P2103416-002	**100**	**96**	**99**	70-130	
S11	P2103416-003	**101**	**96**	**98**	70-130	
S11D	P2103416-004	**101**	**93**	**99**	70-130	
S8	P2103416-005	**106**	**91**	**98**	70-130	
S4	P2103416-006	**120**	**82**	**90**	70-130	
S1	P2103416-007	**122**	**80**	**88**	70-130	
S3	P2103416-008	**120**	**80**	**89**	70-130	
S2	P2103416-009	**122**	**79**	**89**	70-130	
S9	P2103416-010	**125**	**80**	**89**	70-130	
S10	P2103416-011	**126**	**79**	**88**	70-130	
REF 1	P2103416-012	**125**	**78**	**88**	70-130	
REF 1	P2103416-012DUP	**123**	**78**	**88**	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P210714-DLCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/14/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	210	198	199	**94**	**95**	71-112	1	25	
74-87-3	Chloromethane	206	147	142	**71**	**69**	53-126	3	25	
75-01-4	Vinyl Chloride	208	160	160	**77**	**77**	63-123	0	25	
75-00-3	Chloroethane	204	165	165	**81**	**81**	66-117	0	25	
64-17-5	Ethanol	998	799	805	**80**	**81**	57-117	1	25	
67-64-1	Acetone	1,030	768	771	**75**	**75**	60-117	0	25	
75-69-4	Trichlorofluoromethane	204	209	206	**102**	**101**	71-114	1	25	
67-63-0	2-Propanol (Isopropyl Alcohol)	408	352	344	**86**	**84**	61-124	2	25	
107-13-1	Acrylonitrile	410	353	354	**86**	**86**	65-130	0	25	
75-35-4	1,1-Dichloroethene	212	190	190	**90**	**90**	74-114	0	25	
75-09-2	Methylene Chloride	208	190	189	**91**	**91**	75-112	0	25	
156-60-5	trans-1,2-Dichloroethene	212	193	193	**91**	**91**	76-119	0	25	
75-34-3	1,1-Dichloroethane	212	179	179	**84**	**84**	70-114	0	25	
78-93-3	2-Butanone (MEK)	412	409	409	**99**	**99**	74-121	0	25	
110-54-3	n-Hexane	212	165	166	**78**	**78**	55-130	0	25	
67-66-3	Chloroform	214	204	202	**95**	**94**	71-114	1	25	
107-06-2	1,2-Dichloroethane	208	204	202	**98**	**97**	71-119	1	25	
71-55-6	1,1,1-Trichloroethane	206	202	199	**98**	**97**	73-119	1	25	
71-43-2	Benzene	204	183	183	**90**	**90**	72-113	0	25	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P210714-DLCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/14/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
56-23-5	Carbon Tetrachloride	210	214	211	**102**	**100**	67-123	2	25	
78-87-5	1,2-Dichloropropane	206	169	169	**82**	**82**	70-118	0	25	
75-27-4	Bromodichloromethane	210	209	205	**100**	**98**	74-119	2	25	
79-01-6	Trichloroethene	206	201	198	**98**	**96**	74-115	2	25	
108-10-1	4-Methyl-2-pentanone	416	356	357	**86**	**86**	73-129	0	25	
108-88-3	Toluene	206	180	183	**87**	**89**	70-118	2	25	
106-93-4	1,2-Dibromoethane	208	206	208	**99**	**100**	76-128	1	25	
127-18-4	Tetrachloroethene	206	181	182	**88**	**88**	63-130	0	25	
108-90-7	Chlorobenzene	206	194	196	**94**	**95**	70-118	1	25	
100-41-4	Ethylbenzene	206	191	191	**93**	**93**	71-123	0	25	
179601-23-1	m,p-Xylenes	412	379	380	**92**	**92**	67-127	0	25	
95-47-6	o-Xylene	206	195	195	**95**	**95**	69-124	0	25	
79-34-5	1,1,2,2-Tetrachloroethane	206	190	191	**92**	**93**	69-128	1	25	
541-73-1	1,3-Dichlorobenzene	206	206	207	**100**	**100**	67-136	0	25	
106-46-7	1,4-Dichlorobenzene	204	202	203	**99**	**100**	63-134	1	25	
95-50-1	1,2-Dichlorobenzene	206	209	209	**101**	**101**	64-139	0	25	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P210716-DLCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	210	214	216	**102**	**103**	71-112	1	25	
74-87-3	Chloromethane	206	140	145	**68**	**70**	53-126	3	25	
75-01-4	Vinyl Chloride	208	147	152	**71**	**73**	63-123	3	25	
75-00-3	Chloroethane	204	142	153	**70**	**75**	66-117	7	25	
64-17-5	Ethanol	998	773	789	**77**	**79**	57-117	3	25	
67-64-1	Acetone	1,030	738	744	**72**	**72**	60-117	0	25	
75-69-4	Trichlorofluoromethane	204	227	226	**111**	**111**	71-114	0	25	
67-63-0	2-Propanol (Isopropyl Alcohol)	408	356	359	**87**	**88**	61-124	1	25	
107-13-1	Acrylonitrile	410	340	345	**83**	**84**	65-130	1	25	
75-35-4	1,1-Dichloroethene	212	184	189	**87**	**89**	74-114	2	25	
75-09-2	Methylene Chloride	208	180	184	**87**	**88**	75-112	1	25	
156-60-5	trans-1,2-Dichloroethene	212	192	194	**91**	**92**	76-119	1	25	
75-34-3	1,1-Dichloroethane	212	176	177	**83**	**83**	70-114	0	25	
78-93-3	2-Butanone (MEK)	412	389	397	**94**	**96**	74-121	2	25	
110-54-3	n-Hexane	212	161	163	**76**	**77**	55-130	1	25	
67-66-3	Chloroform	214	208	208	**97**	**97**	71-114	0	25	
107-06-2	1,2-Dichloroethane	208	224	221	**108**	**106**	71-119	2	25	
71-55-6	1,1,1-Trichloroethane	206	216	216	**105**	**105**	73-119	0	25	
71-43-2	Benzene	204	176	179	**86**	**88**	72-113	2	25	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P210716-DLCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
56-23-5	Carbon Tetrachloride	210	236	232	**112**	**110**	67-123	2	25	
78-87-5	1,2-Dichloropropane	206	159	162	**77**	**79**	70-118	3	25	
75-27-4	Bromodichloromethane	210	216	218	**103**	**104**	74-119	1	25	
79-01-6	Trichloroethene	206	201	201	**98**	**98**	74-115	0	25	
108-10-1	4-Methyl-2-pentanone	416	348	351	**84**	**84**	73-129	0	25	
108-88-3	Toluene	206	163	169	**79**	**82**	70-118	4	25	
106-93-4	1,2-Dibromoethane	208	190	194	**91**	**93**	76-128	2	25	
127-18-4	Tetrachloroethene	206	172	174	**83**	**84**	63-130	1	25	
108-90-7	Chlorobenzene	206	181	184	**88**	**89**	70-118	1	25	
100-41-4	Ethylbenzene	206	177	181	**86**	**88**	71-123	2	25	
179601-23-1	m,p-Xylenes	412	355	363	**86**	**88**	67-127	2	25	
95-47-6	o-Xylene	206	183	187	**89**	**91**	69-124	2	25	
79-34-5	1,1,2,2-Tetrachloroethane	206	170	173	**83**	**84**	69-128	1	25	
541-73-1	1,3-Dichlorobenzene	206	196	197	**95**	**96**	67-136	1	25	
106-46-7	1,4-Dichlorobenzene	204	192	193	**94**	**95**	63-134	1	25	
95-50-1	1,2-Dichlorobenzene	206	199	201	**97**	**98**	64-139	1	25	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Client: **Intertox, Incorporated**
Client Sample ID: **REF 1** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-012DUP

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Simon Cao Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01344

Initial Pressure (psig): -2.12 Final Pressure (psig): 3.94

Container Dilution Factor: 1.48

Compound	Sample Result µg/m³	Sample Result ppbV	Duplicate Sample Result µg/m³	Duplicate Sample Result ppbV	Average µg/m³	% RPD	RPD Limit	Data Qualifier
Dichlorodifluoromethane (CFC 12)	2.85	0.576	2.80	0.567	2.825	**2**	25	
Chloromethane	0.157	0.0760	ND	ND	-	-	25	
Vinyl Chloride	ND	ND	ND	ND	-	-	25	
Chloroethane	ND	ND	ND	ND	-	-	25	
Ethanol	11.2	5.96	11.3	5.99	11.25	**0.9**	25	
Acetone	8.23	3.47	8.19	3.45	8.21	**0.5**	25	
Trichlorofluoromethane	1.57	0.279	1.52	0.271	1.545	**3**	25	
2-Propanol (Isopropyl Alcohol)	1.98	0.807	1.85	0.751	1.915	**7**	25	**B**
Acrylonitrile	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethene	ND	ND	ND	ND	-	-	25	
Methylene Chloride	0.231	0.0665	0.253	0.0729	0.242	**9**	25	**J**
trans-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethane	ND	ND	ND	ND	-	-	25	
2-Butanone (MEK)	0.392	0.133	0.419	0.142	0.4055	**7**	25	**J**
n-Hexane	ND	ND	ND	ND	-	-	25	
Chloroform	0.107	0.0218	ND	ND	-	-	25	
1,2-Dichloroethane	ND	ND	ND	ND	-	-	25	
1,1,1-Trichloroethane	ND	ND	ND	ND	-	-	25	
Benzene	ND	ND	ND	ND	-	-	25	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
B = Analyte detected in both the sample and the associated method blank.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Client: **Intertox, Incorporated**
Client Sample ID: **REF 1** ALS Project ID: P2103416
Client Project ID: **KCLF AIR** ALS Sample ID: P2103416-012DUP

Test Code: EPA TO-15 Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/24/21
Analyst: Simon Cao Date Analyzed: 7/17/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01344

Initial Pressure (psig): -2.12 Final Pressure (psig): 3.94

Container Dilution Factor: 1.48

Compound	Sample Result µg/m³	Sample Result ppbV	Duplicate Sample Result µg/m³	Duplicate Sample Result ppbV	Average µg/m³	% RPD	RPD Limit	Data Qualifier
Carbon Tetrachloride	0.497	0.0791	0.506	0.0805	0.5015	**2**	25	**J**
1,2-Dichloropropane	ND	ND	ND	ND	-	-	25	
Bromodichloromethane	ND	ND	ND	ND	-	-	25	
Trichloroethene	ND	ND	ND	ND	-	-	25	
4-Methyl-2-pentanone	ND	ND	ND	ND	-	-	25	
Toluene	0.274	0.0727	0.275	0.0731	0.2745	**0.4**	25	**J**
1,2-Dibromoethane	ND	ND	ND	ND	-	-	25	
Tetrachloroethene	ND	ND	ND	ND	-	-	25	
Chlorobenzene	ND	ND	ND	ND	-	-	25	
Ethylbenzene	ND	ND	ND	ND	-	-	25	
m,p-Xylenes	ND	ND	ND	ND	-	-	25	
o-Xylene	ND	ND	ND	ND	-	-	25	
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	-	-	25	
1,3-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
1,4-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
1,2-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
Chlorodifluoromethane (CFC 22)	0.482	0.136	0.414	0.117	0.448	**15**	25	**J, X**
Dichlorofluoromethane (CFC 21)	ND	ND	ND	ND	-	-	25	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

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LABORATORY REPORT

July 26, 2021

Lisa Corey
Intertox, Incorporated
600 Stewart Street, Suite 1101
Seattle, WA 98101

RE: KCLF

Dear Lisa:

Enclosed are the results of the samples submitted to our laboratory on June 29, 2021. For your reference, these analyses have been assigned our service request number P2103483.

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

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

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 4:37 pm, Jul 26, 2021

Sue Anderson
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: Intertox, Incorporated
Project: KCLF

Service Request No: P2103483

CASE NARRATIVE

The samples were received intact under chain of custody on June 29, 2021 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.

Butane and Pentane Analysis

The samples were analyzed per modified EPA Method TO-3 for butane and pentane using a gas chromatograph equipped with a flame ionization detector (FID). This procedure is described in laboratory SOP VOA-TO3C1C6. This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP accreditation.

Carbon Monoxide and Total Gaseous Non-Methane Organics as Hexane Analysis

The samples were also analyzed for carbon monoxide and total gaseous non-methane organics as hexane according to modified EPA Method 25C. The analyses included a single sample injection (method modification) analyzed by gas chromatography using flame ionization detection/total combustion analysis. This method is not included on the laboratory's NELAP or DoD-ELAP scope of accreditation.

Ethane and Propane Analysis

The samples were also analyzed per modified EPA Method TO-3 for ethane and propane using a gas chromatograph equipped with a flame ionization detector (FID). This procedure is described in laboratory SOP VOA-TO3C1C6. This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP accreditation.

Sulfur Analysis

The samples were also analyzed for six sulfur compounds per ASTM D 5504-12 using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). All compounds with the exception of hydrogen sulfide and carbonyl sulfide are quantitated against the initial calibration curve for methyl mercaptan. This method is included on the laboratory's NELAP scope of accreditation, however it is not part of the DoD-ELAP accreditation.

The samples were received with insufficient hold time remaining to complete the analysis within the recommended limit. The analysis was performed as soon as possible after receipt by the laboratory and the data flagged to indicate the holding time exceedance.

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T: +1 805 526 7161
www.alsglobal.com

Client: Intertox, Incorporated
Project: KCLF

Service Request No: P2103483

CASE NARRATIVE

Volatile Organic Compound Analysis

The samples were analyzed for volatile organic compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. This procedure is described in laboratory SOP VOA-TO15. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. The method was modified to include the use of helium as a diluent gas in place of zero-grade air for container pressurization. When necessary, analytical sample volumes were adjusted by a correction factor for containers pressurized with helium. A summary sheet has been included listing the affected samples. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the NELAP or DoD-ELAP accreditation.

The containers were cleaned, prior to sampling, down to the method reporting limit (MRL) reported for this project. For projects requiring DoD QSM 5.3 compliance canisters were cleaned to <1/2 the MRL. Please note, projects which require reporting below the MRL could have results between the MRL and method detection limit (MDL) that are biased high.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

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

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

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Intertox, Incorporated
Project ID: KCLF

Service Request: P2103483

Date Received: 6/29/2021
Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pf1 (psig)	TO-3 Modified - C1C6+ Can	TO-3 Modified - MEEPP Can	ASTM D 5504-12 - Sulfur Can	25C Modified - TGNMO+ 1X Can	TO-15 Modified - VOC Cans
S5	P2103483-001	Air	6/22/2021	12:58	AS01047	-2.10	4.07	X	X	X	X	X
S7	P2103483-002	Air	6/22/2021	12:25	AS01160	-1.56	3.73	X	X	X	X	X
S6	P2103483-003	Air	6/22/2021	12:42	AS00826	-2.20	3.55	X	X	X	X	X
S13	P2103483-004	Air	6/23/2021	06:38	AS01046	-0.57	3.76	X	X	X	X	X
S12	P2103483-005	Air	6/23/2021	07:02	AS00668	-1.43	3.85	X	X	X	X	X
S11	P2103483-006	Air	6/23/2021	07:22	AS01371	-1.31	3.79	X	X	X	X	X
S11 D	P2103483-007	Air	6/23/2021	07:34	AS01468	-1.97	3.67	X	X	X	X	X
S8	P2103483-008	Air	6/23/2021	08:06	AS01557	-1.80	3.73	X	X	X	X	X
S4	P2103483-009	Air	6/23/2021	08:25	AS01472	-1.51	3.67	X	X	X	X	X
S1	P2103483-010	Air	6/23/2021	08:39	AS00228	-0.06	3.73	X	X	X	X	X
S3	P2103483-011	Air	6/23/2021	08:59	AS01573	-2.22	4.10	X	X	X	X	X
S2	P2103483-012	Air	6/23/2021	09:14	AS01430	-1.85	3.81	X	X	X	X	X
S9	P2103483-013	Air	6/23/2021	09:41	AS00748	-2.06	3.85	X	X	X	X	X
S10	P2103483-014	Air	6/23/2021	09:56	AS01316	-1.82	3.71	X	X	X	X	X
REF 1	P2103483-015	Air	6/23/2021	10:32	AS01391	-2.18	3.50	X	X	X	X	X
S6	P2103483-016	Air	6/23/2021	11:15	AS01506	-2.36	3.95	X	X	X	X	X

ALS ENVIRONMENTAL

Sample Volume Correction for Helium Pressurization for SCAN Analysis

Sample ID	Pi1	Pf1	Pi2	Pf2	Sample Volume (L)	Adjusted Volume (L)
P2103483-001	-2.10	4.07			1.000	1.13
P2103483-002	-1.56	3.73			1.000	1.11
P2103483-003	-2.20	3.55			0.891	1.00
P2103483-004	-0.57	3.76			0.912	1.00
P2103483-005	-1.43	3.85			0.899	1.00
P2103483-006	-1.31	3.79			0.901	1.00
P2103483-007	-1.97	3.67			0.894	1.00
P2103483-008	-1.80	3.73			0.895	1.00
P2103483-009	-1.51	3.67			0.900	1.00
P2103483-010	-0.06	3.73	-0.07	2.10	0.893	1.00
P2103483-011	-2.22	4.10			0.886	1.00
P2103483-012	-1.85	3.81			0.894	1.00
P2103483-013	-2.06	3.85			0.891	1.00
P2103483-014	-1.82	3.71			0.895	1.00
P2103483-015	-2.18	3.50			0.892	1.00
P2103483-016	-2.36	3.95			0.886	1.00

Air - Chain of Custody Record & Analytical Service Request

Page 1 of 2

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

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard

ALS Project No. R2103483

ALS Contact: Sue Anderson

Company Name & Address (Reporting Information)	Project Name	Analysis Method	Comments e.g. Actual Preservative or specific instructions
Intertox Inc ~~2010 NW 62nd ST~~ 600 Stewart St Suite 1101 ~~Seattle, WA 98107~~ Seattle, WA 98107	KCLF	TO-15 AP-42 Per email w/ Sue	
Project Manager: Lisa Corey	Project Number:		
Phone: (253)951-9515 Fax:	P.O. # / Billing Information: Intertox c/o Reva Newland 600 Stewart St, Suite 1101 Seattle, WA 98101		
Email Address for Result Reporting: lcorey@intertox.com	Sampler (Print & Sign): Kelli Hackney Kelli Hackney		

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
S5	1	6/22	12:58	AS01047		-29	-6	
S7	2	6/22	12:25	AS 01160		-28.6	-4	
S6	3	6/22	12:42	AS00826		-29.2	-5	
S13	4	6/23	06:38	AS01046		-29.2	-3.2	
S12	5	6/23	07:02	AS00668		-29.4	-5	
S11	6	6/23	07:22	AS01371		-30	-5	
S11D	7	6/23	07:34	~~AWC~~ 35276		-34	-5.5	
S8	8	6/23	08:06	AS01557		-29.2	-5.2	
S4	9	6/23	08:25	345169		-30	-5	
S1	10	6/23	08:39	AS00228		-27.9	-5	
S3	11	6/23	08:59	AS01573		-28.1	-5	
S2	12	6/23	09:14	AS01430		-27.4	-4	
S9	13	6/23	09:41	AS00740		-27.9	-4.2	
S10	14	6/23	09:56	AS01316		-29.5	-4	

7 of 129

Report Tier Levels - please select

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

EDD required Yes / No
Type: _____ Units: _____

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Lisa Corey	6/24/21	2:00 PM			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date: 6-29-21	Time: 0935

Cooler / Blank Temperature ____°C

C-137

Air - Chain of Custody Record & Analytical Service Request

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

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 (circled)

ALS Project No. SWC P2103483

ALS Contact: Sue Anderson

Company Name & Address (Reporting Information): Intertox Inc. 600 Stewart St, Suite 1101 Seattle, WA 98101

Project Name: KCLF

Project Number:

Project Manager: Lisa Corey

Phone: (253)951-9515

Fax:

P.O. # / Billing Information: Intertox c/o Reva Newland 600 Stewart St, Suite 1101 Seattle, WA 98107

Email Address for Result Reporting: lcorey@intertox.com

Sampler (Print & Sign): Lisa Corey [signature]

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: TO-15 per email w/ Sue	Analysis Method: AP-42	Comments e.g. Actual Preservative or specific instructions
REF1	13	6/23/21	10:32	AS01391		-29	-5		X	X	
S6	14	6/23/21	11:15	AS01506		-27.5	-5		X	X	

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

EDD required Yes / No
Type: ____ Units: ____

Chain of Custody Seal: (Circle)
INTACT BROKEN ABSENT

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
[signature]	6/24/21	2:00 PM			
			[signature]	6-29-21	

Cooler / Blank Temperature 3.0 °C

ALS Environmental
Sample Acceptance Check Form

Client: Intertox, Incorporated Work order: P2103483
Project: KCLF
Sample(s) received on: 6/29/21 Date opened: 6/29/21 by: ADAVID

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

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
8	Were **custody seals** on outside of cooler/Box/Container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
9	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?	☐	☐	☒
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**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
P2103483-001.01	6.0 L Silonite Can					
P2103483-002.01	6.0 L Silonite Can					
P2103483-003.01	6.0 L Silonite Can					
P2103483-004.01	6.0 L Silonite Can					
P2103483-005.01	6.0 L Silonite Can					
P2103483-006.01	6.0 L Silonite Can					
P2103483-007.01	6.0 L Silonite Can					
P2103483-008.01	6.0 L Silonite Can					
P2103483-009.01	6.0 L Silonite Can					
P2103483-010.01	6.0 L Silonite Can					
P2103483-011.01	6.0 L Silonite Can					
P2103483-012.01	6.0 L Silonite Can					
P2103483-013.01	6.0 L Silonite Can					
P2103483-014.01	6.0 L Silonite Can					
P2103483-015.01	6.0 L Silonite Can					

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

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

ALS Environmental
Sample Acceptance Check Form

Client: Intertox, Incorporated Work order: P2103483
Project: KCLF
Sample(s) received on: 6/29/21 Date opened: 6/29/21 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2103483-016.01	6.0 L Silonite Can					

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

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-001

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01047

Date Collected: 6/22/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.10 Final Pressure (psig): 4.07

Container Dilution Factor: 1.49

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.75	0.066	
n-Pentane	ND	0.75	0.073	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-002

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01160

Date Collected: 6/22/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.56 Final Pressure (psig): 3.73

Container Dilution Factor: 1.40

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.70	0.062	
n-Pentane	ND	0.70	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-003

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00826

Date Collected: 6/22/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.20 Final Pressure (psig): 3.55

Container Dilution Factor: 1.46

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.73	0.064	
n-Pentane	ND	0.73	0.072	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-004

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01046

Date Collected: 6/23/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -0.57 Final Pressure (psig): 3.76

Container Dilution Factor: 1.31

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.66	0.058	
n-Pentane	ND	0.66	0.064	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-005

Test Code: EPA TO-3 Modified Date Collected: 6/23/21
Instrument ID: HP5890 II/GC8/FID Date Received: 6/29/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/1/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS00668

Initial Pressure (psig): -1.43 Final Pressure (psig): 3.85

Container Dilution Factor: 1.40

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.70	0.062	
n-Pentane	ND	0.70	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-006

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01371

Date Collected: 6/23/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.31 Final Pressure (psig): 3.79

Container Dilution Factor: 1.38

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.69	0.061	
n-Pentane	ND	0.69	0.068	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11 D**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-007

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01468

Date Collected: 6/23/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.97 Final Pressure (psig): 3.67

Container Dilution Factor: 1.44

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.72	0.063	
n-Pentane	ND	0.72	0.071	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-008

Test Code: EPA TO-3 Modified Date Collected: 6/23/21
Instrument ID: HP5890 II/GC8/FID Date Received: 6/29/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/1/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01557

Initial Pressure (psig): -1.80 Final Pressure (psig): 3.73

Container Dilution Factor: 1.43

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.72	0.063	
n-Pentane	ND	0.72	0.070	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-009

Test Code:	EPA TO-3 Modified	Date Collected:	6/23/21
Instrument ID:	HP5890 II/GC8/FID	Date Received:	6/29/21
Analyst:	Gilbert Gutierrez	Date Analyzed:	7/1/21
Sampling Media:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.0 ml(s)
Test Notes:			
Container ID:	AS01472		

Initial Pressure (psig): -1.51 Final Pressure (psig): 3.67

Container Dilution Factor: 1.39

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.70	0.061	
n-Pentane	ND	0.70	0.068	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-010

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00228

Date Collected: 6/23/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -0.06 Final Pressure (psig): 3.73

Container Dilution Factor: 1.26

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.63	0.055	
n-Pentane	ND	0.63	0.062	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-011

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01573

Date Collected: 6/23/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.22 Final Pressure (psig): 4.10

Container Dilution Factor: 1.51

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.76	0.066	
n-Pentane	ND	0.76	0.074	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-012

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01430

Date Collected: 6/23/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.85 Final Pressure (psig): 3.81

Container Dilution Factor: 1.44

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.72	0.063	
n-Pentane	ND	0.72	0.071	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-013

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00748

Date Collected: 6/23/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.06 Final Pressure (psig): 3.85

Container Dilution Factor: 1.47

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.74	0.065	
n-Pentane	ND	0.74	0.072	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-014

Test Code: EPA TO-3 Modified Date Collected: 6/23/21
Instrument ID: HP5890 II/GC8/FID Date Received: 6/29/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/1/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01316

Initial Pressure (psig): -1.82 Final Pressure (psig): 3.71

Container Dilution Factor: 1.43

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.72	0.063	
n-Pentane	ND	0.72	0.070	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF 1** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-015

Test Code: EPA TO-3 Modified Date Collected: 6/23/21
Instrument ID: HP5890 II/GC8/FID Date Received: 6/29/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/1/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01391

Initial Pressure (psig): -2.18 Final Pressure (psig): 3.50

Container Dilution Factor: 1.45

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.73	0.064	
n-Pentane	ND	0.73	0.071	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-016

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01506

Date Collected: 6/23/21
Date Received: 6/29/21
Date Analyzed: 7/1/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.36 Final Pressure (psig): 3.95

Container Dilution Factor: 1.51

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.76	0.066	
n-Pentane	ND	0.76	0.074	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P210701-MB

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890 II/GC8/FID Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 7/01/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.50	0.044	
n-Pentane	ND	0.50	0.049	

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

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P210701-DLCS

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/01/21
Volume(s) Analyzed: NA ml(s)

Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
n-Butane	1,000	971	1,010	**97**	**101**	91-121	4	6	
n-Pentane	1,000	960	991	**96**	**99**	89-118	3	6	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-001

Test Code: EPA Method 25C Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/12/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01047

Initial Pressure (psig): -2.10 Final Pressure (psig): 4.07

Container Dilution Factor: 1.49

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.5	0.79	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.25	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-002

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01160

Date Collected: 6/22/21
Date Received: 6/29/21
Date Analyzed: 7/12/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -1.56 Final Pressure (psig): 3.73

Container Dilution Factor: 1.40

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.0	0.74	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.24	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-003

Test Code: EPA Method 25C Modified Date Collected: 6/22/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/12/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00826

Initial Pressure (psig): -2.20 Final Pressure (psig): 3.55

Container Dilution Factor: 1.46

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.3	0.77	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.25	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-004

Test Code: EPA Method 25C Modified Date Collected: 6/23/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/12/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01046

Initial Pressure (psig): -0.57 Final Pressure (psig): 3.76

Container Dilution Factor: 1.31

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	6.6	0.69	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.22	0.098	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-005

Test Code: EPA Method 25C Modified Date Collected: 6/23/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/12/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00668

Initial Pressure (psig): -1.43 Final Pressure (psig): 3.85

Container Dilution Factor: 1.40

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.0	0.74	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.24	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-006

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01371

Date Collected: 6/23/21
Date Received: 6/29/21
Date Analyzed: 7/12/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -1.31 Final Pressure (psig): 3.79

Container Dilution Factor: 1.38

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	6.9	0.73	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.23	0.10	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11 D**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-007

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01468

Date Collected: 6/23/21
Date Received: 6/29/21
Date Analyzed: 7/12/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -1.97 Final Pressure (psig): 3.67

Container Dilution Factor: 1.44

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.2	0.76	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.24	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-008

Test Code: EPA Method 25C Modified Date Collected: 6/23/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/12/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01557

Initial Pressure (psig): -1.80 Final Pressure (psig): 3.73

Container Dilution Factor: 1.43

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.2	0.76	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.24	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-009

Test Code: EPA Method 25C Modified Date Collected: 6/23/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/12/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01472

Initial Pressure (psig): -1.51 Final Pressure (psig): 3.67

Container Dilution Factor: 1.39

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.0	0.74	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.24	0.10	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-010

Test Code: EPA Method 25C Modified Date Collected: 6/23/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/12/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00228

Initial Pressure (psig): -0.06 Final Pressure (psig): 3.73

Container Dilution Factor: 1.26

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	6.3	0.67	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.55**	0.21	0.095	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-011

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01573

Date Collected: 6/23/21
Date Received: 6/29/21
Date Analyzed: 7/12/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -2.22 Final Pressure (psig): 4.10

Container Dilution Factor: 1.51

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.6	0.80	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.26	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-012

Test Code: EPA Method 25C Modified Date Collected: 6/23/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/12/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01430

Initial Pressure (psig): -1.85 Final Pressure (psig): 3.81

Container Dilution Factor: 1.44

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.2	0.76	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.24	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-013

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00748

Date Collected: 6/23/21
Date Received: 6/29/21
Date Analyzed: 7/12/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -2.06 Final Pressure (psig): 3.85

Container Dilution Factor: 1.47

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.4	0.78	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.25	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-014

Test Code: EPA Method 25C Modified Date Collected: 6/23/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/12/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01316

Initial Pressure (psig): -1.82 Final Pressure (psig): 3.71

Container Dilution Factor: 1.43

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.2	0.76	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.24	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF 1** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-015

Test Code: EPA Method 25C Modified Date Collected: 6/23/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/12/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01391

Initial Pressure (psig): -2.18 Final Pressure (psig): 3.50

Container Dilution Factor: 1.45

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.3	0.77	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.66**	0.25	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-016

Test Code: EPA Method 25C Modified Date Collected: 6/23/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/12/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01506

Initial Pressure (psig): -2.36 Final Pressure (psig): 3.95

Container Dilution Factor: 1.51

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.6	0.80	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.26	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P210712-MB

Test Code: EPA Method 25C Modified Date Collected: NA
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: NA
Analyst: Connor Barrett Date Analyzed: 7/12/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	5.0	0.53	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.17	0.075	

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

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P210712-DLCS

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/12/21
Volume(s) Analyzed: NA ml(s)

Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
Carbon Monoxide	400	436	438	**109**	**110**	90-123	0.9	11	
Total Gaseous Nonmethane Organics (TGNMO) as Methane	400	416	426	**104**	**107**	86-121	3	13	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-001

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01047

Date Collected: 6/22/21
Date Received: 6/29/21
Date Analyzed: 7/13/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -2.10 Final Pressure (psig): 4.07

Container Dilution Factor: 1.49

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.55	0.077	ND	0.45	0.063	
74-98-6	Propane	ND	0.81	0.12	ND	0.45	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-002

Test Code: EPA TO-3 Modified Date Collected: 6/22/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/13/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01160

Initial Pressure (psig): -1.56 Final Pressure (psig): 3.73

Container Dilution Factor: 1.40

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.52	0.073	ND	0.42	0.059	
74-98-6	Propane	ND	0.76	0.11	ND	0.42	0.064	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-003

Test Code: EPA TO-3 Modified Date Collected: 6/22/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/13/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00826

Initial Pressure (psig): -2.20 Final Pressure (psig): 3.55

Container Dilution Factor: 1.46

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.54	0.076	ND	0.44	0.061	
74-98-6	Propane	ND	0.79	0.12	ND	0.44	0.067	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-004

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01046

Date Collected: 6/23/21
Date Received: 6/29/21
Date Analyzed: 7/13/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -0.57 Final Pressure (psig): 3.76

Container Dilution Factor: 1.31

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.48	0.068	ND	0.39	0.055	
74-98-6	Propane	ND	0.71	0.11	ND	0.39	0.060	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-005

Test Code: EPA TO-3 Modified Date Collected: 6/23/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/13/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00668

Initial Pressure (psig): -1.43 Final Pressure (psig): 3.85

Container Dilution Factor: 1.40

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.52	0.073	ND	0.42	0.059	
74-98-6	Propane	ND	0.76	0.11	ND	0.42	0.064	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-006

Test Code: EPA TO-3 Modified Date Collected: 6/23/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/13/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01371

Initial Pressure (psig): -1.31 Final Pressure (psig): 3.79

Container Dilution Factor: 1.38

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.51	0.072	ND	0.41	0.058	
74-98-6	Propane	ND	0.75	0.11	ND	0.41	0.063	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11 D**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-007

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01468

Date Collected: 6/23/21
Date Received: 6/29/21
Date Analyzed: 7/13/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -1.97 Final Pressure (psig): 3.67

Container Dilution Factor: 1.44

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.53	0.075	ND	0.43	0.060	
74-98-6	Propane	ND	0.78	0.12	ND	0.43	0.066	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-008

Test Code: EPA TO-3 Modified Date Collected: 6/23/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/13/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01557

Initial Pressure (psig): -1.80 Final Pressure (psig): 3.73

Container Dilution Factor: 1.43

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.53	0.074	ND	0.43	0.060	
74-98-6	Propane	ND	0.77	0.12	ND	0.43	0.066	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-009

Test Code: EPA TO-3 Modified Date Collected: 6/23/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/13/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01472

Initial Pressure (psig): -1.51 Final Pressure (psig): 3.67

Container Dilution Factor: 1.39

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.51	0.072	ND	0.42	0.058	
74-98-6	Propane	ND	0.75	0.11	ND	0.42	0.064	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-010

Test Code: EPA TO-3 Modified Date Collected: 6/23/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/13/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00228

Initial Pressure (psig): -0.06 Final Pressure (psig): 3.73

Container Dilution Factor: 1.26

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.46	0.066	ND	0.38	0.053	
74-98-6	Propane	ND	0.68	0.10	ND	0.38	0.058	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-011

Test Code: EPA TO-3 Modified Date Collected: 6/23/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/14/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01573

Initial Pressure (psig): -2.22 Final Pressure (psig): 4.10

Container Dilution Factor: 1.51

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.56	0.079	ND	0.45	0.063	
74-98-6	Propane	ND	0.82	0.12	ND	0.45	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-012

Test Code: EPA TO-3 Modified Date Collected: 6/23/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/14/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01430

Initial Pressure (psig): -1.85 Final Pressure (psig): 3.81

Container Dilution Factor: 1.44

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.53	0.075	ND	0.43	0.060	
74-98-6	Propane	ND	0.78	0.12	ND	0.43	0.066	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-013

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00748

Date Collected: 6/23/21
Date Received: 6/29/21
Date Analyzed: 7/14/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -2.06 Final Pressure (psig): 3.85

Container Dilution Factor: 1.47

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.54	0.076	ND	0.44	0.062	
74-98-6	Propane	ND	0.80	0.12	ND	0.44	0.068	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-014

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01316

Date Collected: 6/23/21
Date Received: 6/29/21
Date Analyzed: 7/14/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -1.82 Final Pressure (psig): 3.71

Container Dilution Factor: 1.43

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.53	0.074	ND	0.43	0.060	
74-98-6	Propane	ND	0.77	0.12	ND	0.43	0.066	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF 1** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-015

Test Code: EPA TO-3 Modified Date Collected: 6/23/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/14/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01391

Initial Pressure (psig): -2.18 Final Pressure (psig): 3.50

Container Dilution Factor: 1.45

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.53	0.075	ND	0.44	0.061	
74-98-6	Propane	ND	0.78	0.12	ND	0.44	0.067	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-016

Test Code: EPA TO-3 Modified Date Collected: 6/23/21
Instrument ID: HP5890A/GC10/FID Date Received: 6/29/21
Analyst: Connor Barrett Date Analyzed: 7/14/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01506

Initial Pressure (psig): -2.36 Final Pressure (psig): 3.95

Container Dilution Factor: 1.51

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.56	0.079	ND	0.45	0.063	
74-98-6	Propane	ND	0.82	0.12	ND	0.45	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P210713-MB

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Connor Barrett Date Analyzed: 7/13/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.37	0.052	ND	0.30	0.042	
74-98-6	Propane	ND	0.54	0.082	ND	0.30	0.046	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P210714-MB

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Connor Barrett Date Analyzed: 7/14/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.37	0.052	ND	0.30	0.042	
74-98-6	Propane	ND	0.54	0.082	ND	0.30	0.046	

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

ALS ENVIRONMENTAL

DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P210713-DLCS

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Connor Barrett Date Analyzed: 7/13/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-84-0	Ethane	1.51	1.52	1.53	**101**	**101**	70-130	0	15	
74-98-6	Propane	1.50	1.54	1.55	**103**	**103**	70-130	0	15	

ALS ENVIRONMENTAL

DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P210714-DLCS

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Connor Barrett Date Analyzed: 7/14/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-84-0	Ethane	1.51	1.50	1.57	**99**	**104**	70-130	5	15	
74-98-6	Propane	1.50	1.47	1.57	**98**	**105**	70-130	7	15	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-001

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes: **H3**
Container ID: AS01047

Date Collected: 6/22/21
Time Collected: 12:58
Date Received: 6/29/21
Date Analyzed: 6/30/21
Time Analyzed: 12:25
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.10 Final Pressure (psig): 4.07

Container Dilution Factor: 1.49

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.1	ND	7.5	2.2	
463-58-1	Carbonyl Sulfide	ND	18	7.0	ND	7.5	2.8	
74-93-1	Methyl Mercaptan	ND	15	5.9	ND	7.5	3.0	
75-08-1	Ethyl Mercaptan	ND	19	7.6	ND	7.5	3.0	
75-18-3	Dimethyl Sulfide	ND	19	7.6	ND	7.5	3.0	
75-15-0	Carbon Disulfide	ND	12	4.6	ND	3.7	1.5	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H3 = Sample was received and analyzed past holding time.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-002

Test Code:	ASTM D 5504-12	Date Collected:	6/22/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	12:25
Analyst:	Gilbert Gutierrez	Date Received:	6/29/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	6/30/21
Test Notes:	**H3**	Time Analyzed:	12:47
Container ID:	AS01160	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.56 Final Pressure (psig): 3.73

Container Dilution Factor: 1.40

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.8	2.9	ND	7.0	2.1	
463-58-1	Carbonyl Sulfide	ND	17	6.5	ND	7.0	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.5	ND	7.0	2.8	
75-08-1	Ethyl Mercaptan	ND	18	7.1	ND	7.0	2.8	
75-18-3	Dimethyl Sulfide	ND	18	7.1	ND	7.0	2.8	
75-15-0	Carbon Disulfide	ND	11	4.4	ND	3.5	1.4	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H3 = Sample was received and analyzed past holding time.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-003

Test Code:	ASTM D 5504-12	Date Collected:	6/22/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	12:42
Analyst:	Gilbert Gutierrez	Date Received:	6/29/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	6/30/21
Test Notes:	**H3**	Time Analyzed:	13:05
Container ID:	AS00826	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -2.20 Final Pressure (psig): 3.55

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.1	ND	7.3	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.8	ND	7.3	2.8	
74-93-1	Methyl Mercaptan	ND	14	5.7	ND	7.3	2.9	
75-08-1	Ethyl Mercaptan	ND	19	7.4	ND	7.3	2.9	
75-18-3	Dimethyl Sulfide	ND	19	7.4	ND	7.3	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.7	1.5	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H3 = Sample was received and analyzed past holding time.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-004

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01046

Date Collected: 6/23/21
Time Collected: 06:38
Date Received: 6/29/21
Date Analyzed: 6/30/21
Time Analyzed: 13:25
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -0.57 Final Pressure (psig): 3.76

Container Dilution Factor: 1.31

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.1	2.7	ND	6.6	2.0	
463-58-1	Carbonyl Sulfide	ND	16	6.1	ND	6.6	2.5	
74-93-1	Methyl Mercaptan	ND	13	5.2	ND	6.6	2.6	
75-08-1	Ethyl Mercaptan	ND	17	6.7	ND	6.6	2.6	
75-18-3	Dimethyl Sulfide	ND	17	6.7	ND	6.6	2.6	
75-15-0	Carbon Disulfide	ND	10	4.1	ND	3.3	1.3	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-005

Test Code:	ASTM D 5504-12	Date Collected:	6/23/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	07:02
Analyst:	Gilbert Gutierrez	Date Received:	6/29/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	6/30/21
Test Notes:		Time Analyzed:	13:50
Container ID:	AS00668	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.43 Final Pressure (psig): 3.85

Container Dilution Factor: 1.40

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.8	2.9	ND	7.0	2.1	
463-58-1	Carbonyl Sulfide	ND	17	6.5	ND	7.0	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.5	ND	7.0	2.8	
75-08-1	Ethyl Mercaptan	ND	18	7.1	ND	7.0	2.8	
75-18-3	Dimethyl Sulfide	ND	18	7.1	ND	7.0	2.8	
75-15-0	Carbon Disulfide	ND	11	4.4	ND	3.5	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-006

Test Code:	ASTM D 5504-12	Date Collected:	6/23/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	07:22
Analyst:	Gilbert Gutierrez	Date Received:	6/29/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	6/30/21
Test Notes:		Time Analyzed:	14:25
Container ID:	AS01371	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.31 Final Pressure (psig): 3.79

Container Dilution Factor: 1.38

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.6	2.9	ND	6.9	2.1	
463-58-1	Carbonyl Sulfide	ND	17	6.4	ND	6.9	2.6	
74-93-1	Methyl Mercaptan	ND	14	5.4	ND	6.9	2.8	
75-08-1	Ethyl Mercaptan	ND	18	7.0	ND	6.9	2.8	
75-18-3	Dimethyl Sulfide	ND	18	7.0	ND	6.9	2.8	
75-15-0	Carbon Disulfide	ND	11	4.3	ND	3.5	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11 D**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-007

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01468

Date Collected: 6/23/21
Time Collected: 07:34
Date Received: 6/29/21
Date Analyzed: 6/30/21
Time Analyzed: 14:44
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.97 Final Pressure (psig): 3.67

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.0	ND	7.2	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.7	ND	7.2	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.7	ND	7.2	2.9	
75-08-1	Ethyl Mercaptan	ND	18	7.3	ND	7.2	2.9	
75-18-3	Dimethyl Sulfide	ND	18	7.3	ND	7.2	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.6	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-008

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes: **H1**
Container ID: AS01557

Date Collected: 6/23/21
Time Collected: 08:06
Date Received: 6/29/21
Date Analyzed: 7/1/21
Time Analyzed: 07:25
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.80 Final Pressure (psig): 3.73

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	**6.0**	10	3.0	**4.3**	7.2	2.1	**J**
463-58-1	Carbonyl Sulfide	ND	18	6.7	ND	7.2	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.6	ND	7.2	2.9	
75-08-1	Ethyl Mercaptan	ND	18	7.3	ND	7.2	2.9	
75-18-3	Dimethyl Sulfide	ND	18	7.3	ND	7.2	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.6	1.4	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-009

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes: **H1**
Container ID: AS01472

Date Collected: 6/23/21
Time Collected: 08:25
Date Received: 6/29/21
Date Analyzed: 7/1/21
Time Analyzed: 07:44
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.51 Final Pressure (psig): 3.67

Container Dilution Factor: 1.39

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.7	2.9	ND	7.0	2.1	
463-58-1	Carbonyl Sulfide	ND	17	6.5	ND	7.0	2.6	
74-93-1	Methyl Mercaptan	ND	14	5.5	ND	7.0	2.8	
75-08-1	Ethyl Mercaptan	ND	18	7.1	ND	7.0	2.8	
75-18-3	Dimethyl Sulfide	ND	18	7.1	ND	7.0	2.8	
75-15-0	Carbon Disulfide	ND	11	4.3	ND	3.5	1.4	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-010

Test Code:	ASTM D 5504-12	Date Collected:	6/23/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	08:39
Analyst:	Gilbert Gutierrez	Date Received:	6/29/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/1/21
Test Notes:	**H1**	Time Analyzed:	08:05
Container ID:	AS00228	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -0.06 Final Pressure (psig): 3.73

Container Dilution Factor: 1.26

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	**5.0**	8.8	2.6	**3.6**	6.3	1.9	**J**
463-58-1	Carbonyl Sulfide	ND	15	5.9	ND	6.3	2.4	
74-93-1	Methyl Mercaptan	ND	12	5.0	ND	6.3	2.5	
75-08-1	Ethyl Mercaptan	ND	16	6.4	ND	6.3	2.5	
75-18-3	Dimethyl Sulfide	ND	16	6.4	ND	6.3	2.5	
75-15-0	Carbon Disulfide	ND	9.8	3.9	ND	3.2	1.3	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-011

Test Code:	ASTM D 5504-12	Date Collected:	6/23/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	08:59
Analyst:	Gilbert Gutierrez	Date Received:	6/29/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/1/21
Test Notes:	**H1**	Time Analyzed:	08:22
Container ID:	AS01573	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -2.22 Final Pressure (psig): 4.10

Container Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	11	3.2	ND	7.6	2.3	
463-58-1	Carbonyl Sulfide	ND	19	7.0	ND	7.6	2.9	
74-93-1	Methyl Mercaptan	ND	15	5.9	ND	7.6	3.0	
75-08-1	Ethyl Mercaptan	ND	19	7.7	ND	7.6	3.0	
75-18-3	Dimethyl Sulfide	ND	19	7.7	ND	7.6	3.0	
75-15-0	Carbon Disulfide	ND	12	4.7	ND	3.8	1.5	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-012

Test Code:	ASTM D 5504-12	Date Collected:	6/23/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	09:14
Analyst:	Gilbert Gutierrez	Date Received:	6/29/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/1/21
Test Notes:	**H1**	Time Analyzed:	08:40
Container ID:	AS01430	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.85 Final Pressure (psig): 3.81

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.0	ND	7.2	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.7	ND	7.2	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.7	ND	7.2	2.9	
75-08-1	Ethyl Mercaptan	ND	18	7.3	ND	7.2	2.9	
75-18-3	Dimethyl Sulfide	ND	18	7.3	ND	7.2	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.6	1.4	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-013

Test Code:	ASTM D 5504-12	Date Collected:	6/23/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	09:41
Analyst:	Gilbert Gutierrez	Date Received:	6/29/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/1/21
Test Notes:	**H1**	Time Analyzed:	09:00
Container ID:	AS00748	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -2.06 Final Pressure (psig): 3.85

Container Dilution Factor: 1.47

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.1	ND	7.4	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.9	ND	7.4	2.8	
74-93-1	Methyl Mercaptan	ND	14	5.8	ND	7.4	2.9	
75-08-1	Ethyl Mercaptan	ND	19	7.5	ND	7.4	2.9	
75-18-3	Dimethyl Sulfide	ND	19	7.5	ND	7.4	2.9	
75-15-0	Carbon Disulfide	ND	11	4.6	ND	3.7	1.5	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-014

Test Code:	ASTM D 5504-12	Date Collected:	6/23/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	09:56
Analyst:	Gilbert Gutierrez	Date Received:	6/29/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/1/21
Test Notes:	**H1**	Time Analyzed:	09:18
Container ID:	AS01316	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.82 Final Pressure (psig): 3.71

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.0	ND	7.2	2.1	
463-58-1	Carbonyl Sulfide	ND	18	6.7	ND	7.2	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.6	ND	7.2	2.9	
75-08-1	Ethyl Mercaptan	ND	18	7.3	ND	7.2	2.9	
75-18-3	Dimethyl Sulfide	ND	18	7.3	ND	7.2	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.6	1.4	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF 1** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-015

Test Code:	ASTM D 5504-12	Date Collected:	6/23/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	10:32
Analyst:	Gilbert Gutierrez	Date Received:	6/29/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/1/21
Test Notes:	**H1**	Time Analyzed:	09:37
Container ID:	AS01391	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -2.18 Final Pressure (psig): 3.50

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.0	ND	7.3	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.8	ND	7.3	2.8	
74-93-1	Methyl Mercaptan	ND	14	5.7	ND	7.3	2.9	
75-08-1	Ethyl Mercaptan	ND	18	7.4	ND	7.3	2.9	
75-18-3	Dimethyl Sulfide	ND	18	7.4	ND	7.3	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.6	1.5	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P2103483-016

Test Code:	ASTM D 5504-12	Date Collected:	6/23/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	11:15
Analyst:	Gilbert Gutierrez	Date Received:	6/29/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/1/21
Test Notes:	**H1**	Time Analyzed:	09:56
Container ID:	AS01506	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -2.36 Final Pressure (psig): 3.95

Container Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	11	3.2	ND	7.6	2.3	
463-58-1	Carbonyl Sulfide	ND	19	7.0	ND	7.6	2.9	
74-93-1	Methyl Mercaptan	ND	15	5.9	ND	7.6	3.0	
75-08-1	Ethyl Mercaptan	ND	19	7.7	ND	7.6	3.0	
75-18-3	Dimethyl Sulfide	ND	19	7.7	ND	7.6	3.0	
75-15-0	Carbon Disulfide	ND	12	4.7	ND	3.8	1.5	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P210630-MB

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Time Collected: NA
Date Received: NA
Date Analyzed: 6/30/21
Time Analyzed: 06:50
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	2.1	ND	5.0	1.5	
463-58-1	Carbonyl Sulfide	ND	12	4.7	ND	5.0	1.9	
74-93-1	Methyl Mercaptan	ND	9.8	3.9	ND	5.0	2.0	
75-08-1	Ethyl Mercaptan	ND	13	5.1	ND	5.0	2.0	
75-18-3	Dimethyl Sulfide	ND	13	5.1	ND	5.0	2.0	
75-15-0	Carbon Disulfide	ND	7.8	3.1	ND	2.5	1.0	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank**
Client Project ID: **KCLF**

ALS Project ID: P2103483
ALS Sample ID: P210701-MB

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Time Collected: NA
Date Received: NA
Date Analyzed: 7/01/21
Time Analyzed: 07:05
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	2.1	ND	5.0	1.5	
463-58-1	Carbonyl Sulfide	ND	12	4.7	ND	5.0	1.9	
74-93-1	Methyl Mercaptan	ND	9.8	3.9	ND	5.0	2.0	
75-08-1	Ethyl Mercaptan	ND	13	5.1	ND	5.0	2.0	
75-18-3	Dimethyl Sulfide	ND	13	5.1	ND	5.0	2.0	
75-15-0	Carbon Disulfide	ND	7.8	3.1	ND	2.5	1.0	

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

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P210630-DLCS

Test Code: ASTM D 5504-12 Date Collected: NA
Instrument ID: Agilent 7890A/GC22/SCD Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 6/30/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ppbV	Result LCS ppbV	Result DLCS ppbV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
7783-06-4	Hydrogen Sulfide	989	1,110	1,160	**112**	**117**	72-122	4	18	
463-58-1	Carbonyl Sulfide	1,050	1,120	1,150	**107**	**110**	72-121	3	17	
74-93-1	Methyl Mercaptan	1,050	1,180	1,230	**112**	**117**	74-127	4	18	

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P210701-DLCS

Test Code: ASTM D 5504-12 Date Collected: NA
Instrument ID: Agilent 7890A/GC22/SCD Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 7/01/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ppbV	Result LCS ppbV	Result DLCS ppbV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
7783-06-4	Hydrogen Sulfide	989	1,120	1,080	**113**	**109**	72-122	4	18	
463-58-1	Carbonyl Sulfide	1,050	1,130	1,090	**108**	**104**	72-121	4	17	
74-93-1	Methyl Mercaptan	1,050	1,210	1,170	**115**	**111**	74-127	4	18	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-001

Test Code: EPA TO-15 Modified Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.13 Liter(s)
Test Notes:
Container ID: AS01047

Initial Pressure (psig): -2.10 Final Pressure (psig): 4.07

Container Dilution Factor: 1.49

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.6**	0.69	0.11	**0.32**	0.14	0.023	
74-87-3	Chloromethane	**0.19**	0.69	0.11	**0.091**	0.33	0.055	**J**
75-01-4	Vinyl Chloride	ND	0.70	0.075	ND	0.27	0.029	
75-00-3	Chloroethane	ND	0.69	0.087	ND	0.26	0.033	
64-17-5	Ethanol	**49**	7.0	0.49	**26**	3.7	0.26	
67-64-1	Acetone	**14**	6.9	1.6	**6.0**	2.9	0.67	
75-69-4	Trichlorofluoromethane	**1.3**	0.67	0.11	**0.23**	0.12	0.019	
67-63-0	2-Propanol (Isopropyl Alcohol)	**2.8**	1.3	0.29	**1.2**	0.54	0.12	
107-13-1	Acrylonitrile	ND	1.3	0.15	ND	0.61	0.067	
75-35-4	1,1-Dichloroethene	ND	0.69	0.098	ND	0.17	0.025	
75-09-2	Methylene Chloride	**1.0**	0.69	0.20	**0.29**	0.20	0.057	
156-60-5	trans-1,2-Dichloroethene	ND	0.70	0.098	ND	0.18	0.025	
75-34-3	1,1-Dichloroethane	ND	0.71	0.10	ND	0.18	0.025	
78-93-3	2-Butanone (MEK)	**1.5**	1.3	0.15	**0.51**	0.45	0.049	
110-54-3	n-Hexane	**0.29**	0.69	0.15	**0.083**	0.19	0.041	**J**
67-66-3	Chloroform	**0.11**	0.70	0.094	**0.022**	0.14	0.019	**J**
107-06-2	1,2-Dichloroethane	**0.12**	0.69	0.078	**0.029**	0.17	0.019	**J**
71-55-6	1,1,1-Trichloroethane	ND	0.69	0.087	ND	0.13	0.016	
71-43-2	Benzene	**0.18**	0.69	0.10	**0.058**	0.21	0.032	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Intertox, Incorporated**
Client Sample ID: **S5** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-001

Test Code: EPA TO-15 Modified Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.13 Liter(s)
Test Notes:
Container ID: AS01047

Initial Pressure (psig): -2.10 Final Pressure (psig): 4.07

Container Dilution Factor: 1.49

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.42**	0.67	0.098	**0.066**	0.11	0.016	**J**
78-87-5	1,2-Dichloropropane	ND	0.69	0.087	ND	0.15	0.019	
75-27-4	Bromodichloromethane	ND	0.69	0.10	ND	0.10	0.015	
79-01-6	Trichloroethene	ND	0.67	0.095	ND	0.13	0.018	
108-10-1	4-Methyl-2-pentanone	**1.0**	1.3	0.096	**0.24**	0.32	0.023	**J**
108-88-3	Toluene	**4.2**	0.69	0.086	**1.1**	0.18	0.023	
106-93-4	1,2-Dibromoethane	ND	0.69	0.082	ND	0.089	0.011	
127-18-4	Tetrachloroethene	**0.15**	0.69	0.091	**0.022**	0.10	0.013	**J**
108-90-7	Chlorobenzene	ND	0.69	0.094	ND	0.15	0.020	
100-41-4	Ethylbenzene	**0.43**	0.69	0.099	**0.099**	0.16	0.023	**J**
179601-23-1	m,p-Xylenes	**1.2**	1.3	0.18	**0.28**	0.30	0.043	**J**
95-47-6	o-Xylene	**0.43**	0.70	0.10	**0.098**	0.16	0.023	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.70	0.098	ND	0.10	0.014	
541-73-1	1,3-Dichlorobenzene	ND	0.70	0.11	ND	0.12	0.018	
106-46-7	1,4-Dichlorobenzene	ND	0.69	0.11	ND	0.11	0.018	
95-50-1	1,2-Dichlorobenzene	ND	0.70	0.10	ND	0.12	0.017	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.66	0.33	ND	0.19	0.093	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.66	0.32	ND	0.16	0.075	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-002

Test Code: EPA TO-15 Modified Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.11 Liter(s)
Test Notes:
Container ID: AS01160

Initial Pressure (psig): -1.56 Final Pressure (psig): 3.73

Container Dilution Factor: 1.40

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.7**	0.66	0.11	**0.33**	0.13	0.022	
74-87-3	Chloromethane	**0.18**	0.66	0.11	**0.086**	0.32	0.053	**J**
75-01-4	Vinyl Chloride	ND	0.67	0.072	ND	0.26	0.028	
75-00-3	Chloroethane	ND	0.66	0.083	ND	0.25	0.032	
64-17-5	Ethanol	**14**	6.7	0.47	**7.5**	3.5	0.25	
67-64-1	Acetone	**12**	6.6	1.5	**5.1**	2.8	0.64	
75-69-4	Trichlorofluoromethane	**1.3**	0.64	0.10	**0.22**	0.11	0.018	
67-63-0	2-Propanol (Isopropyl Alcohol)	**1.1**	1.3	0.28	**0.46**	0.51	0.11	**J**
107-13-1	Acrylonitrile	ND	1.3	0.14	ND	0.58	0.064	
75-35-4	1,1-Dichloroethene	ND	0.66	0.093	ND	0.17	0.024	
75-09-2	Methylene Chloride	**0.37**	0.66	0.19	**0.11**	0.19	0.054	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.67	0.093	ND	0.17	0.024	
75-34-3	1,1-Dichloroethane	ND	0.68	0.098	ND	0.17	0.024	
78-93-3	2-Butanone (MEK)	**0.57**	1.3	0.14	**0.19**	0.43	0.047	**J**
110-54-3	n-Hexane	**0.19**	0.66	0.14	**0.054**	0.19	0.039	**J**
67-66-3	Chloroform	**0.20**	0.67	0.090	**0.041**	0.14	0.018	**J**
107-06-2	1,2-Dichloroethane	ND	0.66	0.074	ND	0.16	0.018	
71-55-6	1,1,1-Trichloroethane	ND	0.66	0.083	ND	0.12	0.015	
71-43-2	Benzene	**0.40**	0.66	0.097	**0.13**	0.21	0.030	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Intertox, Incorporated**
Client Sample ID: **S7** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-002

Test Code: EPA TO-15 Modified Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.11 Liter(s)
Test Notes:
Container ID: AS01160

Initial Pressure (psig): -1.56 Final Pressure (psig): 3.73

Container Dilution Factor: 1.40

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.41**	0.64	0.093	**0.065**	0.10	0.015	**J**
78-87-5	1,2-Dichloropropane	ND	0.66	0.083	ND	0.14	0.018	
75-27-4	Bromodichloromethane	ND	0.66	0.097	ND	0.098	0.015	
79-01-6	Trichloroethene	**0.19**	0.64	0.091	**0.035**	0.12	0.017	**J**
108-10-1	4-Methyl-2-pentanone	ND	1.3	0.092	ND	0.31	0.022	
108-88-3	Toluene	**0.78**	0.66	0.082	**0.21**	0.17	0.022	
106-93-4	1,2-Dibromoethane	ND	0.66	0.078	ND	0.085	0.010	
127-18-4	Tetrachloroethene	**0.13**	0.66	0.087	**0.019**	0.097	0.013	**J**
108-90-7	Chlorobenzene	ND	0.66	0.090	ND	0.14	0.019	
100-41-4	Ethylbenzene	**0.11**	0.66	0.095	**0.025**	0.15	0.022	**J**
179601-23-1	m,p-Xylenes	**0.24**	1.3	0.18	**0.055**	0.29	0.041	**J**
95-47-6	o-Xylene	**0.11**	0.67	0.097	**0.026**	0.15	0.022	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.67	0.093	ND	0.097	0.014	
541-73-1	1,3-Dichlorobenzene	ND	0.67	0.10	ND	0.11	0.017	
106-46-7	1,4-Dichlorobenzene	ND	0.66	0.10	ND	0.11	0.017	
95-50-1	1,2-Dichlorobenzene	ND	0.67	0.10	ND	0.11	0.017	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.63	0.32	ND	0.18	0.089	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.63	0.30	ND	0.15	0.072	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-003

Test Code: EPA TO-15 Modified Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00826

Initial Pressure (psig): -2.20 Final Pressure (psig): 3.55

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.8**	0.76	0.13	**0.36**	0.15	0.026	
74-87-3	Chloromethane	**0.20**	0.76	0.13	**0.096**	0.37	0.061	**J**
75-01-4	Vinyl Chloride	ND	0.77	0.083	ND	0.30	0.033	
75-00-3	Chloroethane	ND	0.76	0.096	ND	0.29	0.037	
64-17-5	Ethanol	**9.0**	7.7	0.54	**4.8**	4.1	0.29	
67-64-1	Acetone	**12**	7.6	1.8	**5.0**	3.2	0.74	
75-69-4	Trichlorofluoromethane	**1.2**	0.74	0.12	**0.22**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.76**	1.5	0.32	**0.31**	0.59	0.13	**J**
107-13-1	Acrylonitrile	ND	1.5	0.16	ND	0.67	0.074	
75-35-4	1,1-Dichloroethene	ND	0.76	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.37**	0.76	0.22	**0.11**	0.22	0.063	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.77	0.11	ND	0.20	0.027	
75-34-3	1,1-Dichloroethane	ND	0.79	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	**0.65**	1.5	0.16	**0.22**	0.50	0.054	**J**
110-54-3	n-Hexane	**0.16**	0.76	0.16	**0.046**	0.22	0.046	**J**
67-66-3	Chloroform	ND	0.77	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.76	0.086	ND	0.19	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.76	0.096	ND	0.14	0.018	
71-43-2	Benzene	**0.16**	0.76	0.11	**0.051**	0.24	0.035	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Intertox, Incorporated**
Client Sample ID: **S6** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-003

Test Code: EPA TO-15 Modified Date Collected: 6/22/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00826

Initial Pressure (psig): -2.20 Final Pressure (psig): 3.55

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.42**	0.74	0.11	**0.066**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.76	0.096	ND	0.16	0.021	
75-27-4	Bromodichloromethane	ND	0.76	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.74	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.36	0.026	
108-88-3	Toluene	**0.82**	0.76	0.095	**0.22**	0.20	0.025	
106-93-4	1,2-Dibromoethane	ND	0.76	0.091	ND	0.099	0.012	
127-18-4	Tetrachloroethene	ND	0.76	0.10	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.76	0.10	ND	0.16	0.023	
100-41-4	Ethylbenzene	**0.11**	0.76	0.11	**0.026**	0.17	0.025	**J**
179601-23-1	m,p-Xylenes	**0.24**	1.5	0.20	**0.055**	0.34	0.047	**J**
95-47-6	o-Xylene	ND	0.77	0.11	ND	0.18	0.026	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.77	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.77	0.12	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.76	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.77	0.12	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.73	0.37	ND	0.21	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.73	0.35	ND	0.17	0.083	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-004

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01046

Initial Pressure (psig): -0.57 Final Pressure (psig): 3.76

Container Dilution Factor: 1.31

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.7**	0.68	0.11	**0.34**	0.14	0.023	
74-87-3	Chloromethane	**0.20**	0.68	0.11	**0.095**	0.33	0.055	**J**
75-01-4	Vinyl Chloride	ND	0.69	0.075	ND	0.27	0.029	
75-00-3	Chloroethane	ND	0.68	0.086	ND	0.26	0.033	
64-17-5	Ethanol	**3.5**	6.9	0.48	**1.8**	3.7	0.26	**J**
67-64-1	Acetone	**4.6**	6.8	1.6	**1.9**	2.9	0.66	**J**
75-69-4	Trichlorofluoromethane	**1.2**	0.67	0.11	**0.22**	0.12	0.019	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.38**	1.3	0.29	**0.16**	0.53	0.12	**J**
107-13-1	Acrylonitrile	ND	1.3	0.14	ND	0.60	0.066	
75-35-4	1,1-Dichloroethene	ND	0.68	0.097	ND	0.17	0.024	
75-09-2	Methylene Chloride	**0.32**	0.68	0.20	**0.092**	0.20	0.057	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.69	0.097	ND	0.18	0.024	
75-34-3	1,1-Dichloroethane	ND	0.71	0.10	ND	0.17	0.025	
78-93-3	2-Butanone (MEK)	**0.55**	1.3	0.14	**0.19**	0.44	0.049	**J**
110-54-3	n-Hexane	ND	0.68	0.14	ND	0.19	0.041	
67-66-3	Chloroform	ND	0.69	0.093	ND	0.14	0.019	
107-06-2	1,2-Dichloroethane	ND	0.68	0.077	ND	0.17	0.019	
71-55-6	1,1,1-Trichloroethane	ND	0.68	0.086	ND	0.12	0.016	
71-43-2	Benzene	ND	0.68	0.10	ND	0.21	0.032	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Intertox, Incorporated**
Client Sample ID: **S13** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-004

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01046

Initial Pressure (psig): -0.57 Final Pressure (psig): 3.76

Container Dilution Factor: 1.31

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.43**	0.67	0.097	**0.068**	0.11	0.015	**J**
78-87-5	1,2-Dichloropropane	ND	0.68	0.086	ND	0.15	0.019	
75-27-4	Bromodichloromethane	ND	0.68	0.10	ND	0.10	0.015	
79-01-6	Trichloroethene	ND	0.67	0.094	ND	0.12	0.018	
108-10-1	4-Methyl-2-pentanone	ND	1.3	0.096	ND	0.32	0.023	
108-88-3	Toluene	**0.53**	0.68	0.085	**0.14**	0.18	0.023	**J**
106-93-4	1,2-Dibromoethane	ND	0.68	0.081	ND	0.089	0.011	
127-18-4	Tetrachloroethene	ND	0.68	0.090	ND	0.10	0.013	
108-90-7	Chlorobenzene	ND	0.68	0.093	ND	0.15	0.020	
100-41-4	Ethylbenzene	**0.11**	0.68	0.098	**0.026**	0.16	0.023	**J**
179601-23-1	m,p-Xylenes	**0.29**	1.3	0.18	**0.067**	0.30	0.042	**J**
95-47-6	o-Xylene	**0.10**	0.69	0.10	**0.024**	0.16	0.023	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.69	0.097	ND	0.10	0.014	
541-73-1	1,3-Dichlorobenzene	ND	0.69	0.10	ND	0.12	0.017	
106-46-7	1,4-Dichlorobenzene	ND	0.68	0.11	ND	0.11	0.018	
95-50-1	1,2-Dichlorobenzene	ND	0.69	0.10	ND	0.12	0.017	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.66	0.33	ND	0.19	0.093	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.66	0.31	ND	0.16	0.075	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-005

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00668

Initial Pressure (psig): -1.43 Final Pressure (psig): 3.85

Container Dilution Factor: 1.40

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.7**	0.73	0.12	**0.35**	0.15	0.025	
74-87-3	Chloromethane	**0.21**	0.73	0.12	**0.10**	0.35	0.058	**J**
75-01-4	Vinyl Chloride	ND	0.74	0.080	ND	0.29	0.031	
75-00-3	Chloroethane	ND	0.73	0.092	ND	0.28	0.035	
64-17-5	Ethanol	**6.1**	7.4	0.52	**3.3**	3.9	0.28	**J**
67-64-1	Acetone	**5.4**	7.3	1.7	**2.3**	3.1	0.71	**J**
75-69-4	Trichlorofluoromethane	**1.4**	0.71	0.11	**0.25**	0.13	0.020	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.56**	1.4	0.31	**0.23**	0.57	0.13	**J**
107-13-1	Acrylonitrile	ND	1.4	0.15	ND	0.65	0.071	
75-35-4	1,1-Dichloroethene	ND	0.73	0.10	ND	0.18	0.026	
75-09-2	Methylene Chloride	**0.35**	0.73	0.21	**0.10**	0.21	0.060	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.74	0.10	ND	0.19	0.026	
75-34-3	1,1-Dichloroethane	ND	0.76	0.11	ND	0.19	0.027	
78-93-3	2-Butanone (MEK)	**1.2**	1.4	0.15	**0.40**	0.47	0.052	**J**
110-54-3	n-Hexane	ND	0.73	0.15	ND	0.21	0.044	
67-66-3	Chloroform	ND	0.74	0.099	ND	0.15	0.020	
107-06-2	1,2-Dichloroethane	ND	0.73	0.083	ND	0.18	0.020	
71-55-6	1,1,1-Trichloroethane	ND	0.73	0.092	ND	0.13	0.017	
71-43-2	Benzene	**0.18**	0.73	0.11	**0.057**	0.23	0.034	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-005

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00668

Initial Pressure (psig): -1.43 Final Pressure (psig): 3.85

Container Dilution Factor: 1.40

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.41**	0.71	0.10	**0.066**	0.11	0.016	**J**
78-87-5	1,2-Dichloropropane	ND	0.73	0.092	ND	0.16	0.020	
75-27-4	Bromodichloromethane	ND	0.73	0.11	ND	0.11	0.016	
79-01-6	Trichloroethene	ND	0.71	0.10	ND	0.13	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.34	0.025	
108-88-3	Toluene	**0.33**	0.73	0.091	**0.088**	0.19	0.024	**J**
106-93-4	1,2-Dibromoethane	ND	0.73	0.087	ND	0.095	0.011	
127-18-4	Tetrachloroethene	ND	0.73	0.097	ND	0.11	0.014	
108-90-7	Chlorobenzene	ND	0.73	0.099	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.73	0.11	ND	0.17	0.024	
179601-23-1	m,p-Xylenes	ND	1.4	0.20	ND	0.32	0.045	
95-47-6	o-Xylene	ND	0.74	0.11	ND	0.17	0.025	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.74	0.10	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.74	0.11	ND	0.12	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.73	0.11	ND	0.12	0.019	
95-50-1	1,2-Dichlorobenzene	ND	0.74	0.11	ND	0.12	0.018	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.70	0.35	ND	0.20	0.099	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.70	0.34	ND	0.17	0.080	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-006

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01371

Initial Pressure (psig): -1.31 Final Pressure (psig): 3.79

Container Dilution Factor: 1.38

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.6**	0.72	0.12	**0.32**	0.15	0.024	
74-87-3	Chloromethane	**0.17**	0.72	0.12	**0.082**	0.35	0.057	**J**
75-01-4	Vinyl Chloride	ND	0.73	0.079	ND	0.29	0.031	
75-00-3	Chloroethane	ND	0.72	0.091	ND	0.27	0.035	
64-17-5	Ethanol	**7.9**	7.3	0.51	**4.2**	3.9	0.27	
67-64-1	Acetone	**20**	7.2	1.7	**8.6**	3.0	0.70	
75-69-4	Trichlorofluoromethane	**1.2**	0.70	0.11	**0.22**	0.13	0.020	
67-63-0	2-Propanol (Isopropyl Alcohol)	**4.2**	1.4	0.30	**1.7**	0.56	0.12	
107-13-1	Acrylonitrile	ND	1.4	0.15	ND	0.64	0.070	
75-35-4	1,1-Dichloroethene	ND	0.72	0.10	ND	0.18	0.026	
75-09-2	Methylene Chloride	**0.35**	0.72	0.21	**0.10**	0.21	0.060	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.73	0.10	ND	0.18	0.026	
75-34-3	1,1-Dichloroethane	ND	0.75	0.11	ND	0.18	0.027	
78-93-3	2-Butanone (MEK)	**16**	1.4	0.15	**5.3**	0.47	0.051	
110-54-3	n-Hexane	ND	0.72	0.15	ND	0.20	0.043	
67-66-3	Chloroform	ND	0.73	0.098	ND	0.15	0.020	
107-06-2	1,2-Dichloroethane	ND	0.72	0.081	ND	0.18	0.020	
71-55-6	1,1,1-Trichloroethane	ND	0.72	0.091	ND	0.13	0.017	
71-43-2	Benzene	ND	0.72	0.11	ND	0.22	0.033	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Intertox, Incorporated**
Client Sample ID: **S11** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-006

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01371

Initial Pressure (psig): -1.31 Final Pressure (psig): 3.79

Container Dilution Factor: 1.38

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.43**	0.70	0.10	**0.068**	0.11	0.016	**J**
78-87-5	1,2-Dichloropropane	ND	0.72	0.091	ND	0.16	0.020	
75-27-4	Bromodichloromethane	ND	0.72	0.11	ND	0.11	0.016	
79-01-6	Trichloroethene	**0.18**	0.70	0.099	**0.033**	0.13	0.018	**J**
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.34	0.025	
108-88-3	Toluene	**0.78**	0.72	0.090	**0.21**	0.19	0.024	
106-93-4	1,2-Dibromoethane	ND	0.72	0.086	ND	0.093	0.011	
127-18-4	Tetrachloroethene	**0.18**	0.72	0.095	**0.027**	0.11	0.014	**J**
108-90-7	Chlorobenzene	ND	0.72	0.098	ND	0.16	0.021	
100-41-4	Ethylbenzene	ND	0.72	0.10	ND	0.17	0.024	
179601-23-1	m,p-Xylenes	**0.20**	1.4	0.19	**0.046**	0.32	0.044	**J**
95-47-6	o-Xylene	ND	0.73	0.11	ND	0.17	0.024	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.73	0.10	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.73	0.11	ND	0.12	0.018	
106-46-7	1,4-Dichlorobenzene	ND	0.72	0.11	ND	0.12	0.019	
95-50-1	1,2-Dichlorobenzene	ND	0.73	0.11	ND	0.12	0.018	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.69	0.35	ND	0.20	0.098	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.69	0.33	ND	0.16	0.079	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11 D** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-007

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01468

Initial Pressure (psig): -1.97 Final Pressure (psig): 3.67

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.6**	0.75	0.13	**0.33**	0.15	0.025	
74-87-3	Chloromethane	**0.19**	0.75	0.12	**0.091**	0.36	0.060	**J**
75-01-4	Vinyl Chloride	ND	0.76	0.082	ND	0.30	0.032	
75-00-3	Chloroethane	ND	0.75	0.095	ND	0.28	0.036	
64-17-5	Ethanol	**3.3**	7.6	0.53	**1.8**	4.1	0.28	**J**
67-64-1	Acetone	**27**	7.5	1.7	**12**	3.2	0.73	
75-69-4	Trichlorofluoromethane	**1.2**	0.73	0.12	**0.22**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**4.8**	1.4	0.32	**2.0**	0.59	0.13	
107-13-1	Acrylonitrile	ND	1.4	0.16	ND	0.66	0.073	
75-35-4	1,1-Dichloroethene	ND	0.75	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.32**	0.75	0.22	**0.091**	0.22	0.062	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.76	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.78	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	**20**	1.4	0.16	**6.9**	0.49	0.054	
110-54-3	n-Hexane	ND	0.75	0.16	ND	0.21	0.045	
67-66-3	Chloroform	ND	0.76	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.75	0.085	ND	0.19	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.75	0.095	ND	0.14	0.017	
71-43-2	Benzene	ND	0.75	0.11	ND	0.23	0.035	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Intertox, Incorporated**
Client Sample ID: **S11 D** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-007

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01468

Initial Pressure (psig): -1.97 Final Pressure (psig): 3.67

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.41**	0.73	0.11	**0.065**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.75	0.095	ND	0.16	0.021	
75-27-4	Bromodichloromethane	ND	0.75	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.73	0.10	ND	0.14	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.11	ND	0.35	0.026	
108-88-3	Toluene	**0.76**	0.75	0.094	**0.20**	0.20	0.025	
106-93-4	1,2-Dibromoethane	ND	0.75	0.089	ND	0.097	0.012	
127-18-4	Tetrachloroethene	ND	0.75	0.099	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.75	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.75	0.11	ND	0.17	0.025	
179601-23-1	m,p-Xylenes	ND	1.4	0.20	ND	0.33	0.046	
95-47-6	o-Xylene	ND	0.76	0.11	ND	0.18	0.026	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.76	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.76	0.12	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.75	0.12	ND	0.12	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.76	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.72	0.36	ND	0.20	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.72	0.35	ND	0.17	0.082	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-008

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01557

Initial Pressure (psig): -1.80 Final Pressure (psig): 3.73

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.7**	0.74	0.12	**0.34**	0.15	0.025	
74-87-3	Chloromethane	**0.20**	0.74	0.12	**0.098**	0.36	0.060	**J**
75-01-4	Vinyl Chloride	ND	0.76	0.082	ND	0.30	0.032	
75-00-3	Chloroethane	ND	0.74	0.094	ND	0.28	0.036	
64-17-5	Ethanol	**29**	7.6	0.53	**16**	4.0	0.28	
67-64-1	Acetone	**6.7**	7.4	1.7	**2.8**	3.1	0.72	**J**
75-69-4	Trichlorofluoromethane	**1.2**	0.73	0.12	**0.22**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.96**	1.4	0.31	**0.39**	0.58	0.13	**J**
107-13-1	Acrylonitrile	ND	1.4	0.16	ND	0.66	0.073	
75-35-4	1,1-Dichloroethene	ND	0.74	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.33**	0.74	0.21	**0.096**	0.21	0.062	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.76	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.77	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	**1.0**	1.4	0.16	**0.34**	0.49	0.053	**J**
110-54-3	n-Hexane	**0.22**	0.74	0.16	**0.062**	0.21	0.045	**J**
67-66-3	Chloroform	ND	0.76	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.74	0.084	ND	0.18	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.74	0.094	ND	0.14	0.017	
71-43-2	Benzene	ND	0.74	0.11	ND	0.23	0.034	

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Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-008

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01557

Initial Pressure (psig): -1.80 Final Pressure (psig): 3.73

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.42**	0.73	0.11	**0.066**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.74	0.094	ND	0.16	0.020	
75-27-4	Bromodichloromethane	ND	0.74	0.11	ND	0.11	0.016	
79-01-6	Trichloroethene	ND	0.73	0.10	ND	0.14	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.35	0.025	
108-88-3	Toluene	**0.33**	0.74	0.093	**0.088**	0.20	0.025	**J**
106-93-4	1,2-Dibromoethane	ND	0.74	0.089	ND	0.097	0.012	
127-18-4	Tetrachloroethene	ND	0.74	0.099	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.74	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.74	0.11	ND	0.17	0.025	
179601-23-1	m,p-Xylenes	ND	1.4	0.20	ND	0.33	0.046	
95-47-6	o-Xylene	ND	0.76	0.11	ND	0.17	0.025	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.76	0.11	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.76	0.11	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.74	0.12	ND	0.12	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.76	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.72	0.36	ND	0.20	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.72	0.34	ND	0.17	0.082	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-009

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01472

Initial Pressure (psig): -1.51 Final Pressure (psig): 3.67

Container Dilution Factor: 1.39

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.6**	0.72	0.12	**0.33**	0.15	0.024	
74-87-3	Chloromethane	**0.18**	0.72	0.12	**0.086**	0.35	0.058	**J**
75-01-4	Vinyl Chloride	ND	0.74	0.079	ND	0.29	0.031	
75-00-3	Chloroethane	ND	0.72	0.092	ND	0.27	0.035	
64-17-5	Ethanol	**12**	7.4	0.51	**6.2**	3.9	0.27	
67-64-1	Acetone	**3.9**	7.2	1.7	**1.7**	3.0	0.70	**J**
75-69-4	Trichlorofluoromethane	**1.2**	0.71	0.11	**0.22**	0.13	0.020	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.4	0.31	ND	0.57	0.12	
107-13-1	Acrylonitrile	ND	1.4	0.15	ND	0.64	0.070	
75-35-4	1,1-Dichloroethene	ND	0.72	0.10	ND	0.18	0.026	
75-09-2	Methylene Chloride	**0.42**	0.72	0.21	**0.12**	0.21	0.060	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.74	0.10	ND	0.19	0.026	
75-34-3	1,1-Dichloroethane	ND	0.75	0.11	ND	0.19	0.027	
78-93-3	2-Butanone (MEK)	ND	1.4	0.15	ND	0.47	0.052	
110-54-3	n-Hexane	ND	0.72	0.15	ND	0.21	0.043	
67-66-3	Chloroform	ND	0.74	0.099	ND	0.15	0.020	
107-06-2	1,2-Dichloroethane	ND	0.72	0.082	ND	0.18	0.020	
71-55-6	1,1,1-Trichloroethane	ND	0.72	0.092	ND	0.13	0.017	
71-43-2	Benzene	ND	0.72	0.11	ND	0.23	0.034	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
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ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-009

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01472

Initial Pressure (psig): -1.51 Final Pressure (psig): 3.67

Container Dilution Factor: 1.39

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.42**	0.71	0.10	**0.067**	0.11	0.016	**J**
78-87-5	1,2-Dichloropropane	ND	0.72	0.092	ND	0.16	0.020	
75-27-4	Bromodichloromethane	ND	0.72	0.11	ND	0.11	0.016	
79-01-6	Trichloroethene	ND	0.71	0.10	ND	0.13	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.34	0.025	
108-88-3	Toluene	**0.33**	0.72	0.090	**0.088**	0.19	0.024	**J**
106-93-4	1,2-Dibromoethane	ND	0.72	0.086	ND	0.094	0.011	
127-18-4	Tetrachloroethene	ND	0.72	0.096	ND	0.11	0.014	
108-90-7	Chlorobenzene	ND	0.72	0.099	ND	0.16	0.021	
100-41-4	Ethylbenzene	ND	0.72	0.10	ND	0.17	0.024	
179601-23-1	m,p-Xylenes	ND	1.4	0.19	ND	0.32	0.045	
95-47-6	o-Xylene	ND	0.74	0.11	ND	0.17	0.025	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.74	0.10	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.74	0.11	ND	0.12	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.72	0.11	ND	0.12	0.019	
95-50-1	1,2-Dichlorobenzene	ND	0.74	0.11	ND	0.12	0.018	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.70	0.35	ND	0.20	0.098	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.70	0.33	ND	0.17	0.079	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-010

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00228

Initial Pressure (psig): -0.06 Final Pressure (psig): 3.73
Initial Pressure 2 (psig): -0.07 Final Pressure 2 (psig): 2.10
Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.6**	0.75	0.13	**0.33**	0.15	0.026	
74-87-3	Chloromethane	**0.19**	0.75	0.12	**0.094**	0.37	0.060	**J**
75-01-4	Vinyl Chloride	ND	0.77	0.083	ND	0.30	0.032	
75-00-3	Chloroethane	ND	0.75	0.096	ND	0.29	0.036	
64-17-5	Ethanol	**160**	7.7	0.54	**85**	4.1	0.28	
67-64-1	Acetone	**13**	7.5	1.7	**5.3**	3.2	0.73	
75-69-4	Trichlorofluoromethane	**1.2**	0.74	0.12	**0.22**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**11**	1.5	0.32	**4.5**	0.59	0.13	
107-13-1	Acrylonitrile	ND	1.5	0.16	ND	0.67	0.074	
75-35-4	1,1-Dichloroethene	ND	0.75	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**2.6**	0.75	0.22	**0.76**	0.22	0.063	
156-60-5	trans-1,2-Dichloroethene	ND	0.77	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.78	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	**2.8**	1.5	0.16	**0.94**	0.49	0.054	
110-54-3	n-Hexane	**0.71**	0.75	0.16	**0.20**	0.21	0.045	**J**
67-66-3	Chloroform	**0.13**	0.77	0.10	**0.026**	0.16	0.021	**J**
107-06-2	1,2-Dichloroethane	**0.18**	0.75	0.086	**0.043**	0.19	0.021	**J**
71-55-6	1,1,1-Trichloroethane	ND	0.75	0.096	ND	0.14	0.018	
71-43-2	Benzene	**0.39**	0.75	0.11	**0.12**	0.24	0.035	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-010

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00228

Initial Pressure (psig): -0.06 Final Pressure (psig): 3.73
Initial Pressure 2 (psig): -0.07 Final Pressure 2 (psig): 2.10
Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.44**	0.74	0.11	**0.070**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.75	0.096	ND	0.16	0.021	
75-27-4	Bromodichloromethane	ND	0.75	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.74	0.10	ND	0.14	0.019	
108-10-1	4-Methyl-2-pentanone	**3.4**	1.5	0.11	**0.83**	0.35	0.026	
108-88-3	Toluene	**9.0**	0.75	0.094	**2.4**	0.20	0.025	
106-93-4	1,2-Dibromoethane	ND	0.75	0.090	ND	0.098	0.012	
127-18-4	Tetrachloroethene	**0.35**	0.75	0.10	**0.052**	0.11	0.015	**J**
108-90-7	Chlorobenzene	ND	0.75	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	**1.3**	0.75	0.11	**0.30**	0.17	0.025	
179601-23-1	m,p-Xylenes	**4.5**	1.5	0.20	**1.0**	0.33	0.047	
95-47-6	o-Xylene	**1.7**	0.77	0.11	**0.40**	0.18	0.026	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.77	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.77	0.12	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.75	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.77	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.73	0.36	ND	0.21	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.73	0.35	ND	0.17	0.083	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-011

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/20/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01573

Initial Pressure (psig): -2.22 Final Pressure (psig): 4.10

Container Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.8**	0.79	0.13	**0.36**	0.16	0.027	
74-87-3	Chloromethane	**0.20**	0.79	0.13	**0.097**	0.38	0.063	**J**
75-01-4	Vinyl Chloride	ND	0.80	0.086	ND	0.31	0.034	
75-00-3	Chloroethane	ND	0.79	0.10	ND	0.30	0.038	
64-17-5	Ethanol	**8.1**	8.0	0.56	**4.3**	4.2	0.30	
67-64-1	Acetone	**3.9**	7.9	1.8	**1.6**	3.3	0.76	**J**
75-69-4	Trichlorofluoromethane	**1.2**	0.77	0.12	**0.22**	0.14	0.022	
67-63-0	2-Propanol (Isopropyl Alcohol)	**1.9**	1.5	0.33	**0.78**	0.61	0.14	
107-13-1	Acrylonitrile	ND	1.5	0.17	ND	0.70	0.077	
75-35-4	1,1-Dichloroethene	ND	0.79	0.11	ND	0.20	0.028	
75-09-2	Methylene Chloride	**0.31**	0.79	0.23	**0.088**	0.23	0.065	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.80	0.11	ND	0.20	0.028	
75-34-3	1,1-Dichloroethane	ND	0.82	0.12	ND	0.20	0.029	
78-93-3	2-Butanone (MEK)	ND	1.5	0.17	ND	0.51	0.056	
110-54-3	n-Hexane	**0.37**	0.79	0.17	**0.11**	0.22	0.047	**J**
67-66-3	Chloroform	ND	0.80	0.11	ND	0.16	0.022	
107-06-2	1,2-Dichloroethane	ND	0.79	0.089	ND	0.19	0.022	
71-55-6	1,1,1-Trichloroethane	ND	0.79	0.10	ND	0.14	0.018	
71-43-2	Benzene	**0.57**	0.79	0.12	**0.18**	0.25	0.036	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Intertox, Incorporated**
Client Sample ID: **S3** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-011

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/20/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01573

Initial Pressure (psig): -2.22 Final Pressure (psig): 4.10

Container Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.43**	0.77	0.11	**0.069**	0.12	0.018	**J**
78-87-5	1,2-Dichloropropane	ND	0.79	0.10	ND	0.17	0.022	
75-27-4	Bromodichloromethane	ND	0.79	0.12	ND	0.12	0.017	
79-01-6	Trichloroethene	ND	0.77	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.37	0.027	
108-88-3	Toluene	**0.66**	0.79	0.098	**0.18**	0.21	0.026	**J**
106-93-4	1,2-Dibromoethane	ND	0.79	0.094	ND	0.10	0.012	
127-18-4	Tetrachloroethene	ND	0.79	0.10	ND	0.12	0.015	
108-90-7	Chlorobenzene	ND	0.79	0.11	ND	0.17	0.023	
100-41-4	Ethylbenzene	ND	0.79	0.11	ND	0.18	0.026	
179601-23-1	m,p-Xylenes	**0.24**	1.5	0.21	**0.055**	0.35	0.049	**J**
95-47-6	o-Xylene	ND	0.80	0.12	ND	0.18	0.027	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.80	0.11	ND	0.12	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.80	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.79	0.12	ND	0.13	0.021	
95-50-1	1,2-Dichlorobenzene	ND	0.80	0.12	ND	0.13	0.020	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.76	0.38	ND	0.21	0.11	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.76	0.36	ND	0.18	0.086	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-012

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/20/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01430

Initial Pressure (psig): -1.85 Final Pressure (psig): 3.81

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.6**	0.75	0.13	**0.33**	0.15	0.025	
74-87-3	Chloromethane	**0.19**	0.75	0.12	**0.091**	0.36	0.060	**J**
75-01-4	Vinyl Chloride	ND	0.76	0.082	ND	0.30	0.032	
75-00-3	Chloroethane	ND	0.75	0.095	ND	0.28	0.036	
64-17-5	Ethanol	**7.1**	7.6	0.53	**3.8**	4.1	0.28	**J**
67-64-1	Acetone	**4.1**	7.5	1.7	**1.7**	3.2	0.73	**J**
75-69-4	Trichlorofluoromethane	**1.2**	0.73	0.12	**0.22**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.4	0.32	ND	0.59	0.13	
107-13-1	Acrylonitrile	ND	1.4	0.16	ND	0.66	0.073	
75-35-4	1,1-Dichloroethene	ND	0.75	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.34**	0.75	0.22	**0.099**	0.22	0.062	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.76	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.78	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	ND	1.4	0.16	ND	0.49	0.054	
110-54-3	n-Hexane	ND	0.75	0.16	ND	0.21	0.045	
67-66-3	Chloroform	ND	0.76	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.75	0.085	ND	0.19	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.75	0.095	ND	0.14	0.017	
71-43-2	Benzene	ND	0.75	0.11	ND	0.23	0.035	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-012

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/20/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01430

Initial Pressure (psig): -1.85 Final Pressure (psig): 3.81

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.42**	0.73	0.11	**0.067**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.75	0.095	ND	0.16	0.021	
75-27-4	Bromodichloromethane	ND	0.75	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.73	0.10	ND	0.14	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.11	ND	0.35	0.026	
108-88-3	Toluene	**0.41**	0.75	0.094	**0.11**	0.20	0.025	**J**
106-93-4	1,2-Dibromoethane	ND	0.75	0.089	ND	0.097	0.012	
127-18-4	Tetrachloroethene	ND	0.75	0.099	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.75	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.75	0.11	ND	0.17	0.025	
179601-23-1	m,p-Xylenes	ND	1.4	0.20	ND	0.33	0.046	
95-47-6	o-Xylene	ND	0.76	0.11	ND	0.18	0.026	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.76	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.76	0.12	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.75	0.12	ND	0.12	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.76	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.72	0.36	ND	0.20	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.72	0.35	ND	0.17	0.082	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-013

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/20/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00748

Initial Pressure (psig): -2.06 Final Pressure (psig): 3.85

Container Dilution Factor: 1.47

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.6**	0.76	0.13	**0.33**	0.15	0.026	
74-87-3	Chloromethane	**0.16**	0.76	0.13	**0.076**	0.37	0.061	**J**
75-01-4	Vinyl Chloride	ND	0.78	0.084	ND	0.30	0.033	
75-00-3	Chloroethane	ND	0.76	0.097	ND	0.29	0.037	
64-17-5	Ethanol	**4.4**	7.8	0.54	**2.3**	4.1	0.29	**J**
67-64-1	Acetone	**3.7**	7.6	1.8	**1.6**	3.2	0.74	**J**
75-69-4	Trichlorofluoromethane	**1.2**	0.75	0.12	**0.22**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.5	0.32	ND	0.60	0.13	
107-13-1	Acrylonitrile	ND	1.5	0.16	ND	0.68	0.075	
75-35-4	1,1-Dichloroethene	ND	0.76	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.37**	0.76	0.22	**0.11**	0.22	0.063	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.78	0.11	ND	0.20	0.027	
75-34-3	1,1-Dichloroethane	ND	0.79	0.11	ND	0.20	0.028	
78-93-3	2-Butanone (MEK)	ND	1.5	0.16	ND	0.50	0.055	
110-54-3	n-Hexane	ND	0.76	0.16	ND	0.22	0.046	
67-66-3	Chloroform	ND	0.78	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.76	0.087	ND	0.19	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.76	0.097	ND	0.14	0.018	
71-43-2	Benzene	**0.47**	0.76	0.11	**0.15**	0.24	0.035	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Intertox, Incorporated**
Client Sample ID: **S9** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-013

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/20/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00748

Initial Pressure (psig): -2.06 Final Pressure (psig): 3.85

Container Dilution Factor: 1.47

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.43**	0.75	0.11	**0.069**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.76	0.097	ND	0.17	0.021	
75-27-4	Bromodichloromethane	ND	0.76	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.75	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.36	0.026	
108-88-3	Toluene	**0.45**	0.76	0.096	**0.12**	0.20	0.025	**J**
106-93-4	1,2-Dibromoethane	ND	0.76	0.091	ND	0.10	0.012	
127-18-4	Tetrachloroethene	ND	0.76	0.10	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.76	0.10	ND	0.17	0.023	
100-41-4	Ethylbenzene	ND	0.76	0.11	ND	0.18	0.025	
179601-23-1	m,p-Xylenes	ND	1.5	0.21	ND	0.34	0.047	
95-47-6	o-Xylene	ND	0.78	0.11	ND	0.18	0.026	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.78	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.78	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.76	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.78	0.12	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.74	0.37	ND	0.21	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.74	0.35	ND	0.17	0.084	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-014

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/20/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01316

Initial Pressure (psig): -1.82 Final Pressure (psig): 3.71

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.7**	0.74	0.12	**0.34**	0.15	0.025	
74-87-3	Chloromethane	**0.17**	0.74	0.12	**0.085**	0.36	0.060	**J**
75-01-4	Vinyl Chloride	ND	0.76	0.082	ND	0.30	0.032	
75-00-3	Chloroethane	ND	0.74	0.094	ND	0.28	0.036	
64-17-5	Ethanol	**3.5**	7.6	0.53	**1.9**	4.0	0.28	**J**
67-64-1	Acetone	**6.1**	7.4	1.7	**2.6**	3.1	0.72	**J**
75-69-4	Trichlorofluoromethane	**1.3**	0.73	0.12	**0.23**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.4	0.31	ND	0.58	0.13	
107-13-1	Acrylonitrile	ND	1.4	0.16	ND	0.66	0.073	
75-35-4	1,1-Dichloroethene	ND	0.74	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.39**	0.74	0.21	**0.11**	0.21	0.062	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.76	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.77	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	ND	1.4	0.16	ND	0.49	0.053	
110-54-3	n-Hexane	ND	0.74	0.16	ND	0.21	0.045	
67-66-3	Chloroform	ND	0.76	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.74	0.084	ND	0.18	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.74	0.094	ND	0.14	0.017	
71-43-2	Benzene	**0.22**	0.74	0.11	**0.070**	0.23	0.034	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-014

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/20/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01316

Initial Pressure (psig): -1.82 Final Pressure (psig): 3.71

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.43**	0.73	0.11	**0.068**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.74	0.094	ND	0.16	0.020	
75-27-4	Bromodichloromethane	ND	0.74	0.11	ND	0.11	0.016	
79-01-6	Trichloroethene	ND	0.73	0.10	ND	0.14	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.35	0.025	
108-88-3	Toluene	**0.66**	0.74	0.093	**0.18**	0.20	0.025	**J**
106-93-4	1,2-Dibromoethane	ND	0.74	0.089	ND	0.097	0.012	
127-18-4	Tetrachloroethene	ND	0.74	0.099	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.74	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	**0.12**	0.74	0.11	**0.028**	0.17	0.025	**J**
179601-23-1	m,p-Xylenes	**0.41**	1.4	0.20	**0.094**	0.33	0.046	**J**
95-47-6	o-Xylene	**0.14**	0.76	0.11	**0.032**	0.17	0.025	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.76	0.11	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.76	0.11	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.74	0.12	ND	0.12	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.76	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.72	0.36	ND	0.20	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.72	0.34	ND	0.17	0.082	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF 1** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-015

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/20/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01391

Initial Pressure (psig): -2.18 Final Pressure (psig): 3.50

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.6**	0.75	0.13	**0.33**	0.15	0.026	
74-87-3	Chloromethane	**0.15**	0.75	0.12	**0.070**	0.37	0.060	**J**
75-01-4	Vinyl Chloride	ND	0.77	0.083	ND	0.30	0.032	
75-00-3	Chloroethane	ND	0.75	0.096	ND	0.29	0.036	
64-17-5	Ethanol	**5.8**	7.7	0.54	**3.1**	4.1	0.28	**J**
67-64-1	Acetone	**5.4**	7.5	1.7	**2.3**	3.2	0.73	**J**
75-69-4	Trichlorofluoromethane	**1.3**	0.74	0.12	**0.23**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.5	0.32	ND	0.59	0.13	
107-13-1	Acrylonitrile	ND	1.5	0.16	ND	0.67	0.074	
75-35-4	1,1-Dichloroethene	ND	0.75	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.46**	0.75	0.22	**0.13**	0.22	0.063	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.77	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.78	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	ND	1.5	0.16	ND	0.49	0.054	
110-54-3	n-Hexane	ND	0.75	0.16	ND	0.21	0.045	
67-66-3	Chloroform	ND	0.77	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.75	0.086	ND	0.19	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.75	0.096	ND	0.14	0.018	
71-43-2	Benzene	**0.13**	0.75	0.11	**0.042**	0.24	0.035	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Intertox, Incorporated**
Client Sample ID: **REF 1** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-015

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/20/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01391

Initial Pressure (psig): -2.18 Final Pressure (psig): 3.50

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.45**	0.74	0.11	**0.071**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.75	0.096	ND	0.16	0.021	
75-27-4	Bromodichloromethane	ND	0.75	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.74	0.10	ND	0.14	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.35	0.026	
108-88-3	Toluene	**0.69**	0.75	0.094	**0.18**	0.20	0.025	**J**
106-93-4	1,2-Dibromoethane	ND	0.75	0.090	ND	0.098	0.012	
127-18-4	Tetrachloroethene	ND	0.75	0.10	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.75	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.75	0.11	ND	0.17	0.025	
179601-23-1	m,p-Xylenes	**0.43**	1.5	0.20	**0.099**	0.33	0.047	**J**
95-47-6	o-Xylene	**0.13**	0.77	0.11	**0.030**	0.18	0.026	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.77	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.77	0.12	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.75	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.77	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.73	0.36	ND	0.21	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.73	0.35	ND	0.17	0.083	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-016

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/21/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01506

Initial Pressure (psig): -2.36 Final Pressure (psig): 3.95

Container Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.8**	0.79	0.13	**0.36**	0.16	0.027	
74-87-3	Chloromethane	**0.18**	0.79	0.13	**0.086**	0.38	0.063	**J**
75-01-4	Vinyl Chloride	ND	0.80	0.086	ND	0.31	0.034	
75-00-3	Chloroethane	ND	0.79	0.10	ND	0.30	0.038	
64-17-5	Ethanol	**22**	8.0	0.56	**12**	4.2	0.30	
67-64-1	Acetone	**11**	7.9	1.8	**4.6**	3.3	0.76	
75-69-4	Trichlorofluoromethane	**1.3**	0.77	0.12	**0.23**	0.14	0.022	
67-63-0	2-Propanol (Isopropyl Alcohol)	**1.7**	1.5	0.33	**0.70**	0.61	0.14	
107-13-1	Acrylonitrile	ND	1.5	0.17	ND	0.70	0.077	
75-35-4	1,1-Dichloroethene	ND	0.79	0.11	ND	0.20	0.028	
75-09-2	Methylene Chloride	**0.42**	0.79	0.23	**0.12**	0.23	0.065	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.80	0.11	ND	0.20	0.028	
75-34-3	1,1-Dichloroethane	ND	0.82	0.12	ND	0.20	0.029	
78-93-3	2-Butanone (MEK)	**1.1**	1.5	0.17	**0.37**	0.51	0.056	**J**
110-54-3	n-Hexane	**0.34**	0.79	0.17	**0.097**	0.22	0.047	**J**
67-66-3	Chloroform	ND	0.80	0.11	ND	0.16	0.022	
107-06-2	1,2-Dichloroethane	ND	0.79	0.089	ND	0.19	0.022	
71-55-6	1,1,1-Trichloroethane	ND	0.79	0.10	ND	0.14	0.018	
71-43-2	Benzene	**0.32**	0.79	0.12	**0.10**	0.25	0.036	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **Intertox, Incorporated**
Client Sample ID: **S6** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-016

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/21/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01506

Initial Pressure (psig): -2.36 Final Pressure (psig): 3.95

Container Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.45**	0.77	0.11	**0.072**	0.12	0.018	**J**
78-87-5	1,2-Dichloropropane	ND	0.79	0.10	ND	0.17	0.022	
75-27-4	Bromodichloromethane	ND	0.79	0.12	ND	0.12	0.017	
79-01-6	Trichloroethene	ND	0.77	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.37	0.027	
108-88-3	Toluene	**1.3**	0.79	0.098	**0.35**	0.21	0.026	
106-93-4	1,2-Dibromoethane	ND	0.79	0.094	ND	0.10	0.012	
127-18-4	Tetrachloroethene	ND	0.79	0.10	ND	0.12	0.015	
108-90-7	Chlorobenzene	ND	0.79	0.11	ND	0.17	0.023	
100-41-4	Ethylbenzene	**0.17**	0.79	0.11	**0.039**	0.18	0.026	**J**
179601-23-1	m,p-Xylenes	**0.46**	1.5	0.21	**0.11**	0.35	0.049	**J**
95-47-6	o-Xylene	**0.19**	0.80	0.12	**0.043**	0.18	0.027	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.80	0.11	ND	0.12	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.80	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.79	0.12	ND	0.13	0.021	
95-50-1	1,2-Dichlorobenzene	ND	0.80	0.12	ND	0.13	0.020	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.76	0.38	ND	0.21	0.11	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.76	0.36	ND	0.18	0.086	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P210719-MB

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.52	0.087	ND	0.11	0.018	
74-87-3	Chloromethane	ND	0.52	0.086	ND	0.25	0.042	
75-01-4	Vinyl Chloride	ND	0.53	0.057	ND	0.21	0.022	
75-00-3	Chloroethane	ND	0.52	0.066	ND	0.20	0.025	
64-17-5	Ethanol	ND	5.3	0.37	ND	2.8	0.20	
67-64-1	Acetone	ND	5.2	1.2	ND	2.2	0.51	
75-69-4	Trichlorofluoromethane	ND	0.51	0.081	ND	0.091	0.014	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.0	0.22	ND	0.41	0.090	
107-13-1	Acrylonitrile	ND	1.0	0.11	ND	0.46	0.051	
75-35-4	1,1-Dichloroethene	ND	0.52	0.074	ND	0.13	0.019	
75-09-2	Methylene Chloride	ND	0.52	0.15	ND	0.15	0.043	
156-60-5	trans-1,2-Dichloroethene	ND	0.53	0.074	ND	0.13	0.019	
75-34-3	1,1-Dichloroethane	ND	0.54	0.078	ND	0.13	0.019	
78-93-3	2-Butanone (MEK)	ND	1.0	0.11	ND	0.34	0.037	
110-54-3	n-Hexane	ND	0.52	0.11	ND	0.15	0.031	
67-66-3	Chloroform	ND	0.53	0.071	ND	0.11	0.015	
107-06-2	1,2-Dichloroethane	ND	0.52	0.059	ND	0.13	0.015	
71-55-6	1,1,1-Trichloroethane	ND	0.52	0.066	ND	0.095	0.012	
71-43-2	Benzene	ND	0.52	0.077	ND	0.16	0.024	

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

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P210719-MB

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	ND	0.51	0.074	ND	0.081	0.012	
78-87-5	1,2-Dichloropropane	ND	0.52	0.066	ND	0.11	0.014	
75-27-4	Bromodichloromethane	ND	0.52	0.077	ND	0.078	0.011	
79-01-6	Trichloroethene	ND	0.51	0.072	ND	0.095	0.013	
108-10-1	4-Methyl-2-pentanone	ND	1.0	0.073	ND	0.24	0.018	
108-88-3	Toluene	ND	0.52	0.065	ND	0.14	0.017	
106-93-4	1,2-Dibromoethane	ND	0.52	0.062	ND	0.068	0.0081	
127-18-4	Tetrachloroethene	ND	0.52	0.069	ND	0.077	0.010	
108-90-7	Chlorobenzene	ND	0.52	0.071	ND	0.11	0.015	
100-41-4	Ethylbenzene	ND	0.52	0.075	ND	0.12	0.017	
179601-23-1	m,p-Xylenes	ND	1.0	0.14	ND	0.23	0.032	
95-47-6	o-Xylene	ND	0.53	0.077	ND	0.12	0.018	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.53	0.074	ND	0.077	0.011	
541-73-1	1,3-Dichlorobenzene	ND	0.53	0.080	ND	0.088	0.013	
106-46-7	1,4-Dichlorobenzene	ND	0.52	0.082	ND	0.087	0.014	
95-50-1	1,2-Dichlorobenzene	ND	0.53	0.079	ND	0.088	0.013	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.50	0.25	ND	0.14	0.071	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.50	0.24	ND	0.12	0.057	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P210720-MB

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/20/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.52	0.087	ND	0.11	0.018	
74-87-3	Chloromethane	ND	0.52	0.086	ND	0.25	0.042	
75-01-4	Vinyl Chloride	ND	0.53	0.057	ND	0.21	0.022	
75-00-3	Chloroethane	ND	0.52	0.066	ND	0.20	0.025	
64-17-5	Ethanol	ND	5.3	0.37	ND	2.8	0.20	
67-64-1	Acetone	ND	5.2	1.2	ND	2.2	0.51	
75-69-4	Trichlorofluoromethane	ND	0.51	0.081	ND	0.091	0.014	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.0	0.22	ND	0.41	0.090	
107-13-1	Acrylonitrile	ND	1.0	0.11	ND	0.46	0.051	
75-35-4	1,1-Dichloroethene	ND	0.52	0.074	ND	0.13	0.019	
75-09-2	Methylene Chloride	ND	0.52	0.15	ND	0.15	0.043	
156-60-5	trans-1,2-Dichloroethene	ND	0.53	0.074	ND	0.13	0.019	
75-34-3	1,1-Dichloroethane	ND	0.54	0.078	ND	0.13	0.019	
78-93-3	2-Butanone (MEK)	ND	1.0	0.11	ND	0.34	0.037	
110-54-3	n-Hexane	ND	0.52	0.11	ND	0.15	0.031	
67-66-3	Chloroform	ND	0.53	0.071	ND	0.11	0.015	
107-06-2	1,2-Dichloroethane	ND	0.52	0.059	ND	0.13	0.015	
71-55-6	1,1,1-Trichloroethane	ND	0.52	0.066	ND	0.095	0.012	
71-43-2	Benzene	ND	0.52	0.077	ND	0.16	0.024	

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

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P210720-MB

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/20/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	ND	0.51	0.074	ND	0.081	0.012	
78-87-5	1,2-Dichloropropane	ND	0.52	0.066	ND	0.11	0.014	
75-27-4	Bromodichloromethane	ND	0.52	0.077	ND	0.078	0.011	
79-01-6	Trichloroethene	ND	0.51	0.072	ND	0.095	0.013	
108-10-1	4-Methyl-2-pentanone	ND	1.0	0.073	ND	0.24	0.018	
108-88-3	Toluene	ND	0.52	0.065	ND	0.14	0.017	
106-93-4	1,2-Dibromoethane	ND	0.52	0.062	ND	0.068	0.0081	
127-18-4	Tetrachloroethene	ND	0.52	0.069	ND	0.077	0.010	
108-90-7	Chlorobenzene	ND	0.52	0.071	ND	0.11	0.015	
100-41-4	Ethylbenzene	ND	0.52	0.075	ND	0.12	0.017	
179601-23-1	m,p-Xylenes	ND	1.0	0.14	ND	0.23	0.032	
95-47-6	o-Xylene	ND	0.53	0.077	ND	0.12	0.018	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.53	0.074	ND	0.077	0.011	
541-73-1	1,3-Dichlorobenzene	ND	0.53	0.080	ND	0.088	0.013	
106-46-7	1,4-Dichlorobenzene	ND	0.52	0.082	ND	0.087	0.014	
95-50-1	1,2-Dichlorobenzene	ND	0.53	0.079	ND	0.088	0.013	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.50	0.25	ND	0.14	0.071	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.50	0.24	ND	0.12	0.057	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
X = See case narrative.

ALS ENVIRONMENTAL

SURROGATE SPIKE RECOVERY RESULTS

Client: **Intertox, Incorporated**
Client Project ID: **KCLF** ALS Project ID: P2103483

Test Code: EPA TO-15 Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date(s) Collected: 6/22 - 6/23/21
Analyst: Wida Ang Date(s) Received: 6/29/21
Sample Type: 6.0 L Silonite Canister(s) Date(s) Analyzed: 7/19 - 7/21/21
Test Notes:

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4 Percent Recovered	Toluene-d8 Percent Recovered	Bromofluorobenzene Percent Recovered	Acceptance Limits	Data Qualifier
Method Blank	P210719-MB	**91**	**102**	**95**	70-130	
Method Blank	P210720-MB	**92**	**102**	**99**	70-130	
Lab Control Sample	P210719-LCS	**102**	**102**	**100**	70-130	
Lab Control Sample	P210720-LCS	**101**	**103**	**106**	70-130	
Duplicate Lab Control Sample	P210719-DLCS	**100**	**103**	**103**	70-130	
Duplicate Lab Control Sample	P210720-DLCS	**100**	**103**	**106**	70-130	
S5	P2103483-001	**88**	**103**	**94**	70-130	
S7	P2103483-002	**90**	**103**	**94**	70-130	
S6	P2103483-003	**88**	**105**	**98**	70-130	
S13	P2103483-004	**89**	**105**	**97**	70-130	
S12	P2103483-005	**90**	**104**	**97**	70-130	
S12	P2103483-005DUP	**85**	**105**	**100**	70-130	
S11	P2103483-006	**89**	**104**	**100**	70-130	
S11 D	P2103483-007	**85**	**101**	**100**	70-130	
S8	P2103483-008	**87**	**101**	**100**	70-130	
S4	P2103483-009	**88**	**101**	**98**	70-130	
S1	P2103483-010	**88**	**106**	**101**	70-130	
S3	P2103483-011	**90**	**102**	**102**	70-130	
S2	P2103483-012	**89**	**101**	**101**	70-130	
S9	P2103483-013	**90**	**101**	**101**	70-130	
S10	P2103483-014	**90**	**101**	**101**	70-130	
REF 1	P2103483-015	**89**	**102**	**101**	70-130	
S6	P2103483-016	**90**	**100**	**100**	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P210719-DLCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	210	217	223	**103**	**106**	71-112	3	25	
74-87-3	Chloromethane	206	201	209	**98**	**101**	53-126	3	25	
75-01-4	Vinyl Chloride	208	215	213	**103**	**102**	63-123	1	25	
75-00-3	Chloroethane	204	222	234	**109**	**115**	66-117	5	25	
64-17-5	Ethanol	998	973	974	**97**	**98**	57-117	1	25	
67-64-1	Acetone	1,030	1050	1040	**102**	**101**	60-117	1	25	
75-69-4	Trichlorofluoromethane	204	209	212	**102**	**104**	71-114	2	25	
67-63-0	2-Propanol (Isopropyl Alcohol)	408	465	467	**114**	**114**	61-124	0	25	
107-13-1	Acrylonitrile	410	472	472	**115**	**115**	65-130	0	25	
75-35-4	1,1-Dichloroethene	212	220	224	**104**	**106**	74-114	2	25	
75-09-2	Methylene Chloride	208	216	221	**104**	**106**	75-112	2	25	
156-60-5	trans-1,2-Dichloroethene	212	235	239	**111**	**113**	76-119	2	25	
75-34-3	1,1-Dichloroethane	212	223	227	**105**	**107**	70-114	2	25	
78-93-3	2-Butanone (MEK)	412	450	462	**109**	**112**	74-121	3	25	
110-54-3	n-Hexane	212	213	218	**100**	**103**	55-130	3	25	
67-66-3	Chloroform	214	216	222	**101**	**104**	71-114	3	25	
107-06-2	1,2-Dichloroethane	208	215	222	**103**	**107**	71-119	4	25	
71-55-6	1,1,1-Trichloroethane	206	213	222	**103**	**108**	73-119	5	25	
71-43-2	Benzene	204	209	217	**102**	**106**	72-113	4	25	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P210719-DLCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
56-23-5	Carbon Tetrachloride	210	213	220	**101**	**105**	67-123	4	25	
78-87-5	1,2-Dichloropropane	206	215	223	**104**	**108**	70-118	4	25	
75-27-4	Bromodichloromethane	210	221	229	**105**	**109**	74-119	4	25	
79-01-6	Trichloroethene	206	211	220	**102**	**107**	74-115	5	25	
108-10-1	4-Methyl-2-pentanone	416	455	469	**109**	**113**	73-129	4	25	
108-88-3	Toluene	206	218	228	**106**	**111**	70-118	5	25	
106-93-4	1,2-Dibromoethane	208	251	265	**121**	**127**	76-128	5	25	
127-18-4	Tetrachloroethene	206	223	237	**108**	**115**	63-130	6	25	
108-90-7	Chlorobenzene	206	223	233	**108**	**113**	70-118	5	25	
100-41-4	Ethylbenzene	206	228	240	**111**	**117**	71-123	5	25	
179601-23-1	m,p-Xylenes	412	444	468	**108**	**114**	67-127	5	25	
95-47-6	o-Xylene	206	228	239	**111**	**116**	69-124	4	25	
79-34-5	1,1,2,2-Tetrachloroethane	206	226	237	**110**	**115**	69-128	4	25	
541-73-1	1,3-Dichlorobenzene	206	247	262	**120**	**127**	67-136	6	25	
106-46-7	1,4-Dichlorobenzene	204	235	248	**115**	**122**	63-134	6	25	
95-50-1	1,2-Dichlorobenzene	206	237	253	**115**	**123**	64-139	7	25	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P210720-DLCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/20/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	210	216	215	**103**	**102**	71-112	1	25	
74-87-3	Chloromethane	206	178	172	**86**	**83**	53-126	4	25	
75-01-4	Vinyl Chloride	208	204	203	**98**	**98**	63-123	0	25	
75-00-3	Chloroethane	204	229	226	**112**	**111**	66-117	0.9	25	
64-17-5	Ethanol	998	954	939	**96**	**94**	57-117	2	25	
67-64-1	Acetone	1,030	1010	1010	**98**	**98**	60-117	0	25	
75-69-4	Trichlorofluoromethane	204	205	207	**100**	**101**	71-114	1	25	
67-63-0	2-Propanol (Isopropyl Alcohol)	408	450	447	**110**	**110**	61-124	0	25	
107-13-1	Acrylonitrile	410	456	456	**111**	**111**	65-130	0	25	
75-35-4	1,1-Dichloroethene	212	216	219	**102**	**103**	74-114	1	25	
75-09-2	Methylene Chloride	208	212	215	**102**	**103**	75-112	1	25	
156-60-5	trans-1,2-Dichloroethene	212	228	230	**108**	**108**	76-119	0	25	
75-34-3	1,1-Dichloroethane	212	216	218	**102**	**103**	70-114	1	25	
78-93-3	2-Butanone (MEK)	412	438	445	**106**	**108**	74-121	2	25	
110-54-3	n-Hexane	212	204	206	**96**	**97**	55-130	1	25	
67-66-3	Chloroform	214	211	215	**99**	**100**	71-114	1	25	
107-06-2	1,2-Dichloroethane	208	210	214	**101**	**103**	71-119	2	25	
71-55-6	1,1,1-Trichloroethane	206	214	215	**104**	**104**	73-119	0	25	
71-43-2	Benzene	204	206	207	**101**	**101**	72-113	0	25	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P210720-DLCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/20/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
56-23-5	Carbon Tetrachloride	210	212	214	**101**	**102**	67-123	1	25	
78-87-5	1,2-Dichloropropane	206	209	210	**101**	**102**	70-118	1	25	
75-27-4	Bromodichloromethane	210	219	220	**104**	**105**	74-119	1	25	
79-01-6	Trichloroethene	206	207	211	**100**	**102**	74-115	2	25	
108-10-1	4-Methyl-2-pentanone	416	440	476	**106**	**114**	73-129	7	25	
108-88-3	Toluene	206	214	219	**104**	**106**	70-118	2	25	
106-93-4	1,2-Dibromoethane	208	247	253	**119**	**122**	76-128	2	25	
127-18-4	Tetrachloroethene	206	224	229	**109**	**111**	63-130	2	25	
108-90-7	Chlorobenzene	206	218	221	**106**	**107**	70-118	0.9	25	
100-41-4	Ethylbenzene	206	225	228	**109**	**111**	71-123	2	25	
179601-23-1	m,p-Xylenes	412	439	443	**107**	**108**	67-127	0.9	25	
95-47-6	o-Xylene	206	225	227	**109**	**110**	69-124	0.9	25	
79-34-5	1,1,2,2-Tetrachloroethane	206	221	224	**107**	**109**	69-128	2	25	
541-73-1	1,3-Dichlorobenzene	206	247	251	**120**	**122**	67-136	2	25	
106-46-7	1,4-Dichlorobenzene	204	234	238	**115**	**117**	63-134	2	25	
95-50-1	1,2-Dichlorobenzene	206	240	242	**117**	**117**	64-139	0	25	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-005DUP

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00668

Initial Pressure (psig): -1.43 Final Pressure (psig): 3.85

Container Dilution Factor: 1.40

Compound	Sample Result µg/m³	Sample Result ppbV	Duplicate Sample Result µg/m³	Duplicate Sample Result ppbV	Average µg/m³	% RPD	RPD Limit	Data Qualifier
Dichlorodifluoromethane (CFC 12)	1.71	0.347	1.61	0.326	1.66	**6**	25	
Chloromethane	0.206	0.100	0.189	0.0916	0.1975	**9**	25	**J**
Vinyl Chloride	ND	ND	ND	ND	-	-	25	
Chloroethane	ND	ND	ND	ND	-	-	25	
Ethanol	6.13	3.25	6.30	3.34	6.215	**3**	25	**J**
Acetone	5.44	2.29	5.61	2.36	5.525	**3**	25	**J**
Trichlorofluoromethane	1.40	0.248	1.41	0.251	1.405	**0.7**	25	
2-Propanol (Isopropyl Alcohol)	0.564	0.230	0.580	0.236	0.572	**3**	25	**J**
Acrylonitrile	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethene	ND	ND	ND	ND	-	-	25	
Methylene Chloride	0.350	0.101	0.375	0.108	0.3625	**7**	25	**J**
trans-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethane	ND	ND	ND	ND	-	-	25	
2-Butanone (MEK)	1.18	0.399	1.42	0.481	1.3	**18**	25	
n-Hexane	ND	ND	ND	ND	-	-	25	
Chloroform	ND	ND	ND	ND	-	-	25	
1,2-Dichloroethane	ND	ND	ND	ND	-	-	25	
1,1,1-Trichloroethane	ND	ND	ND	ND	-	-	25	
Benzene	0.181	0.0566	0.182	0.0570	0.1815	**0.6**	25	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103483
Client Project ID: **KCLF** ALS Sample ID: P2103483-005DUP

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 6/29/21
Analyst: Wida Ang Date Analyzed: 7/19/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00668

Initial Pressure (psig): -1.43 Final Pressure (psig): 3.85

Container Dilution Factor: 1.40

Compound	Sample Result µg/m³	Sample Result ppbV	Duplicate Sample Result µg/m³	Duplicate Sample Result ppbV	Average µg/m³	% RPD	RPD Limit	Data Qualifier
Carbon Tetrachloride	0.413	0.0657	0.431	0.0686	0.422	**4**	25	**J**
1,2-Dichloropropane	ND	ND	ND	ND	-	-	25	
Bromodichloromethane	ND	ND	ND	ND	-	-	25	
Trichloroethene	ND	ND	ND	ND	-	-	25	
4-Methyl-2-pentanone	ND	ND	ND	ND	-	-	25	
Toluene	0.333	0.0885	0.346	0.0918	0.3395	**4**	25	**J**
1,2-Dibromoethane	ND	ND	ND	ND	-	-	25	
Tetrachloroethene	ND	ND	ND	ND	-	-	25	
Chlorobenzene	ND	ND	ND	ND	-	-	25	
Ethylbenzene	ND	ND	ND	ND	-	-	25	
m,p-Xylenes	ND	ND	ND	ND	-	-	25	
o-Xylene	ND	ND	ND	ND	-	-	25	
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	-	-	25	
1,3-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
1,4-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
1,2-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
Chlorodifluoromethane (CFC 22)	ND	ND	ND	ND	-	-	25	**X**
Dichlorofluoromethane (CFC 21)	ND	ND	ND	ND	-	-	25	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

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LABORATORY REPORT

August 11, 2021

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Intertox, Incorporated
600 Stewart Street, Suite 1101
Seattle, WA 98101

RE: KCLF

Dear Lisa:

Enclosed are the results of the samples submitted to our laboratory on July 9, 2021. For your reference, these analyses have been assigned our service request number P2103635.

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

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

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 5:23 pm, Aug 11, 2021

Sue Anderson
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: Intertox, Incorporated
Project: KCLF

Service Request No: P2103635

CASE NARRATIVE

The samples were received intact under chain of custody on July 9, 2021 and were stored in accordance with the analytical method requirements. The first two sulfur samples were received past the recommended holding time. The analysis was performed as soon as possible after receipt by the laboratory. The data is flagged to indicate the holding time exceedance. 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.

Butane and Pentane Analysis

The samples were analyzed per modified EPA Method TO-3 for butane and pentane using a gas chromatograph equipped with a flame ionization detector (FID). This procedure is described in laboratory SOP VOA-TO3C1C6. This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP accreditation.

Carbon Monoxide and Total Gaseous Non-Methane Organics as Hexane Analysis

The samples were also analyzed for carbon monoxide and total gaseous non-methane organics according to modified EPA Method 25C. The analyses included a single sample injection (method modification) analyzed by gas chromatography using flame ionization detection/total combustion analysis. This method is not included on the laboratory's NELAP or DoD-ELAP scope of accreditation.

Ethane and Propane Analysis

The samples were also analyzed per modified EPA Method TO-3 for ethane and propane using a gas chromatograph equipped with a flame ionization detector (FID). This procedure is described in laboratory SOP VOA-TO3C1C6. This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP accreditation.

Sulfur Analysis

The samples were also analyzed for six sulfur compounds per ASTM D 5504-12 using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). All compounds with the exception of hydrogen sulfide and carbonyl sulfide are quantitated against the initial calibration curve for methyl mercaptan. This method is included on the laboratory's NELAP scope of accreditation, however it is not part of the DoD-ELAP accreditation.

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Client: Intertox, Incorporated
Project: KCLF

Service Request No: P2103635

CASE NARRATIVE

Volatile Organic Compound Analysis

The samples were also analyzed for volatile organic compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. This procedure is described in laboratory SOP VOA-TO15. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the NELAP or DoD-ELAP accreditation.

The minimum criterion for chloromethane was not met in the Continuing Calibration Verification (CCV) analyzed on July 22, 2021. In accordance with ALS Environmental standard operating procedures, a Method Reporting Limit (MRL) check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard verified that instrument sensitivity was adequate to detect the analyte at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compound in question and the compound was not detected in the field samples, the data quality has not been significantly affected. This procedure is a quantitative confirmation of non-detect results at or below the MRL. No further corrective action was necessary.

The spike recovery of methyl methacrylate for the Laboratory Control Sample (LCS) analyzed on July 22, 2021 was outside the laboratory generated control criterion. The recovery error equates to a potential high bias. However, the spike recovery of the analyte in question was within the method criteria; therefore, the data quality has not been significantly affected. No corrective action was taken.

The containers were cleaned, prior to sampling, down to the method reporting limit (MRL) reported for this project. For projects requiring DoD QSM 5.3 compliance canisters were cleaned to <1/2 the MRL. Please note, projects which require reporting below the MRL could have results between the MRL and method detection limit (MDL) that are biased high.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

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

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

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Intertox, Incorporated
Project ID: KCLF

Service Request: P2103635

Date Received: 7/9/2021
Time Received: 10:00

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pfl (psig)	TO-3 Modified - C1C6+ Can	TO-3 Modified - MEEPP Can	ASTM D 5504-12 - Sulfur Can	25C Modified - TGNMO+ 1X Can	TO-15 - VOC Cans
S5	P2103635-001	Air	6/23/2021	11:31	AS00091	-2.49	3.86	X	X	X	X	X
S7	P2103635-002	Air	6/23/2021	11:50	AS00726	-2.09	3.90	X	X	X	X	X
S13	P2103635-003	Air	7/7/2021	07:16	AS00503	-2.09	3.96	X	X	X	X	X
S12	P2103635-004	Air	7/7/2021	07:38	AS01308	-1.82	3.50	X	X	X	X	X
S11	P2103635-005	Air	7/7/2021	07:53	AS00854	-1.73	3.60	X	X	X	X	X
S11D	P2103635-006	Air	7/7/2021	08:01	AS01374	-2.04	3.62	X	X	X	X	X
S8	P2103635-007	Air	7/7/2021	08:22	AS01264	-2.01	3.76	X	X	X	X	X
S9	P2103635-008	Air	7/7/2021	08:38	AS01153	-1.46	3.92	X	X	X	X	X
S10	P2103635-009	Air	7/7/2021	08:53	AS01584	-1.13	3.53	X	X	X	X	X
S2	P2103635-010	Air	7/7/2021	09:17	AS01131	-1.96	3.75	X	X	X	X	X
S3	P2103635-011	Air	7/7/2021	09:30	AS01560	-2.34	4.10	X	X	X	X	X
S1	P2103635-012	Air	7/7/2021	09:45	AS01576	-1.87	4.21	X	X	X	X	X
S4	P2103635-013	Air	7/7/2021	10:02	AS01263	-1.60	3.83	X	X	X	X	X
REF1	P2103635-014	Air	7/7/2021	10:54	AS00675	-1.54	3.58	X	X	X	X	X
S7	P2103635-015	Air	7/7/2021	11:36	AS01048	-2.76	4.12	X	X	X	X	X
S6	P2103635-016	Air	7/7/2021	11:50	AS01456	-0.82	3.62	X	X	X	X	X
S5	P2103635-017	Air	7/7/2021	12:03	AS01350	-2.03	3.52	X	X	X	X	X

Air - Chain of Custody Record & Analytical Service Request

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

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard

ALS Project No. P2103635

ALS Contact: Sue Anderson

Company Name & Address (Reporting Information): Intertox, 600 Stewart St, Suite 1101, Seattle, WA 98107

Project Name: KCLF

Project Number:

Project Manager: Lisa Corey

P.O. # / Billing Information: 600 Stewart St, Suite 1101, Seattle, WA 98101

Phone: (206) 443-2115

Fax:

Email Address for Result Reporting: lcorey@intertox.com

Sampler (Print & Sign):

Analysis Method: Please see Sue's email

Comments e.g. Actual Preservative or specific instructions

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
~~REF1~~		~~6/23/21~~	~~10:32~~	~~AS01391~~		~~-29~~	~~-5~~ UMC	
~~S6~~		~~6/23/21~~	~~11:16~~	~~AS01506~~		~~-27.5~~	~~-5~~ UMC	
S5	1	6/23/21	11:31	AS00091		-28.5	-5.5	
S7	2	6/23/21	11:50	AS00726		-29.5	-5	
S13	3	7/7/21	07:16	AS00503		-27.5	-5	
S12	4	7/7/21	07:39	AS01308		-29.0	-5	
S11	5	7/7/21	07:53	AS00084		-25.5	-4	
S11D	6	7/7/21	08:01	AS01374		-32.0	-6	
S8	7	7/7/21	08:22	AS01264		-28.0	-5	
S9	8	7/7/21	08:38	AS01153		-32.0	-5.5	
S10	9	7/7/21	08:53	AS01584		-30.0	-5.0	
S2	10	7/7/21	09:17	AS01131		-30.0	-5.0	
S3	11	7/7/21	09:30	AS01560		-28.5	-5.0	
S1	12	7/7/21	09:45	AS01576		-29.0	-5.0	

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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) X
Tier IV (Data Validation Package) 10% Surcharge ____

EDD required Yes / No
Type: ____ Units: ____

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
[signature]	7/7/21	4:00	[signature]	7-9-21	1000

Cooler / Blank Temperature ____ °C

Air - Chain of Custody Record & Analytical Service Request

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

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard

ALS Project No. PA103435

Company Name & Address (Reporting Information)
Intertox
600 Stewart St, Suite 1101
Seattle, WA ~~98107~~ 98101

Project Name: KCLF

Project Number:

ALS Contact: Sue Anderson

Analysis Method

Project Manager: Lisa Corey

P.O. # / Billing Information
600 Stewart St, Suite 1101
Seattle, WA ~~98107~~ 98101

Phone: (206)443-2115

Fax:

Email Address for Result Reporting: lcorey@intertox.com

Sampler (Print & Sign):

Please see Sue's email

Comments e.g. Actual Preservative or specific instructions

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
S4	13	7/7/21	10:02	AS01263		-29.0	-5.0	
REF1	14	7/7/21	10:54	AS00675		-32.0	-5.0	
S7	15	7/7/21	11:36	AS01049		-27.0	-4.0	
S6	16	7/7/21	11:50	AS01456		-29.0	-4.0	
S5	17	7/7/21	12:03	AS01350		-30.0	-5.0	

Report Tier Levels - please select

Tier I - Results (Default if not specified) _____
Tier II (Results + QC Summaries) _____
Tier III (Results + QC & Calibration Summaries) X
Tier IV (Data Validation Package) 10% Surcharge _____

EDD required Yes / No
Type: _____ Units: _____

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Lisa Corey	7/7/21	4:00		7-9-21	1000
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank Temperature ____ °C

C-266

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ALS Environmental
Sample Acceptance Check Form

Client: Intertox, Incorporated Work order: P2103635
Project: KCLF
Sample(s) received on: 7/9/21 Date opened: 7/9/21 by: DENISE.POSADA

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	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
8	Were **custody seals** on outside of cooler/Box/Container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
9	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?	☐	☐	☒
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**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
P2103635-001.01	6.0 L Silonite Can					
P2103635-002.01	6.0 L Silonite Can					
P2103635-003.01	6.0 L Silonite Can					
P2103635-004.01	6.0 L Silonite Can					
P2103635-005.01	6.0 L Silonite Can					
P2103635-006.01	6.0 L Silonite Can					
P2103635-007.01	6.0 L Silonite Can					
P2103635-008.01	6.0 L Silonite Can					
P2103635-009.01	6.0 L Silonite Can					
P2103635-010.01	6.0 L Silonite Can					
P2103635-011.01	6.0 L Silonite Can					
P2103635-012.01	6.0 L Silonite Can					
P2103635-013.01	6.0 L Silonite Can					
P2103635-014.01	6.0 L Silonite Can					
P2103635-015.01	6.0 L Silonite Can					

Explain any discrepancies: (include lab sample ID numbers):
Canister ID fro sample -005 is listed AS0084 and the correct Can ID is AS00845.

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

ALS Environmental
Sample Acceptance Check Form

Client: Intertox, Incorporated Work order: P2103635
Project: KCLF
Sample(s) received on: 7/9/21 Date opened: 7/9/21 by: DENISE.POSADA

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2103635-016.01	6.0 L Silonite Can					
P2103635-017.01	6.0 L Silonite Can					

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

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-001

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00091

Date Collected: 6/23/21
Date Received: 7/9/21
Date Analyzed: 7/13/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.49 Final Pressure (psig): 3.86

Container Dilution Factor: 1.52

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.76	0.067	
n-Pentane	ND	0.76	0.074	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-002

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00726

Date Collected: 6/23/21
Date Received: 7/9/21
Date Analyzed: 7/13/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.09 Final Pressure (psig): 3.90

Container Dilution Factor: 1.48

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.74	0.065	
n-Pentane	ND	0.74	0.073	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-003

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00503

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/13/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.09 Final Pressure (psig): 3.96

Container Dilution Factor: 1.48

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.74	0.065	
n-Pentane	ND	0.74	0.073	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-004

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01308

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/13/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.82 Final Pressure (psig): 3.50

Container Dilution Factor: 1.41

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.71	0.062	
n-Pentane	ND	0.71	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-005

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00854

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/13/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.73 Final Pressure (psig): 3.60

Container Dilution Factor: 1.41

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.71	0.062	
n-Pentane	ND	0.71	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-006

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/13/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01374

Initial Pressure (psig): -2.04 Final Pressure (psig): 3.62

Container Dilution Factor: 1.45

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.73	0.064	
n-Pentane	ND	0.73	0.071	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-007

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/13/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01264

Initial Pressure (psig): -2.01 Final Pressure (psig): 3.76

Container Dilution Factor: 1.45

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.73	0.064	
n-Pentane	ND	0.73	0.071	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-008

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01153

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/13/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.46 Final Pressure (psig): 3.92

Container Dilution Factor: 1.41

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.71	0.062	
n-Pentane	ND	0.71	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-009

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/13/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01584

Initial Pressure (psig): -1.13 Final Pressure (psig): 3.53

Container Dilution Factor: 1.34

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.67	0.059	
n-Pentane	ND	0.67	0.066	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-010

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/13/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01131

Initial Pressure (psig): -1.96 Final Pressure (psig): 3.75

Container Dilution Factor: 1.45

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.73	0.064	
n-Pentane	ND	0.73	0.071	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-011

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01560

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/14/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.34 Final Pressure (psig): 4.10

Container Dilution Factor: 1.52

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.76	0.067	
n-Pentane	ND	0.76	0.074	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-012

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01576

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/14/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.87 Final Pressure (psig): 4.21

Container Dilution Factor: 1.47

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.74	0.065	
n-Pentane	ND	0.74	0.072	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-013

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/14/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01263

Initial Pressure (psig): -1.60 Final Pressure (psig): 3.83

Container Dilution Factor: 1.41

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.71	0.062	
n-Pentane	ND	0.71	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF1** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-014

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/14/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS00675

Initial Pressure (psig): -1.54 Final Pressure (psig): 3.58

Container Dilution Factor: 1.39

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.70	0.061	
n-Pentane	ND	0.70	0.068	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-015

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/14/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01048

Initial Pressure (psig): -2.76 Final Pressure (psig): 4.12

Container Dilution Factor: 1.58

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.79	0.070	
n-Pentane	ND	0.79	0.077	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-016

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01456

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/14/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -0.82 Final Pressure (psig): 3.62

Container Dilution Factor: 1.32

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.66	0.058	
n-Pentane	ND	0.66	0.065	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-017

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/14/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01350

Initial Pressure (psig): -2.03 Final Pressure (psig): 3.52

Container Dilution Factor: 1.44

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.72	0.063	
n-Pentane	ND	0.72	0.071	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P210713-MB

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890 II/GC8/FID Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 7/13/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.50	0.044	
n-Pentane	ND	0.50	0.049	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P210714-MB

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890 II/GC8/FID Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 7/14/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.50	0.044	
n-Pentane	ND	0.50	0.049	

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

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P210713-DLCS

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/13/21
Volume(s) Analyzed: NA ml(s)

Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
n-Butane	1,000	1,040	1,030	**104**	**103**	91-121	1	6	
n-Pentane	1,000	1,020	1,010	**102**	**101**	89-118	1	6	

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P210714-DLCS

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/14/21
Volume(s) Analyzed: NA ml(s)

Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
n-Butane	1,000	994	1,030	**99**	**103**	91-121	4	6	
n-Pentane	1,000	976	1,010	**98**	**101**	89-118	3	6	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-001

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00091

Date Collected: 6/23/21
Date Received: 7/9/21
Date Analyzed: 7/15/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -2.49 Final Pressure (psig): 3.86

Container Dilution Factor: 1.52

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.6	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.89**	0.26	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-002

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00726

Date Collected: 6/23/21
Date Received: 7/9/21
Date Analyzed: 7/15/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -2.09 Final Pressure (psig): 3.90

Container Dilution Factor: 1.48

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.4	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.41**	0.25	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-003

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00503

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/15/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -2.09 Final Pressure (psig): 3.96

Container Dilution Factor: 1.48

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.4	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.94**	0.25	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-004

Test Code: EPA Method 25C Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/9/21
Analyst: Connor Barrett Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01308

Initial Pressure (psig): -1.82 Final Pressure (psig): 3.50

Container Dilution Factor: 1.41

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.1	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.62**	0.24	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-005

Test Code: EPA Method 25C Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/9/21
Analyst: Connor Barrett Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00854

Initial Pressure (psig): -1.73 Final Pressure (psig): 3.60

Container Dilution Factor: 1.41

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.1	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.92**	0.24	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-006

Test Code: EPA Method 25C Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/9/21
Analyst: Connor Barrett Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01374

Initial Pressure (psig): -2.04 Final Pressure (psig): 3.62

Container Dilution Factor: 1.45

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.3	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.90**	0.25	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-007

Test Code: EPA Method 25C Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/9/21
Analyst: Connor Barrett Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01264

Initial Pressure (psig): -2.01 Final Pressure (psig): 3.76

Container Dilution Factor: 1.45

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.3	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.76**	0.25	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-008

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01153

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/15/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -1.46 Final Pressure (psig): 3.92

Container Dilution Factor: 1.41

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.1	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.56**	0.24	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-009

Test Code: EPA Method 25C Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/9/21
Analyst: Connor Barrett Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01584

Initial Pressure (psig): -1.13 Final Pressure (psig): 3.53

Container Dilution Factor: 1.34

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	6.7	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.37**	0.23	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-010

Test Code: EPA Method 25C Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/9/21
Analyst: Connor Barrett Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01131

Initial Pressure (psig): -1.96 Final Pressure (psig): 3.75

Container Dilution Factor: 1.45

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.3	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.45**	0.25	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-011

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01560

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/15/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -2.34 Final Pressure (psig): 4.10

Container Dilution Factor: 1.52

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.6	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.92**	0.26	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-012

Test Code: EPA Method 25C Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/9/21
Analyst: Connor Barrett Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01576

Initial Pressure (psig): -1.87 Final Pressure (psig): 4.21

Container Dilution Factor: 1.47

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.4	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.54**	0.25	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-013

Test Code: EPA Method 25C Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/9/21
Analyst: Connor Barrett Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01263

Initial Pressure (psig): -1.60 Final Pressure (psig): 3.83

Container Dilution Factor: 1.41

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.1	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.86**	0.24	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF1** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-014

Test Code: EPA Method 25C Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/9/21
Analyst: Connor Barrett Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00675

Initial Pressure (psig): -1.54 Final Pressure (psig): 3.58

Container Dilution Factor: 1.39

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.0	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.61**	0.24	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-015

Test Code: EPA Method 25C Modified Date Collected: 7/7/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/9/21
Analyst: Connor Barrett Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01048

Initial Pressure (psig): -2.76 Final Pressure (psig): 4.12

Container Dilution Factor: 1.58

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.9	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.77**	0.27	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-016

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01456

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/15/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -0.82 Final Pressure (psig): 3.62

Container Dilution Factor: 1.32

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	6.6	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.59**	0.22	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-017

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01350

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/15/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -2.03 Final Pressure (psig): 3.52

Container Dilution Factor: 1.44

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.2	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.70**	0.24	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P210715-MB

Test Code: EPA Method 25C Modified Date Collected: NA
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: NA
Analyst: Connor Barrett Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:

CAS #	Compound	Result ppmV	MRL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	5.0	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.17	

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

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P210715-DLCS

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/15/21
Volume(s) Analyzed: NA ml(s)

Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
Carbon Monoxide	400	441	450	**110**	**113**	90-123	3	11	
Total Gaseous Nonmethane Organics (TGNMO) as Methane	400	425	439	**106**	**110**	86-121	4	13	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-001

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00091

Date Collected: 6/23/21
Date Received: 7/9/21
Date Analyzed: 7/16/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -2.49 Final Pressure (psig): 3.86

Container Dilution Factor: 1.52

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.56	0.079	ND	0.46	0.064	
74-98-6	Propane	ND	0.82	0.12	ND	0.46	0.070	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-002

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00726

Date Collected: 6/23/21
Date Received: 7/9/21
Date Analyzed: 7/16/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -2.09 Final Pressure (psig): 3.90

Container Dilution Factor: 1.48

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.55	0.077	ND	0.44	0.062	
74-98-6	Propane	ND	0.80	0.12	ND	0.44	0.068	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-003

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00503

Initial Pressure (psig): -2.09 Final Pressure (psig): 3.96

Container Dilution Factor: 1.48

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.55	0.077	ND	0.44	0.062	
74-98-6	Propane	ND	0.80	0.12	ND	0.44	0.068	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-004

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01308

Initial Pressure (psig): -1.82 Final Pressure (psig): 3.50

Container Dilution Factor: 1.41

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.52	0.073	ND	0.42	0.059	
74-98-6	Propane	ND	0.76	0.12	ND	0.42	0.065	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-005

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00854

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/16/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -1.73 Final Pressure (psig): 3.60

Container Dilution Factor: 1.41

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.52	0.073	ND	0.42	0.059	
74-98-6	Propane	ND	0.76	0.12	ND	0.42	0.065	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-006

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01374

Initial Pressure (psig): -2.04 Final Pressure (psig): 3.62

Container Dilution Factor: 1.45

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.53	0.075	ND	0.44	0.061	
74-98-6	Propane	ND	0.78	0.12	ND	0.44	0.067	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-007

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01264

Initial Pressure (psig): -2.01 Final Pressure (psig): 3.76

Container Dilution Factor: 1.45

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.53	0.075	ND	0.44	0.061	
74-98-6	Propane	ND	0.78	0.12	ND	0.44	0.067	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-008

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01153

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/16/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -1.46 Final Pressure (psig): 3.92

Container Dilution Factor: 1.41

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.52	0.073	ND	0.42	0.059	
74-98-6	Propane	ND	0.76	0.12	ND	0.42	0.065	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-009

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01584

Initial Pressure (psig): -1.13 Final Pressure (psig): 3.53

Container Dilution Factor: 1.34

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.49	0.070	ND	0.40	0.056	
74-98-6	Propane	ND	0.72	0.11	ND	0.40	0.062	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-010

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01131

Initial Pressure (psig): -1.96 Final Pressure (psig): 3.75

Container Dilution Factor: 1.45

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.53	0.075	ND	0.44	0.061	
74-98-6	Propane	ND	0.78	0.12	ND	0.44	0.067	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-011

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01560

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/21/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -2.34 Final Pressure (psig): 4.10

Container Dilution Factor: 1.52

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.56	0.079	ND	0.46	0.064	
74-98-6	Propane	ND	0.82	0.12	ND	0.46	0.070	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-012

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01576

Initial Pressure (psig): -1.87 Final Pressure (psig): 4.21

Container Dilution Factor: 1.47

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.54	0.076	ND	0.44	0.062	
74-98-6	Propane	ND	0.80	0.12	ND	0.44	0.068	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-013

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01263

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/21/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -1.60 Final Pressure (psig): 3.83

Container Dilution Factor: 1.41

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.52	0.073	ND	0.42	0.059	
74-98-6	Propane	ND	0.76	0.12	ND	0.42	0.065	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF1** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-014

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00675

Initial Pressure (psig): -1.54 Final Pressure (psig): 3.58

Container Dilution Factor: 1.39

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.51	0.072	ND	0.42	0.058	
74-98-6	Propane	ND	0.75	0.11	ND	0.42	0.064	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-015

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01048

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/21/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -2.76 Final Pressure (psig): 4.12

Container Dilution Factor: 1.58

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.58	0.082	ND	0.47	0.066	
74-98-6	Propane	ND	0.85	0.13	ND	0.47	0.073	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-016

Test Code: EPA TO-3 Modified Date Collected: 7/7/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/9/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01456

Initial Pressure (psig): -0.82 Final Pressure (psig): 3.62

Container Dilution Factor: 1.32

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.49	0.069	ND	0.40	0.055	
74-98-6	Propane	ND	0.71	0.11	ND	0.40	0.061	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-017

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01350

Date Collected: 7/7/21
Date Received: 7/9/21
Date Analyzed: 7/21/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -2.03 Final Pressure (psig): 3.52

Container Dilution Factor: 1.44

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.53	0.075	ND	0.43	0.060	
74-98-6	Propane	ND	0.78	0.12	ND	0.43	0.066	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P210716-MB

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.37	0.052	ND	0.30	0.042	
74-98-6	Propane	ND	0.54	0.082	ND	0.30	0.046	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P210721-MB

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.37	0.052	ND	0.30	0.042	
74-98-6	Propane	ND	0.54	0.082	ND	0.30	0.046	

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

ALS ENVIRONMENTAL

DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P210716-DLCS

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-84-0	Ethane	1.51	1.50	1.53	**99**	**101**	70-130	2	15	
74-98-6	Propane	1.50	1.49	1.48	**99**	**99**	70-130	0	15	

ALS ENVIRONMENTAL

DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P210721-DLCS

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-84-0	Ethane	1.51	1.58	1.58	**105**	**105**	70-130	0	15	
74-98-6	Propane	1.50	1.60	1.61	**107**	**107**	70-130	0	15	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-001

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes: **H3**
Container ID: AS00091

Date Collected: 6/23/21
Time Collected: 11:31
Date Received: 7/9/21
Date Analyzed: 7/13/21
Time Analyzed: 08:00
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.49 Final Pressure (psig): 3.86

Container Dilution Factor: 1.52

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	11	3.2	ND	7.6	2.3	
463-58-1	Carbonyl Sulfide	ND	19	7.1	ND	7.6	2.9	
74-93-1	Methyl Mercaptan	ND	15	6.0	ND	7.6	3.0	
75-08-1	Ethyl Mercaptan	ND	19	7.7	ND	7.6	3.0	
75-18-3	Dimethyl Sulfide	ND	19	7.7	ND	7.6	3.0	
75-15-0	Carbon Disulfide	**10**	12	4.7	**3.3**	3.8	1.5	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H3 = Sample was received and analyzed past holding time.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-002

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes: **H3**
Container ID: AS00726

Date Collected: 6/23/21
Time Collected: 11:50
Date Received: 7/9/21
Date Analyzed: 7/13/21
Time Analyzed: 08:35
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.09 Final Pressure (psig): 3.90

Container Dilution Factor: 1.48

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.1	ND	7.4	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.9	ND	7.4	2.8	
74-93-1	Methyl Mercaptan	ND	15	5.8	ND	7.4	3.0	
75-08-1	Ethyl Mercaptan	ND	19	7.5	ND	7.4	3.0	
75-18-3	Dimethyl Sulfide	ND	19	7.5	ND	7.4	3.0	
75-15-0	Carbon Disulfide	ND	12	4.6	ND	3.7	1.5	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H3 = Sample was received and analyzed past holding time.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-003

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00503

Date Collected: 7/7/21
Time Collected: 07:16
Date Received: 7/9/21
Date Analyzed: 7/13/21
Time Analyzed: 08:55
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.09 Final Pressure (psig): 3.96

Container Dilution Factor: 1.48

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.1	ND	7.4	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.9	ND	7.4	2.8	
74-93-1	Methyl Mercaptan	ND	15	5.8	ND	7.4	3.0	
75-08-1	Ethyl Mercaptan	ND	19	7.5	ND	7.4	3.0	
75-18-3	Dimethyl Sulfide	ND	19	7.5	ND	7.4	3.0	
75-15-0	Carbon Disulfide	ND	12	4.6	ND	3.7	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-004

Test Code:	ASTM D 5504-12	Date Collected:	7/7/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	07:38
Analyst:	Gilbert Gutierrez	Date Received:	7/9/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/13/21
Test Notes:		Time Analyzed:	09:18
Container ID:	AS01308	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.82 Final Pressure (psig): 3.50

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.8	2.9	ND	7.1	2.1	
463-58-1	Carbonyl Sulfide	ND	17	6.6	ND	7.1	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.5	ND	7.1	2.8	
75-08-1	Ethyl Mercaptan	ND	18	7.2	ND	7.1	2.8	
75-18-3	Dimethyl Sulfide	ND	18	7.2	ND	7.1	2.8	
75-15-0	Carbon Disulfide	ND	11	4.4	ND	3.5	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-005

Test Code:	ASTM D 5504-12	Date Collected:	7/7/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	07:53
Analyst:	Gilbert Gutierrez	Date Received:	7/9/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/13/21
Test Notes:		Time Analyzed:	09:39
Container ID:	AS00854	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.73 Final Pressure (psig): 3.60

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.8	2.9	ND	7.1	2.1	
463-58-1	Carbonyl Sulfide	ND	17	6.6	ND	7.1	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.5	ND	7.1	2.8	
75-08-1	Ethyl Mercaptan	ND	18	7.2	ND	7.1	2.8	
75-18-3	Dimethyl Sulfide	ND	18	7.2	ND	7.1	2.8	
75-15-0	Carbon Disulfide	ND	11	4.4	ND	3.5	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-006

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01374

Date Collected: 7/7/21
Time Collected: 08:01
Date Received: 7/9/21
Date Analyzed: 7/13/21
Time Analyzed: 10:00
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.04 Final Pressure (psig): 3.62

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.0	ND	7.3	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.8	ND	7.3	2.8	
74-93-1	Methyl Mercaptan	ND	14	5.7	ND	7.3	2.9	
75-08-1	Ethyl Mercaptan	ND	18	7.4	ND	7.3	2.9	
75-18-3	Dimethyl Sulfide	ND	18	7.4	ND	7.3	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.6	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-007

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01264

Date Collected: 7/7/21
Time Collected: 08:22
Date Received: 7/9/21
Date Analyzed: 7/13/21
Time Analyzed: 10:19
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.01 Final Pressure (psig): 3.76

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.0	ND	7.3	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.8	ND	7.3	2.8	
74-93-1	Methyl Mercaptan	ND	14	5.7	ND	7.3	2.9	
75-08-1	Ethyl Mercaptan	ND	18	7.4	ND	7.3	2.9	
75-18-3	Dimethyl Sulfide	ND	18	7.4	ND	7.3	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.6	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-008

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01153

Date Collected: 7/7/21
Time Collected: 08:38
Date Received: 7/9/21
Date Analyzed: 7/13/21
Time Analyzed: 10:41
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.46 Final Pressure (psig): 3.92

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.8	2.9	ND	7.1	2.1	
463-58-1	Carbonyl Sulfide	ND	17	6.6	ND	7.1	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.5	ND	7.1	2.8	
75-08-1	Ethyl Mercaptan	ND	18	7.2	ND	7.1	2.8	
75-18-3	Dimethyl Sulfide	ND	18	7.2	ND	7.1	2.8	
75-15-0	Carbon Disulfide	ND	11	4.4	ND	3.5	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-009

Test Code:	ASTM D 5504-12	Date Collected:	7/7/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	08:53
Analyst:	Gilbert Gutierrez	Date Received:	7/9/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/13/21
Test Notes:		Time Analyzed:	11:00
Container ID:	AS01584	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.13 Final Pressure (psig): 3.53

Container Dilution Factor: 1.34

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.3	2.8	ND	6.7	2.0	
463-58-1	Carbonyl Sulfide	ND	16	6.3	ND	6.7	2.5	
74-93-1	Methyl Mercaptan	ND	13	5.3	ND	6.7	2.7	
75-08-1	Ethyl Mercaptan	ND	17	6.8	ND	6.7	2.7	
75-18-3	Dimethyl Sulfide	ND	17	6.8	ND	6.7	2.7	
75-15-0	Carbon Disulfide	ND	10	4.2	ND	3.4	1.3	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-010

Test Code: ASTM D 5504-12
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01131

Date Collected: 7/7/21
Time Collected: 09:17
Date Received: 7/9/21
Date Analyzed: 7/13/21
Time Analyzed: 07:56
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.96 Final Pressure (psig): 3.75

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.0	ND	7.3	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.8	ND	7.3	2.8	
74-93-1	Methyl Mercaptan	ND	14	5.7	ND	7.3	2.9	
75-08-1	Ethyl Mercaptan	ND	18	7.4	ND	7.3	2.9	
75-18-3	Dimethyl Sulfide	ND	18	7.4	ND	7.3	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.6	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-011

Test Code: ASTM D 5504-12
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01560

Date Collected: 7/7/21
Time Collected: 09:30
Date Received: 7/9/21
Date Analyzed: 7/13/21
Time Analyzed: 08:35
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.34 Final Pressure (psig): 4.10

Container Dilution Factor: 1.52

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	**22**	11	3.2	**15**	7.6	2.3	
463-58-1	Carbonyl Sulfide	ND	19	7.1	ND	7.6	2.9	
74-93-1	Methyl Mercaptan	ND	15	6.0	ND	7.6	3.0	
75-08-1	Ethyl Mercaptan	ND	19	7.7	ND	7.6	3.0	
75-18-3	Dimethyl Sulfide	ND	19	7.7	ND	7.6	3.0	
75-15-0	Carbon Disulfide	ND	12	4.7	ND	3.8	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-012

Test Code:	ASTM D 5504-12	Date Collected:	7/7/21
Instrument ID:	Agilent 6890A/GC13/SCD	Time Collected:	09:45
Analyst:	Gilbert Gutierrez	Date Received:	7/9/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/13/21
Test Notes:		Time Analyzed:	09:19
Container ID:	AS01576	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.87 Final Pressure (psig): 4.21

Container Dilution Factor: 1.47

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.1	ND	7.4	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.9	ND	7.4	2.8	
74-93-1	Methyl Mercaptan	ND	14	5.8	ND	7.4	2.9	
75-08-1	Ethyl Mercaptan	ND	19	7.5	ND	7.4	2.9	
75-18-3	Dimethyl Sulfide	ND	19	7.5	ND	7.4	2.9	
75-15-0	Carbon Disulfide	ND	11	4.6	ND	3.7	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-013

Test Code: ASTM D 5504-12
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01263

Date Collected: 7/7/21
Time Collected: 10:02
Date Received: 7/9/21
Date Analyzed: 7/13/21
Time Analyzed: 09:41
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.60 Final Pressure (psig): 3.83

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.8	2.9	ND	7.1	2.1	
463-58-1	Carbonyl Sulfide	ND	17	6.6	ND	7.1	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.5	ND	7.1	2.8	
75-08-1	Ethyl Mercaptan	ND	18	7.2	ND	7.1	2.8	
75-18-3	Dimethyl Sulfide	ND	18	7.2	ND	7.1	2.8	
75-15-0	Carbon Disulfide	ND	11	4.4	ND	3.5	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF1**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-014

Test Code: ASTM D 5504-12
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00675

Date Collected: 7/7/21
Time Collected: 10:54
Date Received: 7/9/21
Date Analyzed: 7/13/21
Time Analyzed: 10:02
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.54 Final Pressure (psig): 3.58

Container Dilution Factor: 1.39

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.7	2.9	ND	7.0	2.1	
463-58-1	Carbonyl Sulfide	ND	17	6.5	ND	7.0	2.6	
74-93-1	Methyl Mercaptan	ND	14	5.5	ND	7.0	2.8	
75-08-1	Ethyl Mercaptan	ND	18	7.1	ND	7.0	2.8	
75-18-3	Dimethyl Sulfide	ND	18	7.1	ND	7.0	2.8	
75-15-0	Carbon Disulfide	ND	11	4.3	ND	3.5	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-015

Test Code: ASTM D 5504-12
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01048

Date Collected: 7/7/21
Time Collected: 11:36
Date Received: 7/9/21
Date Analyzed: 7/13/21
Time Analyzed: 10:18
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.76 Final Pressure (psig): 4.12

Container Dilution Factor: 1.58

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	**24**	11	3.3	**17**	7.9	2.4	
463-58-1	Carbonyl Sulfide	ND	19	7.4	ND	7.9	3.0	
74-93-1	Methyl Mercaptan	ND	16	6.2	ND	7.9	3.2	
75-08-1	Ethyl Mercaptan	ND	20	8.0	ND	7.9	3.2	
75-18-3	Dimethyl Sulfide	ND	20	8.0	ND	7.9	3.2	
75-15-0	Carbon Disulfide	ND	12	4.9	ND	4.0	1.6	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-016

Test Code:	ASTM D 5504-12	Date Collected:	7/7/21
Instrument ID:	Agilent 6890A/GC13/SCD	Time Collected:	11:50
Analyst:	Gilbert Gutierrez	Date Received:	7/9/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/13/21
Test Notes:		Time Analyzed:	10:42
Container ID:	AS01456	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -0.82 Final Pressure (psig): 3.62

Container Dilution Factor: 1.32

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.2	2.8	ND	6.6	2.0	
463-58-1	Carbonyl Sulfide	ND	16	6.2	ND	6.6	2.5	
74-93-1	Methyl Mercaptan	ND	13	5.2	ND	6.6	2.6	
75-08-1	Ethyl Mercaptan	ND	17	6.7	ND	6.6	2.6	
75-18-3	Dimethyl Sulfide	ND	17	6.7	ND	6.6	2.6	
75-15-0	Carbon Disulfide	ND	10	4.1	ND	3.3	1.3	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P2103635-017

Test Code:	ASTM D 5504-12	Date Collected:	7/7/21
Instrument ID:	Agilent 6890A/GC13/SCD	Time Collected:	12:03
Analyst:	Gilbert Gutierrez	Date Received:	7/9/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/13/21
Test Notes:		Time Analyzed:	11:00
Container ID:	AS01350	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -2.03 Final Pressure (psig): 3.52

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.0	ND	7.2	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.7	ND	7.2	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.7	ND	7.2	2.9	
75-08-1	Ethyl Mercaptan	ND	18	7.3	ND	7.2	2.9	
75-18-3	Dimethyl Sulfide	ND	18	7.3	ND	7.2	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.6	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P210713-MB

Test Code: ASTM D 5504-12
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Time Collected: NA
Date Received: NA
Date Analyzed: 7/13/21
Time Analyzed: 07:22
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	2.1	ND	5.0	1.5	
463-58-1	Carbonyl Sulfide	ND	12	4.7	ND	5.0	1.9	
74-93-1	Methyl Mercaptan	ND	9.8	3.9	ND	5.0	2.0	
75-08-1	Ethyl Mercaptan	ND	13	5.1	ND	5.0	2.0	
75-18-3	Dimethyl Sulfide	ND	13	5.1	ND	5.0	2.0	
75-15-0	Carbon Disulfide	ND	7.8	3.1	ND	2.5	1.0	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank**
Client Project ID: **KCLF**

ALS Project ID: P2103635
ALS Sample ID: P210713-MB

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Time Collected: NA
Date Received: NA
Date Analyzed: 7/13/21
Time Analyzed: 07:22
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	2.1	ND	5.0	1.5	
463-58-1	Carbonyl Sulfide	ND	12	4.7	ND	5.0	1.9	
74-93-1	Methyl Mercaptan	ND	9.8	3.9	ND	5.0	2.0	
75-08-1	Ethyl Mercaptan	ND	13	5.1	ND	5.0	2.0	
75-18-3	Dimethyl Sulfide	ND	13	5.1	ND	5.0	2.0	
75-15-0	Carbon Disulfide	ND	7.8	3.1	ND	2.5	1.0	

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

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P210713-DLCS

Test Code: ASTM D 5504-12 Date Collected: NA
Instrument ID: Agilent 6890A/GC13/SCD Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 7/13/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ppbV	Result LCS ppbV	Result DLCS ppbV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
7783-06-4	Hydrogen Sulfide	989	958	964	**97**	**97**	72-122	0	18	
463-58-1	Carbonyl Sulfide	1,050	1,050	1,040	**100**	**99**	72-121	1	17	
74-93-1	Methyl Mercaptan	1,050	1,140	1,130	**109**	**108**	74-127	0.9	18	

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P210713-DLCS

Test Code: ASTM D 5504-12 Date Collected: NA
Instrument ID: Agilent 7890A/GC22/SCD Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 7/13/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ppbV	Result LCS ppbV	Result DLCS ppbV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
7783-06-4	Hydrogen Sulfide	989	1,050	988	**106**	**100**	72-122	6	18	
463-58-1	Carbonyl Sulfide	1,050	1,100	1,040	**105**	**99**	72-121	6	17	
74-93-1	Methyl Mercaptan	1,050	1,150	1,070	**110**	**102**	74-127	8	18	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-001

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00091

Initial Pressure (psig): -2.49 Final Pressure (psig): 3.86

Container Dilution Factor: 1.52

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.4**	0.79	0.13	**0.29**	0.16	0.027	
74-87-3	Chloromethane	**0.14**	0.79	0.13	**0.069**	0.38	0.063	**J, V**
75-01-4	Vinyl Chloride	ND	0.81	0.087	ND	0.32	0.034	
75-00-3	Chloroethane	ND	0.79	0.10	ND	0.30	0.038	
64-17-5	Ethanol	**3.7**	8.1	0.56	**2.0**	4.3	0.30	**J**
67-64-1	Acetone	**8.2**	7.9	1.8	**3.4**	3.3	0.77	
75-69-4	Trichlorofluoromethane	**1.2**	0.78	0.12	**0.22**	0.14	0.022	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.42**	1.5	0.33	**0.17**	0.62	0.14	**J**
107-13-1	Acrylonitrile	ND	1.5	0.17	ND	0.70	0.077	
75-35-4	1,1-Dichloroethene	ND	0.79	0.11	ND	0.20	0.028	
75-09-2	Methylene Chloride	**0.37**	0.79	0.23	**0.11**	0.23	0.066	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.81	0.11	ND	0.20	0.028	
75-34-3	1,1-Dichloroethane	ND	0.82	0.12	ND	0.20	0.029	
78-93-3	2-Butanone (MEK)	**0.98**	1.5	0.17	**0.33**	0.52	0.057	**J**
110-54-3	n-Hexane	ND	0.79	0.17	ND	0.22	0.047	
67-66-3	Chloroform	ND	0.81	0.11	ND	0.17	0.022	
107-06-2	1,2-Dichloroethane	ND	0.79	0.090	ND	0.20	0.022	
71-55-6	1,1,1-Trichloroethane	ND	0.79	0.10	ND	0.14	0.018	
71-43-2	Benzene	**0.24**	0.79	0.12	**0.076**	0.25	0.037	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-001

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00091

Initial Pressure (psig): -2.49 Final Pressure (psig): 3.86

Container Dilution Factor: 1.52

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.42**	0.78	0.11	**0.066**	0.12	0.018	**J**
78-87-5	1,2-Dichloropropane	ND	0.79	0.10	ND	0.17	0.022	
75-27-4	Bromodichloromethane	ND	0.79	0.12	ND	0.12	0.017	
79-01-6	Trichloroethene	ND	0.78	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.37	0.027	
108-88-3	Toluene	**1.2**	0.79	0.099	**0.31**	0.21	0.026	
106-93-4	1,2-Dibromoethane	ND	0.79	0.094	ND	0.10	0.012	
127-18-4	Tetrachloroethene	ND	0.79	0.10	ND	0.12	0.015	
108-90-7	Chlorobenzene	ND	0.79	0.11	ND	0.17	0.023	
100-41-4	Ethylbenzene	**0.12**	0.79	0.11	**0.027**	0.18	0.026	**J**
179601-23-1	m,p-Xylenes	**0.44**	1.5	0.21	**0.10**	0.35	0.049	**J**
95-47-6	o-Xylene	**0.17**	0.81	0.12	**0.040**	0.19	0.027	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.81	0.11	ND	0.12	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.81	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.79	0.12	ND	0.13	0.021	
95-50-1	1,2-Dichlorobenzene	ND	0.81	0.12	ND	0.13	0.020	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.76	0.38	ND	0.21	0.11	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.76	0.36	ND	0.18	0.087	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-002

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00726

Initial Pressure (psig): -2.09 Final Pressure (psig): 3.90

Container Dilution Factor: 1.48

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.4**	0.77	0.13	**0.27**	0.16	0.026	
74-87-3	Chloromethane	ND	0.77	0.13	ND	0.37	0.062	**V**
75-01-4	Vinyl Chloride	ND	0.78	0.084	ND	0.31	0.033	
75-00-3	Chloroethane	ND	0.77	0.098	ND	0.29	0.037	
64-17-5	Ethanol	**4.7**	7.8	0.55	**2.5**	4.2	0.29	**J**
67-64-1	Acetone	**5.9**	7.7	1.8	**2.5**	3.2	0.75	**J**
75-69-4	Trichlorofluoromethane	**1.1**	0.75	0.12	**0.20**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.5	0.33	ND	0.60	0.13	
107-13-1	Acrylonitrile	ND	1.5	0.16	ND	0.68	0.075	
75-35-4	1,1-Dichloroethene	ND	0.77	0.11	ND	0.19	0.028	
75-09-2	Methylene Chloride	**0.39**	0.77	0.22	**0.11**	0.22	0.064	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.78	0.11	ND	0.20	0.028	
75-34-3	1,1-Dichloroethane	ND	0.80	0.12	ND	0.20	0.029	
78-93-3	2-Butanone (MEK)	**0.80**	1.5	0.16	**0.27**	0.50	0.055	**J**
110-54-3	n-Hexane	ND	0.77	0.16	ND	0.22	0.046	
67-66-3	Chloroform	ND	0.78	0.11	ND	0.16	0.022	
107-06-2	1,2-Dichloroethane	ND	0.77	0.087	ND	0.19	0.022	
71-55-6	1,1,1-Trichloroethane	ND	0.77	0.098	ND	0.14	0.018	
71-43-2	Benzene	**0.72**	0.77	0.11	**0.23**	0.24	0.036	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-002

Test Code: EPA TO-15 Modified Date Collected: 6/23/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00726

Initial Pressure (psig): -2.09 Final Pressure (psig): 3.90

Container Dilution Factor: 1.48

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.37**	0.75	0.11	**0.060**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.77	0.098	ND	0.17	0.021	
75-27-4	Bromodichloromethane	ND	0.77	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.75	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.36	0.026	
108-88-3	Toluene	**0.82**	0.77	0.096	**0.22**	0.20	0.026	
106-93-4	1,2-Dibromoethane	ND	0.77	0.092	ND	0.10	0.012	
127-18-4	Tetrachloroethene	ND	0.77	0.10	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.77	0.11	ND	0.17	0.023	
100-41-4	Ethylbenzene	ND	0.77	0.11	ND	0.18	0.026	
179601-23-1	m,p-Xylenes	**0.37**	1.5	0.21	**0.086**	0.34	0.048	**J**
95-47-6	o-Xylene	**0.15**	0.78	0.11	**0.034**	0.18	0.026	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.78	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.78	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.77	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.78	0.12	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.74	0.37	ND	0.21	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.74	0.36	ND	0.18	0.084	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-003

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00503

Initial Pressure (psig): -2.09 Final Pressure (psig): 3.96

Container Dilution Factor: 1.48

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.6**	0.77	0.13	**0.33**	0.16	0.026	
74-87-3	Chloromethane	**0.16**	0.77	0.13	**0.080**	0.37	0.062	**J, V**
75-01-4	Vinyl Chloride	ND	0.78	0.084	ND	0.31	0.033	
75-00-3	Chloroethane	ND	0.77	0.098	ND	0.29	0.037	
64-17-5	Ethanol	**320**	7.8	0.55	**170**	4.2	0.29	
67-64-1	Acetone	**19**	7.7	1.8	**8.0**	3.2	0.75	
75-69-4	Trichlorofluoromethane	**2.6**	0.75	0.12	**0.47**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**12**	1.5	0.33	**4.7**	0.60	0.13	
107-13-1	Acrylonitrile	ND	1.5	0.16	ND	0.68	0.075	
75-35-4	1,1-Dichloroethene	ND	0.77	0.11	ND	0.19	0.028	
75-09-2	Methylene Chloride	**0.92**	0.77	0.22	**0.26**	0.22	0.064	
156-60-5	trans-1,2-Dichloroethene	ND	0.78	0.11	ND	0.20	0.028	
75-34-3	1,1-Dichloroethane	ND	0.80	0.12	ND	0.20	0.029	
78-93-3	2-Butanone (MEK)	**7.1**	1.5	0.16	**2.4**	0.50	0.055	
110-54-3	n-Hexane	**1.0**	0.77	0.16	**0.29**	0.22	0.046	
67-66-3	Chloroform	**0.12**	0.78	0.11	**0.024**	0.16	0.022	**J**
107-06-2	1,2-Dichloroethane	**0.15**	0.77	0.087	**0.038**	0.19	0.022	**J**
71-55-6	1,1,1-Trichloroethane	**2.0**	0.77	0.098	**0.37**	0.14	0.018	
71-43-2	Benzene	**0.15**	0.77	0.11	**0.046**	0.24	0.036	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

Client: **Intertox, Incorporated**
Client Sample ID: **S13** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-003

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00503

Initial Pressure (psig): -2.09 Final Pressure (psig): 3.96

Container Dilution Factor: 1.48

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.43**	0.75	0.11	**0.068**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.77	0.098	ND	0.17	0.021	
75-27-4	Bromodichloromethane	ND	0.77	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.75	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	**0.32**	1.5	0.11	**0.078**	0.36	0.026	**J**
108-88-3	Toluene	**5.6**	0.77	0.096	**1.5**	0.20	0.026	
106-93-4	1,2-Dibromoethane	ND	0.77	0.092	ND	0.10	0.012	
127-18-4	Tetrachloroethene	**0.56**	0.77	0.10	**0.082**	0.11	0.015	**J**
108-90-7	Chlorobenzene	ND	0.77	0.11	ND	0.17	0.023	
100-41-4	Ethylbenzene	**1.1**	0.77	0.11	**0.26**	0.18	0.026	
179601-23-1	m,p-Xylenes	**3.3**	1.5	0.21	**0.76**	0.34	0.048	
95-47-6	o-Xylene	**0.96**	0.78	0.11	**0.22**	0.18	0.026	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.78	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.78	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.77	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.78	0.12	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.74	0.37	ND	0.21	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.74	0.36	ND	0.18	0.084	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-004

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01308

Initial Pressure (psig): -1.82 Final Pressure (psig): 3.50

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.6**	0.73	0.12	**0.32**	0.15	0.025	
74-87-3	Chloromethane	**0.15**	0.73	0.12	**0.072**	0.36	0.059	**J, V**
75-01-4	Vinyl Chloride	ND	0.75	0.080	ND	0.29	0.031	
75-00-3	Chloroethane	ND	0.73	0.093	ND	0.28	0.035	
64-17-5	Ethanol	**19**	7.5	0.52	**10**	4.0	0.28	
67-64-1	Acetone	**9.8**	7.3	1.7	**4.1**	3.1	0.71	
75-69-4	Trichlorofluoromethane	**1.3**	0.72	0.11	**0.24**	0.13	0.020	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.80**	1.4	0.31	**0.33**	0.57	0.13	**J**
107-13-1	Acrylonitrile	ND	1.4	0.16	ND	0.65	0.071	
75-35-4	1,1-Dichloroethene	ND	0.73	0.10	ND	0.19	0.026	
75-09-2	Methylene Chloride	**0.33**	0.73	0.21	**0.096**	0.21	0.061	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.75	0.10	ND	0.19	0.026	
75-34-3	1,1-Dichloroethane	ND	0.76	0.11	ND	0.19	0.027	
78-93-3	2-Butanone (MEK)	**2.7**	1.4	0.16	**0.93**	0.48	0.053	
110-54-3	n-Hexane	ND	0.73	0.16	ND	0.21	0.044	
67-66-3	Chloroform	**0.10**	0.75	0.10	**0.021**	0.15	0.021	**J**
107-06-2	1,2-Dichloroethane	ND	0.73	0.083	ND	0.18	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.73	0.093	ND	0.13	0.017	
71-43-2	Benzene	**0.11**	0.73	0.11	**0.034**	0.23	0.034	**J**

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V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-004

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01308

Initial Pressure (psig): -1.82 Final Pressure (psig): 3.50

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.45**	0.72	0.10	**0.072**	0.11	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.73	0.093	ND	0.16	0.020	
75-27-4	Bromodichloromethane	ND	0.73	0.11	ND	0.11	0.016	
79-01-6	Trichloroethene	ND	0.72	0.10	ND	0.13	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.34	0.025	
108-88-3	Toluene	**0.48**	0.73	0.092	**0.13**	0.19	0.024	**J**
106-93-4	1,2-Dibromoethane	ND	0.73	0.087	ND	0.095	0.011	
127-18-4	Tetrachloroethene	ND	0.73	0.097	ND	0.11	0.014	
108-90-7	Chlorobenzene	ND	0.73	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.73	0.11	ND	0.17	0.024	
179601-23-1	m,p-Xylenes	ND	1.4	0.20	ND	0.32	0.045	
95-47-6	o-Xylene	ND	0.75	0.11	ND	0.17	0.025	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.75	0.10	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.75	0.11	ND	0.12	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.73	0.12	ND	0.12	0.019	
95-50-1	1,2-Dichlorobenzene	ND	0.75	0.11	ND	0.12	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.71	0.35	ND	0.20	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.71	0.34	ND	0.17	0.080	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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X = See case narrative

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-005

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00854

Initial Pressure (psig): -1.73 Final Pressure (psig): 3.60

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.5**	0.73	0.12	**0.30**	0.15	0.025	
74-87-3	Chloromethane	**0.14**	0.73	0.12	**0.069**	0.36	0.059	**J, V**
75-01-4	Vinyl Chloride	ND	0.75	0.080	ND	0.29	0.031	
75-00-3	Chloroethane	ND	0.73	0.093	ND	0.28	0.035	
64-17-5	Ethanol	**19**	7.5	0.52	**10**	4.0	0.28	
67-64-1	Acetone	**13**	7.3	1.7	**5.4**	3.1	0.71	
75-69-4	Trichlorofluoromethane	**1.3**	0.72	0.11	**0.23**	0.13	0.020	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.94**	1.4	0.31	**0.38**	0.57	0.13	**J**
107-13-1	Acrylonitrile	ND	1.4	0.16	ND	0.65	0.071	
75-35-4	1,1-Dichloroethene	ND	0.73	0.10	ND	0.19	0.026	
75-09-2	Methylene Chloride	**0.32**	0.73	0.21	**0.091**	0.21	0.061	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.75	0.10	ND	0.19	0.026	
75-34-3	1,1-Dichloroethane	ND	0.76	0.11	ND	0.19	0.027	
78-93-3	2-Butanone (MEK)	**3.8**	1.4	0.16	**1.3**	0.48	0.053	
110-54-3	n-Hexane	ND	0.73	0.16	ND	0.21	0.044	
67-66-3	Chloroform	ND	0.75	0.10	ND	0.15	0.021	
107-06-2	1,2-Dichloroethane	ND	0.73	0.083	ND	0.18	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.73	0.093	ND	0.13	0.017	
71-43-2	Benzene	ND	0.73	0.11	ND	0.23	0.034	

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V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-005

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00854

Initial Pressure (psig): -1.73 Final Pressure (psig): 3.60

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.45**	0.72	0.10	**0.071**	0.11	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.73	0.093	ND	0.16	0.020	
75-27-4	Bromodichloromethane	ND	0.73	0.11	ND	0.11	0.016	
79-01-6	Trichloroethene	ND	0.72	0.10	ND	0.13	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.34	0.025	
108-88-3	Toluene	**0.37**	0.73	0.092	**0.098**	0.19	0.024	**J**
106-93-4	1,2-Dibromoethane	ND	0.73	0.087	ND	0.095	0.011	
127-18-4	Tetrachloroethene	ND	0.73	0.097	ND	0.11	0.014	
108-90-7	Chlorobenzene	ND	0.73	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.73	0.11	ND	0.17	0.024	
179601-23-1	m,p-Xylenes	ND	1.4	0.20	ND	0.32	0.045	
95-47-6	o-Xylene	ND	0.75	0.11	ND	0.17	0.025	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.75	0.10	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.75	0.11	ND	0.12	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.73	0.12	ND	0.12	0.019	
95-50-1	1,2-Dichlorobenzene	ND	0.75	0.11	ND	0.12	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.71	0.35	ND	0.20	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.71	0.34	ND	0.17	0.080	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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X = See case narrative

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-006

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01374

Initial Pressure (psig): -2.04 Final Pressure (psig): 3.62

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.6**	0.75	0.13	**0.32**	0.15	0.026	
74-87-3	Chloromethane	**0.17**	0.75	0.12	**0.081**	0.37	0.060	**J, V**
75-01-4	Vinyl Chloride	ND	0.77	0.083	ND	0.30	0.032	
75-00-3	Chloroethane	ND	0.75	0.096	ND	0.29	0.036	
64-17-5	Ethanol	**16**	7.7	0.54	**8.4**	4.1	0.28	
67-64-1	Acetone	**17**	7.5	1.7	**7.3**	3.2	0.73	
75-69-4	Trichlorofluoromethane	**1.2**	0.74	0.12	**0.22**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**3.7**	1.5	0.32	**1.5**	0.59	0.13	
107-13-1	Acrylonitrile	ND	1.5	0.16	ND	0.67	0.074	
75-35-4	1,1-Dichloroethene	ND	0.75	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.31**	0.75	0.22	**0.089**	0.22	0.063	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.77	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.78	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	**12**	1.5	0.16	**4.0**	0.49	0.054	
110-54-3	n-Hexane	ND	0.75	0.16	ND	0.21	0.045	
67-66-3	Chloroform	ND	0.77	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.75	0.086	ND	0.19	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.75	0.096	ND	0.14	0.018	
71-43-2	Benzene	ND	0.75	0.11	ND	0.24	0.035	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

Client: **Intertox, Incorporated**
Client Sample ID: **S11D** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-006

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01374

Initial Pressure (psig): -2.04 Final Pressure (psig): 3.62

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.42**	0.74	0.11	**0.067**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.75	0.096	ND	0.16	0.021	
75-27-4	Bromodichloromethane	ND	0.75	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.74	0.10	ND	0.14	0.019	
108-10-1	4-Methyl-2-pentanone	**0.18**	1.5	0.11	**0.044**	0.35	0.026	**J**
108-88-3	Toluene	**0.77**	0.75	0.094	**0.20**	0.20	0.025	
106-93-4	1,2-Dibromoethane	ND	0.75	0.090	ND	0.098	0.012	
127-18-4	Tetrachloroethene	ND	0.75	0.10	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.75	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.75	0.11	ND	0.17	0.025	
179601-23-1	m,p-Xylenes	ND	1.5	0.20	ND	0.33	0.047	
95-47-6	o-Xylene	ND	0.77	0.11	ND	0.18	0.026	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.77	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.77	0.12	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.75	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.77	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.73	0.36	ND	0.21	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.73	0.35	ND	0.17	0.083	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-007

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01264

Initial Pressure (psig): -2.01 Final Pressure (psig): 3.76

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.6**	0.75	0.13	**0.32**	0.15	0.026	
74-87-3	Chloromethane	**0.15**	0.75	0.12	**0.071**	0.37	0.060	**J, V**
75-01-4	Vinyl Chloride	ND	0.77	0.083	ND	0.30	0.032	
75-00-3	Chloroethane	ND	0.75	0.096	ND	0.29	0.036	
64-17-5	Ethanol	**54**	7.7	0.54	**29**	4.1	0.28	
67-64-1	Acetone	**22**	7.5	1.7	**9.1**	3.2	0.73	
75-69-4	Trichlorofluoromethane	**1.3**	0.74	0.12	**0.23**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**4.0**	1.5	0.32	**1.6**	0.59	0.13	
107-13-1	Acrylonitrile	ND	1.5	0.16	ND	0.67	0.074	
75-35-4	1,1-Dichloroethene	ND	0.75	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.31**	0.75	0.22	**0.089**	0.22	0.063	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.77	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.78	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	**6.4**	1.5	0.16	**2.2**	0.49	0.054	
110-54-3	n-Hexane	ND	0.75	0.16	ND	0.21	0.045	
67-66-3	Chloroform	ND	0.77	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.75	0.086	ND	0.19	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.75	0.096	ND	0.14	0.018	
71-43-2	Benzene	**0.13**	0.75	0.11	**0.041**	0.24	0.035	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-007

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01264

Initial Pressure (psig): -2.01 Final Pressure (psig): 3.76

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.45**	0.74	0.11	**0.071**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.75	0.096	ND	0.16	0.021	
75-27-4	Bromodichloromethane	ND	0.75	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.74	0.10	ND	0.14	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.35	0.026	
108-88-3	Toluene	**0.49**	0.75	0.094	**0.13**	0.20	0.025	**J**
106-93-4	1,2-Dibromoethane	ND	0.75	0.090	ND	0.098	0.012	
127-18-4	Tetrachloroethene	ND	0.75	0.10	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.75	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.75	0.11	ND	0.17	0.025	
179601-23-1	m,p-Xylenes	ND	1.5	0.20	ND	0.33	0.047	
95-47-6	o-Xylene	ND	0.77	0.11	ND	0.18	0.026	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.77	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.77	0.12	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.75	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.77	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.73	0.36	ND	0.21	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.73	0.35	ND	0.17	0.083	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-008

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01153

Initial Pressure (psig): -1.46 Final Pressure (psig): 3.92

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.5**	0.73	0.12	**0.31**	0.15	0.025	
74-87-3	Chloromethane	**0.14**	0.73	0.12	**0.068**	0.36	0.059	**J, V**
75-01-4	Vinyl Chloride	ND	0.75	0.080	ND	0.29	0.031	
75-00-3	Chloroethane	ND	0.73	0.093	ND	0.28	0.035	
64-17-5	Ethanol	**2.9**	7.5	0.52	**1.5**	4.0	0.28	**J**
67-64-1	Acetone	**3.7**	7.3	1.7	**1.6**	3.1	0.71	**J**
75-69-4	Trichlorofluoromethane	**1.3**	0.72	0.11	**0.23**	0.13	0.020	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.4	0.31	ND	0.57	0.13	
107-13-1	Acrylonitrile	ND	1.4	0.16	ND	0.65	0.071	
75-35-4	1,1-Dichloroethene	ND	0.73	0.10	ND	0.19	0.026	
75-09-2	Methylene Chloride	**0.31**	0.73	0.21	**0.089**	0.21	0.061	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.75	0.10	ND	0.19	0.026	
75-34-3	1,1-Dichloroethane	ND	0.76	0.11	ND	0.19	0.027	
78-93-3	2-Butanone (MEK)	ND	1.4	0.16	ND	0.48	0.053	
110-54-3	n-Hexane	ND	0.73	0.16	ND	0.21	0.044	
67-66-3	Chloroform	ND	0.75	0.10	ND	0.15	0.021	
107-06-2	1,2-Dichloroethane	ND	0.73	0.083	ND	0.18	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.73	0.093	ND	0.13	0.017	
71-43-2	Benzene	ND	0.73	0.11	ND	0.23	0.034	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

Client: **Intertox, Incorporated**
Client Sample ID: **S9** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-008

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01153

Initial Pressure (psig): -1.46 Final Pressure (psig): 3.92

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.45**	0.72	0.10	**0.071**	0.11	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.73	0.093	ND	0.16	0.020	
75-27-4	Bromodichloromethane	ND	0.73	0.11	ND	0.11	0.016	
79-01-6	Trichloroethene	ND	0.72	0.10	ND	0.13	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.34	0.025	
108-88-3	Toluene	**0.28**	0.73	0.092	**0.074**	0.19	0.024	**J**
106-93-4	1,2-Dibromoethane	ND	0.73	0.087	ND	0.095	0.011	
127-18-4	Tetrachloroethene	ND	0.73	0.097	ND	0.11	0.014	
108-90-7	Chlorobenzene	ND	0.73	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.73	0.11	ND	0.17	0.024	
179601-23-1	m,p-Xylenes	ND	1.4	0.20	ND	0.32	0.045	
95-47-6	o-Xylene	ND	0.75	0.11	ND	0.17	0.025	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.75	0.10	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.75	0.11	ND	0.12	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.73	0.12	ND	0.12	0.019	
95-50-1	1,2-Dichlorobenzene	ND	0.75	0.11	ND	0.12	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.71	0.35	ND	0.20	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.71	0.34	ND	0.17	0.080	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-009

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01584

Initial Pressure (psig): -1.13 Final Pressure (psig): 3.53

Container Dilution Factor: 1.34

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.7**	0.70	0.12	**0.33**	0.14	0.024	
74-87-3	Chloromethane	**0.15**	0.70	0.12	**0.073**	0.34	0.056	**J, V**
75-01-4	Vinyl Chloride	ND	0.71	0.076	ND	0.28	0.030	
75-00-3	Chloroethane	ND	0.70	0.088	ND	0.26	0.034	
64-17-5	Ethanol	**8.4**	7.1	0.50	**4.4**	3.8	0.26	
67-64-1	Acetone	**4.8**	7.0	1.6	**2.0**	2.9	0.68	**J**
75-69-4	Trichlorofluoromethane	**1.2**	0.68	0.11	**0.22**	0.12	0.019	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.56**	1.3	0.29	**0.23**	0.55	0.12	**J**
107-13-1	Acrylonitrile	ND	1.3	0.15	ND	0.62	0.068	
75-35-4	1,1-Dichloroethene	ND	0.70	0.099	ND	0.18	0.025	
75-09-2	Methylene Chloride	**0.32**	0.70	0.20	**0.091**	0.20	0.058	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.71	0.099	ND	0.18	0.025	
75-34-3	1,1-Dichloroethane	ND	0.72	0.10	ND	0.18	0.026	
78-93-3	2-Butanone (MEK)	**0.29**	1.3	0.15	**0.097**	0.45	0.050	**J**
110-54-3	n-Hexane	**0.28**	0.70	0.15	**0.079**	0.20	0.042	**J**
67-66-3	Chloroform	**0.10**	0.71	0.095	**0.021**	0.15	0.019	**J**
107-06-2	1,2-Dichloroethane	ND	0.70	0.079	ND	0.17	0.020	
71-55-6	1,1,1-Trichloroethane	ND	0.70	0.088	ND	0.13	0.016	
71-43-2	Benzene	**0.32**	0.70	0.10	**0.10**	0.22	0.032	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-009

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01584

Initial Pressure (psig): -1.13 Final Pressure (psig): 3.53

Container Dilution Factor: 1.34

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.44**	0.68	0.099	**0.069**	0.11	0.016	**J**
78-87-5	1,2-Dichloropropane	ND	0.70	0.088	ND	0.15	0.019	
75-27-4	Bromodichloromethane	ND	0.70	0.10	ND	0.10	0.015	
79-01-6	Trichloroethene	ND	0.68	0.096	ND	0.13	0.018	
108-10-1	4-Methyl-2-pentanone	ND	1.3	0.098	ND	0.33	0.024	
108-88-3	Toluene	**1.6**	0.70	0.087	**0.41**	0.18	0.023	
106-93-4	1,2-Dibromoethane	ND	0.70	0.083	ND	0.091	0.011	
127-18-4	Tetrachloroethene	**0.20**	0.70	0.092	**0.029**	0.10	0.014	**J**
108-90-7	Chlorobenzene	ND	0.70	0.095	ND	0.15	0.021	
100-41-4	Ethylbenzene	**0.24**	0.70	0.10	**0.054**	0.16	0.023	**J**
179601-23-1	m,p-Xylenes	**0.81**	1.3	0.19	**0.19**	0.31	0.043	**J**
95-47-6	o-Xylene	**0.31**	0.71	0.10	**0.071**	0.16	0.024	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.71	0.099	ND	0.10	0.014	
541-73-1	1,3-Dichlorobenzene	ND	0.71	0.11	ND	0.12	0.018	
106-46-7	1,4-Dichlorobenzene	ND	0.70	0.11	ND	0.12	0.018	
95-50-1	1,2-Dichlorobenzene	ND	0.71	0.11	ND	0.12	0.018	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.67	0.34	ND	0.19	0.095	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.67	0.32	ND	0.16	0.076	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-010

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01131

Initial Pressure (psig): -1.96 Final Pressure (psig): 3.75

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.7**	0.75	0.13	**0.34**	0.15	0.026	
74-87-3	Chloromethane	**0.16**	0.75	0.12	**0.077**	0.37	0.060	**J, V**
75-01-4	Vinyl Chloride	ND	0.77	0.083	ND	0.30	0.032	
75-00-3	Chloroethane	ND	0.75	0.096	ND	0.29	0.036	
64-17-5	Ethanol	**8.1**	7.7	0.54	**4.3**	4.1	0.28	
67-64-1	Acetone	**5.5**	7.5	1.7	**2.3**	3.2	0.73	**J**
75-69-4	Trichlorofluoromethane	**1.3**	0.74	0.12	**0.23**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.66**	1.5	0.32	**0.27**	0.59	0.13	**J**
107-13-1	Acrylonitrile	ND	1.5	0.16	ND	0.67	0.074	
75-35-4	1,1-Dichloroethene	ND	0.75	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.32**	0.75	0.22	**0.092**	0.22	0.063	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.77	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.78	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	ND	1.5	0.16	ND	0.49	0.054	
110-54-3	n-Hexane	ND	0.75	0.16	ND	0.21	0.045	
67-66-3	Chloroform	ND	0.77	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.75	0.086	ND	0.19	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.75	0.096	ND	0.14	0.018	
71-43-2	Benzene	ND	0.75	0.11	ND	0.24	0.035	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-010

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01131

Initial Pressure (psig): -1.96 Final Pressure (psig): 3.75

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.45**	0.74	0.11	**0.072**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.75	0.096	ND	0.16	0.021	
75-27-4	Bromodichloromethane	ND	0.75	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.74	0.10	ND	0.14	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.35	0.026	
108-88-3	Toluene	**0.39**	0.75	0.094	**0.10**	0.20	0.025	**J**
106-93-4	1,2-Dibromoethane	ND	0.75	0.090	ND	0.098	0.012	
127-18-4	Tetrachloroethene	ND	0.75	0.10	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.75	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.75	0.11	ND	0.17	0.025	
179601-23-1	m,p-Xylenes	ND	1.5	0.20	ND	0.33	0.047	
95-47-6	o-Xylene	ND	0.77	0.11	ND	0.18	0.026	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.77	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.77	0.12	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.75	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.77	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.73	0.36	ND	0.21	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.73	0.35	ND	0.17	0.083	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-011

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01560

Initial Pressure (psig): -2.34 Final Pressure (psig): 4.10

Container Dilution Factor: 1.52

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.7**	0.79	0.13	**0.35**	0.16	0.027	
74-87-3	Chloromethane	**0.15**	0.79	0.13	**0.072**	0.38	0.063	**J, V**
75-01-4	Vinyl Chloride	ND	0.81	0.087	ND	0.32	0.034	
75-00-3	Chloroethane	ND	0.79	0.10	ND	0.30	0.038	
64-17-5	Ethanol	**6.4**	8.1	0.56	**3.4**	4.3	0.30	**J**
67-64-1	Acetone	**5.9**	7.9	1.8	**2.5**	3.3	0.77	**J**
75-69-4	Trichlorofluoromethane	**1.3**	0.78	0.12	**0.23**	0.14	0.022	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.82**	1.5	0.33	**0.34**	0.62	0.14	**J**
107-13-1	Acrylonitrile	ND	1.5	0.17	ND	0.70	0.077	
75-35-4	1,1-Dichloroethene	ND	0.79	0.11	ND	0.20	0.028	
75-09-2	Methylene Chloride	**0.30**	0.79	0.23	**0.087**	0.23	0.066	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.81	0.11	ND	0.20	0.028	
75-34-3	1,1-Dichloroethane	ND	0.82	0.12	ND	0.20	0.029	
78-93-3	2-Butanone (MEK)	**0.75**	1.5	0.17	**0.25**	0.52	0.057	**J**
110-54-3	n-Hexane	**0.18**	0.79	0.17	**0.050**	0.22	0.047	**J**
67-66-3	Chloroform	ND	0.81	0.11	ND	0.17	0.022	
107-06-2	1,2-Dichloroethane	ND	0.79	0.090	ND	0.20	0.022	
71-55-6	1,1,1-Trichloroethane	ND	0.79	0.10	ND	0.14	0.018	
71-43-2	Benzene	**0.12**	0.79	0.12	**0.038**	0.25	0.037	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-011

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01560

Initial Pressure (psig): -2.34 Final Pressure (psig): 4.10

Container Dilution Factor: 1.52

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.45**	0.78	0.11	**0.072**	0.12	0.018	**J**
78-87-5	1,2-Dichloropropane	ND	0.79	0.10	ND	0.17	0.022	
75-27-4	Bromodichloromethane	ND	0.79	0.12	ND	0.12	0.017	
79-01-6	Trichloroethene	ND	0.78	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.37	0.027	
108-88-3	Toluene	**0.28**	0.79	0.099	**0.075**	0.21	0.026	**J**
106-93-4	1,2-Dibromoethane	ND	0.79	0.094	ND	0.10	0.012	
127-18-4	Tetrachloroethene	ND	0.79	0.10	ND	0.12	0.015	
108-90-7	Chlorobenzene	ND	0.79	0.11	ND	0.17	0.023	
100-41-4	Ethylbenzene	ND	0.79	0.11	ND	0.18	0.026	
179601-23-1	m,p-Xylenes	ND	1.5	0.21	ND	0.35	0.049	
95-47-6	o-Xylene	ND	0.81	0.12	ND	0.19	0.027	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.81	0.11	ND	0.12	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.81	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.79	0.12	ND	0.13	0.021	
95-50-1	1,2-Dichlorobenzene	ND	0.81	0.12	ND	0.13	0.020	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.76	0.38	ND	0.21	0.11	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.76	0.36	ND	0.18	0.087	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-012

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01576

Initial Pressure (psig): -1.87 Final Pressure (psig): 4.21

Container Dilution Factor: 1.47

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.8**	0.76	0.13	**0.36**	0.15	0.026	
74-87-3	Chloromethane	**0.19**	0.76	0.13	**0.092**	0.37	0.061	**J, V**
75-01-4	Vinyl Chloride	ND	0.78	0.084	ND	0.30	0.033	
75-00-3	Chloroethane	ND	0.76	0.097	ND	0.29	0.037	
64-17-5	Ethanol	**17**	7.8	0.54	**8.8**	4.1	0.29	
67-64-1	Acetone	**8.9**	7.6	1.8	**3.7**	3.2	0.74	
75-69-4	Trichlorofluoromethane	**1.3**	0.75	0.12	**0.22**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.96**	1.5	0.32	**0.39**	0.60	0.13	**J**
107-13-1	Acrylonitrile	ND	1.5	0.16	ND	0.68	0.075	
75-35-4	1,1-Dichloroethene	ND	0.76	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.33**	0.76	0.22	**0.096**	0.22	0.063	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.78	0.11	ND	0.20	0.027	
75-34-3	1,1-Dichloroethane	ND	0.79	0.11	ND	0.20	0.028	
78-93-3	2-Butanone (MEK)	**2.3**	1.5	0.16	**0.78**	0.50	0.055	
110-54-3	n-Hexane	ND	0.76	0.16	ND	0.22	0.046	
67-66-3	Chloroform	ND	0.78	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.76	0.087	ND	0.19	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.76	0.097	ND	0.14	0.018	
71-43-2	Benzene	**0.15**	0.76	0.11	**0.048**	0.24	0.035	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-012

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01576

Initial Pressure (psig): -1.87 Final Pressure (psig): 4.21

Container Dilution Factor: 1.47

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.44**	0.75	0.11	**0.069**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.76	0.097	ND	0.17	0.021	
75-27-4	Bromodichloromethane	ND	0.76	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.75	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.36	0.026	
108-88-3	Toluene	**0.58**	0.76	0.096	**0.15**	0.20	0.025	**J**
106-93-4	1,2-Dibromoethane	ND	0.76	0.091	ND	0.10	0.012	
127-18-4	Tetrachloroethene	ND	0.76	0.10	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.76	0.10	ND	0.17	0.023	
100-41-4	Ethylbenzene	ND	0.76	0.11	ND	0.18	0.025	
179601-23-1	m,p-Xylenes	ND	1.5	0.21	ND	0.34	0.047	
95-47-6	o-Xylene	ND	0.78	0.11	ND	0.18	0.026	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.78	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.78	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.76	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.78	0.12	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.74	0.37	ND	0.21	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.74	0.35	ND	0.17	0.084	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-013

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01263

Initial Pressure (psig): -1.60 Final Pressure (psig): 3.83

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.6**	0.73	0.12	**0.33**	0.15	0.025	
74-87-3	Chloromethane	**0.15**	0.73	0.12	**0.072**	0.36	0.059	**J, V**
75-01-4	Vinyl Chloride	ND	0.75	0.080	ND	0.29	0.031	
75-00-3	Chloroethane	ND	0.73	0.093	ND	0.28	0.035	
64-17-5	Ethanol	**16**	7.5	0.52	**8.6**	4.0	0.28	
67-64-1	Acetone	**7.6**	7.3	1.7	**3.2**	3.1	0.71	
75-69-4	Trichlorofluoromethane	**1.3**	0.72	0.11	**0.23**	0.13	0.020	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.4	0.31	ND	0.57	0.13	
107-13-1	Acrylonitrile	ND	1.4	0.16	ND	0.65	0.071	
75-35-4	1,1-Dichloroethene	ND	0.73	0.10	ND	0.19	0.026	
75-09-2	Methylene Chloride	**0.32**	0.73	0.21	**0.091**	0.21	0.061	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.75	0.10	ND	0.19	0.026	
75-34-3	1,1-Dichloroethane	ND	0.76	0.11	ND	0.19	0.027	
78-93-3	2-Butanone (MEK)	**1.3**	1.4	0.16	**0.44**	0.48	0.053	**J**
110-54-3	n-Hexane	ND	0.73	0.16	ND	0.21	0.044	
67-66-3	Chloroform	**0.10**	0.75	0.10	**0.021**	0.15	0.021	**J**
107-06-2	1,2-Dichloroethane	ND	0.73	0.083	ND	0.18	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.73	0.093	ND	0.13	0.017	
71-43-2	Benzene	**0.17**	0.73	0.11	**0.053**	0.23	0.034	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-013

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01263

Initial Pressure (psig): -1.60 Final Pressure (psig): 3.83

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.46**	0.72	0.10	**0.072**	0.11	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.73	0.093	ND	0.16	0.020	
75-27-4	Bromodichloromethane	ND	0.73	0.11	ND	0.11	0.016	
79-01-6	Trichloroethene	ND	0.72	0.10	ND	0.13	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.34	0.025	
108-88-3	Toluene	**0.33**	0.73	0.092	**0.086**	0.19	0.024	**J**
106-93-4	1,2-Dibromoethane	ND	0.73	0.087	ND	0.095	0.011	
127-18-4	Tetrachloroethene	ND	0.73	0.097	ND	0.11	0.014	
108-90-7	Chlorobenzene	ND	0.73	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.73	0.11	ND	0.17	0.024	
179601-23-1	m,p-Xylenes	ND	1.4	0.20	ND	0.32	0.045	
95-47-6	o-Xylene	ND	0.75	0.11	ND	0.17	0.025	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.75	0.10	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.75	0.11	ND	0.12	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.73	0.12	ND	0.12	0.019	
95-50-1	1,2-Dichlorobenzene	ND	0.75	0.11	ND	0.12	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.71	0.35	ND	0.20	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.71	0.34	ND	0.17	0.080	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF1** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-014

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00675

Initial Pressure (psig): -1.54 Final Pressure (psig): 3.58

Container Dilution Factor: 1.39

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.6**	0.72	0.12	**0.33**	0.15	0.024	
74-87-3	Chloromethane	**0.14**	0.72	0.12	**0.066**	0.35	0.058	**J, V**
75-01-4	Vinyl Chloride	ND	0.74	0.079	ND	0.29	0.031	
75-00-3	Chloroethane	ND	0.72	0.092	ND	0.27	0.035	
64-17-5	Ethanol	**1.8**	7.4	0.51	**0.93**	3.9	0.27	**J**
67-64-1	Acetone	**5.4**	7.2	1.7	**2.3**	3.0	0.70	**J**
75-69-4	Trichlorofluoromethane	**1.3**	0.71	0.11	**0.23**	0.13	0.020	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.78**	1.4	0.31	**0.32**	0.57	0.12	**J**
107-13-1	Acrylonitrile	ND	1.4	0.15	ND	0.64	0.070	
75-35-4	1,1-Dichloroethene	ND	0.72	0.10	ND	0.18	0.026	
75-09-2	Methylene Chloride	**0.30**	0.72	0.21	**0.088**	0.21	0.060	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.74	0.10	ND	0.19	0.026	
75-34-3	1,1-Dichloroethane	ND	0.75	0.11	ND	0.19	0.027	
78-93-3	2-Butanone (MEK)	ND	1.4	0.15	ND	0.47	0.052	
110-54-3	n-Hexane	ND	0.72	0.15	ND	0.21	0.043	
67-66-3	Chloroform	ND	0.74	0.099	ND	0.15	0.020	
107-06-2	1,2-Dichloroethane	ND	0.72	0.082	ND	0.18	0.020	
71-55-6	1,1,1-Trichloroethane	ND	0.72	0.092	ND	0.13	0.017	
71-43-2	Benzene	**0.21**	0.72	0.11	**0.065**	0.23	0.034	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

Client: **Intertox, Incorporated**
Client Sample ID: **REF1** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-014

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00675

Initial Pressure (psig): -1.54 Final Pressure (psig): 3.58

Container Dilution Factor: 1.39

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.45**	0.71	0.10	**0.072**	0.11	0.016	**J**
78-87-5	1,2-Dichloropropane	ND	0.72	0.092	ND	0.16	0.020	
75-27-4	Bromodichloromethane	ND	0.72	0.11	ND	0.11	0.016	
79-01-6	Trichloroethene	ND	0.71	0.10	ND	0.13	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.34	0.025	
108-88-3	Toluene	**0.34**	0.72	0.090	**0.091**	0.19	0.024	**J**
106-93-4	1,2-Dibromoethane	ND	0.72	0.086	ND	0.094	0.011	
127-18-4	Tetrachloroethene	ND	0.72	0.096	ND	0.11	0.014	
108-90-7	Chlorobenzene	ND	0.72	0.099	ND	0.16	0.021	
100-41-4	Ethylbenzene	ND	0.72	0.10	ND	0.17	0.024	
179601-23-1	m,p-Xylenes	ND	1.4	0.19	ND	0.32	0.045	
95-47-6	o-Xylene	ND	0.74	0.11	ND	0.17	0.025	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.74	0.10	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.74	0.11	ND	0.12	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.72	0.11	ND	0.12	0.019	
95-50-1	1,2-Dichlorobenzene	ND	0.74	0.11	ND	0.12	0.018	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.70	0.35	ND	0.20	0.098	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.70	0.33	ND	0.17	0.079	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-015

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01048

Initial Pressure (psig): -2.76 Final Pressure (psig): 4.12

Container Dilution Factor: 1.58

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.6**	0.82	0.14	**0.33**	0.17	0.028	
74-87-3	Chloromethane	**0.15**	0.82	0.14	**0.073**	0.40	0.066	**J, V**
75-01-4	Vinyl Chloride	ND	0.84	0.090	ND	0.33	0.035	
75-00-3	Chloroethane	ND	0.82	0.10	ND	0.31	0.040	
64-17-5	Ethanol	**6.4**	8.4	0.58	**3.4**	4.4	0.31	**J**
67-64-1	Acetone	**7.0**	8.2	1.9	**2.9**	3.5	0.80	**J**
75-69-4	Trichlorofluoromethane	**1.3**	0.81	0.13	**0.23**	0.14	0.023	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.6	0.35	ND	0.64	0.14	
107-13-1	Acrylonitrile	ND	1.6	0.17	ND	0.73	0.080	
75-35-4	1,1-Dichloroethene	ND	0.82	0.12	ND	0.21	0.030	
75-09-2	Methylene Chloride	**0.32**	0.82	0.24	**0.093**	0.24	0.068	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.84	0.12	ND	0.21	0.030	
75-34-3	1,1-Dichloroethane	ND	0.85	0.12	ND	0.21	0.030	
78-93-3	2-Butanone (MEK)	**1.0**	1.6	0.17	**0.34**	0.54	0.059	**J**
110-54-3	n-Hexane	ND	0.82	0.17	ND	0.23	0.049	
67-66-3	Chloroform	ND	0.84	0.11	ND	0.17	0.023	
107-06-2	1,2-Dichloroethane	ND	0.82	0.093	ND	0.20	0.023	
71-55-6	1,1,1-Trichloroethane	ND	0.82	0.10	ND	0.15	0.019	
71-43-2	Benzene	ND	0.82	0.12	ND	0.26	0.038	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-015

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01048

Initial Pressure (psig): -2.76 Final Pressure (psig): 4.12

Container Dilution Factor: 1.58

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.44**	0.81	0.12	**0.070**	0.13	0.019	**J**
78-87-5	1,2-Dichloropropane	ND	0.82	0.10	ND	0.18	0.023	
75-27-4	Bromodichloromethane	ND	0.82	0.12	ND	0.12	0.018	
79-01-6	Trichloroethene	ND	0.81	0.11	ND	0.15	0.021	
108-10-1	4-Methyl-2-pentanone	ND	1.6	0.12	ND	0.39	0.028	
108-88-3	Toluene	**0.43**	0.82	0.10	**0.11**	0.22	0.027	**J**
106-93-4	1,2-Dibromoethane	ND	0.82	0.098	ND	0.11	0.013	
127-18-4	Tetrachloroethene	ND	0.82	0.11	ND	0.12	0.016	
108-90-7	Chlorobenzene	ND	0.82	0.11	ND	0.18	0.024	
100-41-4	Ethylbenzene	ND	0.82	0.12	ND	0.19	0.027	
179601-23-1	m,p-Xylenes	ND	1.6	0.22	ND	0.36	0.051	
95-47-6	o-Xylene	ND	0.84	0.12	ND	0.19	0.028	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.84	0.12	ND	0.12	0.017	
541-73-1	1,3-Dichlorobenzene	ND	0.84	0.13	ND	0.14	0.021	
106-46-7	1,4-Dichlorobenzene	ND	0.82	0.13	ND	0.14	0.022	
95-50-1	1,2-Dichlorobenzene	ND	0.84	0.12	ND	0.14	0.021	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.79	0.40	ND	0.22	0.11	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.79	0.38	ND	0.19	0.090	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-016

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01456

Initial Pressure (psig): -0.82 Final Pressure (psig): 3.62

Container Dilution Factor: 1.32

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.7**	0.69	0.11	**0.34**	0.14	0.023	
74-87-3	Chloromethane	**0.16**	0.69	0.11	**0.076**	0.33	0.055	**J, V**
75-01-4	Vinyl Chloride	ND	0.70	0.075	ND	0.27	0.029	
75-00-3	Chloroethane	ND	0.69	0.087	ND	0.26	0.033	
64-17-5	Ethanol	**3.9**	7.0	0.49	**2.1**	3.7	0.26	**J**
67-64-1	Acetone	**5.8**	6.9	1.6	**2.4**	2.9	0.67	**J**
75-69-4	Trichlorofluoromethane	**1.3**	0.67	0.11	**0.23**	0.12	0.019	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.3	0.29	ND	0.54	0.12	
107-13-1	Acrylonitrile	ND	1.3	0.15	ND	0.61	0.067	
75-35-4	1,1-Dichloroethene	ND	0.69	0.098	ND	0.17	0.025	
75-09-2	Methylene Chloride	**0.30**	0.69	0.20	**0.086**	0.20	0.057	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.70	0.098	ND	0.18	0.025	
75-34-3	1,1-Dichloroethane	ND	0.71	0.10	ND	0.18	0.025	
78-93-3	2-Butanone (MEK)	**0.70**	1.3	0.15	**0.24**	0.45	0.049	**J**
110-54-3	n-Hexane	ND	0.69	0.15	ND	0.19	0.041	
67-66-3	Chloroform	**0.099**	0.70	0.094	**0.020**	0.14	0.019	**J**
107-06-2	1,2-Dichloroethane	ND	0.69	0.078	ND	0.17	0.019	
71-55-6	1,1,1-Trichloroethane	ND	0.69	0.087	ND	0.13	0.016	
71-43-2	Benzene	**0.10**	0.69	0.10	**0.032**	0.21	0.032	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

Client: **Intertox, Incorporated**
Client Sample ID: **S6** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-016

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01456

Initial Pressure (psig): -0.82 Final Pressure (psig): 3.62

Container Dilution Factor: 1.32

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.44**	0.67	0.098	**0.071**	0.11	0.016	**J**
78-87-5	1,2-Dichloropropane	ND	0.69	0.087	ND	0.15	0.019	
75-27-4	Bromodichloromethane	ND	0.69	0.10	ND	0.10	0.015	
79-01-6	Trichloroethene	ND	0.67	0.095	ND	0.13	0.018	
108-10-1	4-Methyl-2-pentanone	ND	1.3	0.096	ND	0.32	0.024	
108-88-3	Toluene	**0.41**	0.69	0.086	**0.11**	0.18	0.023	**J**
106-93-4	1,2-Dibromoethane	ND	0.69	0.082	ND	0.089	0.011	
127-18-4	Tetrachloroethene	**0.17**	0.69	0.091	**0.025**	0.10	0.013	**J**
108-90-7	Chlorobenzene	ND	0.69	0.094	ND	0.15	0.020	
100-41-4	Ethylbenzene	ND	0.69	0.099	ND	0.16	0.023	
179601-23-1	m,p-Xylenes	**0.20**	1.3	0.18	**0.047**	0.30	0.043	**J**
95-47-6	o-Xylene	ND	0.70	0.10	ND	0.16	0.023	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.70	0.098	ND	0.10	0.014	
541-73-1	1,3-Dichlorobenzene	ND	0.70	0.11	ND	0.12	0.018	
106-46-7	1,4-Dichlorobenzene	ND	0.69	0.11	ND	0.11	0.018	
95-50-1	1,2-Dichlorobenzene	ND	0.70	0.10	ND	0.12	0.017	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.66	0.33	ND	0.19	0.093	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.66	0.32	ND	0.16	0.075	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-017

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01350

Initial Pressure (psig): -2.03 Final Pressure (psig): 3.52

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.6**	0.75	0.13	**0.33**	0.15	0.025	
74-87-3	Chloromethane	**0.14**	0.75	0.12	**0.070**	0.36	0.060	**J, V**
75-01-4	Vinyl Chloride	ND	0.76	0.082	ND	0.30	0.032	
75-00-3	Chloroethane	ND	0.75	0.095	ND	0.28	0.036	
64-17-5	Ethanol	**6.5**	7.6	0.53	**3.5**	4.1	0.28	**J**
67-64-1	Acetone	**6.7**	7.5	1.7	**2.8**	3.2	0.73	**J**
75-69-4	Trichlorofluoromethane	**1.3**	0.73	0.12	**0.23**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.4	0.32	ND	0.59	0.13	
107-13-1	Acrylonitrile	ND	1.4	0.16	ND	0.66	0.073	
75-35-4	1,1-Dichloroethene	ND	0.75	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.35**	0.75	0.22	**0.10**	0.22	0.062	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.76	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.78	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	**0.95**	1.4	0.16	**0.32**	0.49	0.054	**J**
110-54-3	n-Hexane	ND	0.75	0.16	ND	0.21	0.045	
67-66-3	Chloroform	ND	0.76	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.75	0.085	ND	0.19	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.75	0.095	ND	0.14	0.017	
71-43-2	Benzene	ND	0.75	0.11	ND	0.23	0.035	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

Client: **Intertox, Incorporated**
Client Sample ID: **S5** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-017

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01350

Initial Pressure (psig): -2.03 Final Pressure (psig): 3.52

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.46**	0.73	0.11	**0.072**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.75	0.095	ND	0.16	0.021	
75-27-4	Bromodichloromethane	ND	0.75	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.73	0.10	ND	0.14	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.11	ND	0.35	0.026	
108-88-3	Toluene	**0.45**	0.75	0.094	**0.12**	0.20	0.025	**J**
106-93-4	1,2-Dibromoethane	ND	0.75	0.089	ND	0.097	0.012	
127-18-4	Tetrachloroethene	ND	0.75	0.099	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.75	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.75	0.11	ND	0.17	0.025	
179601-23-1	m,p-Xylenes	**0.21**	1.4	0.20	**0.048**	0.33	0.046	**J**
95-47-6	o-Xylene	ND	0.76	0.11	ND	0.18	0.026	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.76	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.76	0.12	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.75	0.12	ND	0.12	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.76	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.72	0.36	ND	0.20	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.72	0.35	ND	0.17	0.082	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P210722-MB

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.52	0.087	ND	0.11	0.018	
74-87-3	Chloromethane	ND	0.52	0.086	ND	0.25	0.042	**V**
75-01-4	Vinyl Chloride	ND	0.53	0.057	ND	0.21	0.022	
75-00-3	Chloroethane	ND	0.52	0.066	ND	0.20	0.025	
64-17-5	Ethanol	ND	5.3	0.37	ND	2.8	0.20	
67-64-1	Acetone	ND	5.2	1.2	ND	2.2	0.51	
75-69-4	Trichlorofluoromethane	ND	0.51	0.081	ND	0.091	0.014	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.0	0.22	ND	0.41	0.090	
107-13-1	Acrylonitrile	ND	1.0	0.11	ND	0.46	0.051	
75-35-4	1,1-Dichloroethene	ND	0.52	0.074	ND	0.13	0.019	
75-09-2	Methylene Chloride	ND	0.52	0.15	ND	0.15	0.043	
156-60-5	trans-1,2-Dichloroethene	ND	0.53	0.074	ND	0.13	0.019	
75-34-3	1,1-Dichloroethane	ND	0.54	0.078	ND	0.13	0.019	
78-93-3	2-Butanone (MEK)	ND	1.0	0.11	ND	0.34	0.037	
110-54-3	n-Hexane	ND	0.52	0.11	ND	0.15	0.031	
67-66-3	Chloroform	ND	0.53	0.071	ND	0.11	0.015	
107-06-2	1,2-Dichloroethane	ND	0.52	0.059	ND	0.13	0.015	
71-55-6	1,1,1-Trichloroethane	ND	0.52	0.066	ND	0.095	0.012	
71-43-2	Benzene	ND	0.52	0.077	ND	0.16	0.024	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P210722-MB

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	ND	0.51	0.074	ND	0.081	0.012	
78-87-5	1,2-Dichloropropane	ND	0.52	0.066	ND	0.11	0.014	
75-27-4	Bromodichloromethane	ND	0.52	0.077	ND	0.078	0.011	
79-01-6	Trichloroethene	ND	0.51	0.072	ND	0.095	0.013	
108-10-1	4-Methyl-2-pentanone	ND	1.0	0.073	ND	0.24	0.018	
108-88-3	Toluene	ND	0.52	0.065	ND	0.14	0.017	
106-93-4	1,2-Dibromoethane	ND	0.52	0.062	ND	0.068	0.0081	
127-18-4	Tetrachloroethene	ND	0.52	0.069	ND	0.077	0.010	
108-90-7	Chlorobenzene	ND	0.52	0.071	ND	0.11	0.015	
100-41-4	Ethylbenzene	ND	0.52	0.075	ND	0.12	0.017	
179601-23-1	m,p-Xylenes	ND	1.0	0.14	ND	0.23	0.032	
95-47-6	o-Xylene	ND	0.53	0.077	ND	0.12	0.018	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.53	0.074	ND	0.077	0.011	
541-73-1	1,3-Dichlorobenzene	ND	0.53	0.080	ND	0.088	0.013	
106-46-7	1,4-Dichlorobenzene	ND	0.52	0.082	ND	0.087	0.014	
95-50-1	1,2-Dichlorobenzene	ND	0.53	0.079	ND	0.088	0.013	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.50	0.25	ND	0.14	0.071	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.50	0.24	ND	0.12	0.057	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
X = See case narrative

ALS ENVIRONMENTAL

SURROGATE SPIKE RECOVERY RESULTS

Client: **Intertox, Incorporated**
Client Project ID: **KCLF** ALS Project ID: P2103635

Test Code: EPA TO-15 Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date(s) Collected: 6/23 - 7/7/21
Analyst: Wida Ang Date(s) Received: 7/9/21
Sample Type: 6.0 L Silonite Canister(s) Date(s) Analyzed: 7/22/21
Test Notes:

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4 Percent Recovered	Toluene-d8 Percent Recovered	Bromofluorobenzene Percent Recovered	Acceptance Limits	Data Qualifier
Method Blank	P210722-MB	**95**	**107**	**111**	70-130	
Lab Control Sample	P210722-LCS	**96**	**106**	**115**	70-130	
S5	P2103635-001	**85**	**106**	**112**	70-130	
S7	P2103635-002	**83**	**107**	**111**	70-130	
S13	P2103635-003	**86**	**107**	**109**	70-130	
S13	P2103635-003DUP	**84**	**106**	**110**	70-130	
S12	P2103635-004	**88**	**108**	**108**	70-130	
S11	P2103635-005	**85**	**107**	**107**	70-130	
S11D	P2103635-006	**87**	**107**	**108**	70-130	
S8	P2103635-007	**85**	**106**	**108**	70-130	
S9	P2103635-008	**87**	**107**	**108**	70-130	
S10	P2103635-009	**87**	**106**	**106**	70-130	
S2	P2103635-010	**86**	**104**	**103**	70-130	
S3	P2103635-011	**92**	**104**	**103**	70-130	
S1	P2103635-012	**91**	**103**	**104**	70-130	
S4	P2103635-013	**91**	**104**	**104**	70-130	
REF1	P2103635-014	**90**	**105**	**103**	70-130	
S7	P2103635-015	**92**	**103**	**103**	70-130	
S6	P2103635-016	**92**	**103**	**105**	70-130	
S5	P2103635-017	**88**	**102**	**105**	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Lab Control Sample** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P210722-LCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	Result µg/m³	% Recovery	ALS Acceptance Limits	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	210	**202**	**96**	71-112	
74-87-3	Chloromethane	206	**127**	**62**	53-126	
75-01-4	Vinyl Chloride	208	**195**	**94**	63-123	
75-00-3	Chloroethane	204	**218**	**107**	66-117	
64-17-5	Ethanol	998	**883**	**88**	57-117	
67-64-1	Acetone	1,030	**962**	**93**	60-117	
75-69-4	Trichlorofluoromethane	204	**199**	**98**	71-114	
67-63-0	2-Propanol (Isopropyl Alcohol)	408	**416**	**102**	61-124	
107-13-1	Acrylonitrile	410	**433**	**106**	65-130	
75-35-4	1,1-Dichloroethene	212	**214**	**101**	74-114	
75-09-2	Methylene Chloride	208	**210**	**101**	75-112	
156-60-5	trans-1,2-Dichloroethene	212	**214**	**101**	76-119	
75-34-3	1,1-Dichloroethane	212	**201**	**95**	70-114	
78-93-3	2-Butanone (MEK)	412	**432**	**105**	74-121	
110-54-3	n-Hexane	212	**196**	**92**	55-130	
67-66-3	Chloroform	214	**206**	**96**	71-114	
107-06-2	1,2-Dichloroethane	208	**203**	**98**	71-119	
71-55-6	1,1,1-Trichloroethane	206	**202**	**98**	73-119	
71-43-2	Benzene	204	**197**	**97**	72-113	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

Client: **Intertox, Incorporated**
Client Sample ID: **Lab Control Sample** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P210722-LCS

Test Code: EPA TO-15 Modified Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	**Result µg/m³**	**% Recovery**	ALS Acceptance Limits	**Data Qualifier**
56-23-5	Carbon Tetrachloride	210	**201**	**96**	67-123	
78-87-5	1,2-Dichloropropane	206	**195**	**95**	70-118	
75-27-4	Bromodichloromethane	210	**209**	**100**	74-119	
79-01-6	Trichloroethene	206	**204**	**99**	74-115	
108-10-1	4-Methyl-2-pentanone	416	**413**	**99**	73-129	
108-88-3	Toluene	206	**218**	**106**	70-118	
106-93-4	1,2-Dibromoethane	208	**253**	**122**	76-128	
127-18-4	Tetrachloroethene	206	**242**	**117**	63-130	
108-90-7	Chlorobenzene	206	**222**	**108**	70-118	
100-41-4	Ethylbenzene	206	**229**	**111**	71-123	
179601-23-1	m,p-Xylenes	412	**458**	**111**	67-127	
95-47-6	o-Xylene	206	**228**	**111**	69-124	
79-34-5	1,1,2,2-Tetrachloroethane	206	**223**	**108**	69-128	
541-73-1	1,3-Dichlorobenzene	206	**259**	**126**	67-136	
106-46-7	1,4-Dichlorobenzene	204	**245**	**120**	63-134	
95-50-1	1,2-Dichlorobenzene	206	**251**	**122**	64-139	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Client: **Intertox, Incorporated**
Client Sample ID: **S13** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-003DUP

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00503

Initial Pressure (psig): -2.09 Final Pressure (psig): 3.96

Container Dilution Factor: 1.48

Compound	Sample Result µg/m³	Sample Result ppbV	Duplicate Sample Result µg/m³	Duplicate Sample Result ppbV	Average µg/m³	% RPD	RPD Limit	Data Qualifier
Dichlorodifluoromethane (CFC 12)	1.63	0.329	1.54	0.311	1.585	**6**	25	
Chloromethane	0.164	0.0796	0.149	0.0724	0.1565	**10**	25	**J, V**
Vinyl Chloride	ND	ND	ND	ND	-	-	25	
Chloroethane	ND	ND	ND	ND	-	-	25	
Ethanol	319	169	317	168	318	**0.6**	25	
Acetone	18.9	7.96	18.8	7.90	18.85	**0.5**	25	
Trichlorofluoromethane	2.62	0.466	2.64	0.471	2.63	**0.8**	25	
2-Propanol (Isopropyl Alcohol)	11.6	4.74	11.7	4.75	11.65	**0.9**	25	
Acrylonitrile	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethene	ND	ND	ND	ND	-	-	25	
Methylene Chloride	0.919	0.265	0.915	0.263	0.917	**0.4**	25	
trans-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethane	ND	ND	ND	ND	-	-	25	
2-Butanone (MEK)	7.08	2.40	7.26	2.46	7.17	**3**	25	
n-Hexane	1.02	0.290	1.04	0.296	1.03	**2**	25	
Chloroform	0.117	0.0240	0.118	0.0243	0.1175	**0.9**	25	**J**
1,2-Dichloroethane	0.154	0.0380	0.151	0.0373	0.1525	**2**	25	**J**
1,1,1-Trichloroethane	2.02	0.370	2.05	0.376	2.035	**1**	25	
Benzene	0.148	0.0463	0.154	0.0482	0.151	**4**	25	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
V = The continuing calibration verification standard was outside (biased low) the specified limits for this compound.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Client: **Intertox, Incorporated**
Client Sample ID: **S13** ALS Project ID: P2103635
Client Project ID: **KCLF** ALS Sample ID: P2103635-003DUP

Test Code: EPA TO-15 Modified Date Collected: 7/7/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 7/9/21
Analyst: Wida Ang Date Analyzed: 7/22/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00503

Initial Pressure (psig): -2.09 Final Pressure (psig): 3.96

Container Dilution Factor: 1.48

Compound	Sample Result µg/m³	Sample Result ppbV	Duplicate Sample Result µg/m³	Duplicate Sample Result ppbV	Average µg/m³	% RPD	RPD Limit	Data Qualifier
Carbon Tetrachloride	0.431	0.0685	0.419	0.0666	0.425	**3**	25	**J**
1,2-Dichloropropane	ND	ND	ND	ND	-	-	25	
Bromodichloromethane	ND	ND	ND	ND	-	-	25	
Trichloroethene	ND	ND	ND	ND	-	-	25	
4-Methyl-2-pentanone	0.321	0.0784	0.332	0.0809	0.3265	**3**	25	**J**
Toluene	5.60	1.49	5.64	1.50	5.62	**0.7**	25	
1,2-Dibromoethane	ND	ND	ND	ND	-	-	25	
Tetrachloroethene	0.556	0.0821	0.561	0.0828	0.5585	**0.9**	25	**J**
Chlorobenzene	ND	ND	ND	ND	-	-	25	
Ethylbenzene	1.13	0.259	1.13	0.259	1.13	**0**	25	
m,p-Xylenes	3.28	0.756	3.33	0.768	3.305	**2**	25	
o-Xylene	0.958	0.221	0.955	0.220	0.9565	**0.3**	25	
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	-	-	25	
1,3-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
1,4-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
1,2-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
Chlorodifluoromethane (CFC 22)	ND	ND	ND	ND	-	-	25	**X**
Dichlorofluoromethane (CFC 21)	ND	ND	ND	ND	-	-	25	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

Response Factor Report HP5890

Method Path : J:\GC08\METHODS\
Method File : TF110917.M
Title : VOA-TO3C1C6
Last Update : Thu Nov 09 10:49:40 2017
Response Via : Initial Calibration

Calibration Files
1 =11091703.D 2 =11091704.D 3 =11091705.D
4 =11091706.D 5 =11091707.D 6 =11091708.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Methane	2.284	2.219	2.090	2.282	2.348	2.379	2.248	E4	4.76
2)	C2 as Ethane	3.795	4.014	3.953	4.280	4.337	4.363	4.124	E4	5.70
3)	C3 as Propane	5.437	5.733	5.664	6.150	6.218	6.259	5.910	E4	5.81
4)	C4 as Butane	7.122	7.470	7.429	8.187	8.262	8.339	7.802	E4	6.68
5)	C5 as Pentane	0.889	0.942	0.911	1.039	1.049	1.067	0.983	E5	7.94
6)	C6 as Hexane	0.958	1.027	0.961	1.149	1.166	1.205	1.078	E5	10.12
7)	>C6_1 as Hexane	0.958	1.027	0.961	1.149	1.166	1.205	1.078	E5	10.12
8)	>C6_2 as Hexane	0.958	1.027	0.961	1.149	1.166	1.205	1.078	E5	10.12
9)	>C6_3 as Hexane	0.958	1.027	0.961	1.149	1.166	1.205	1.078	E5	10.12

(#) = Out of Range ### Number of calibration levels exceeded format ###

TF110917.M Thu Nov 09 10:50:04 2017

11/9/17

ALS Environmental

REPORT SUMMARY

7/24/21 C CB

Method : VOA-TO3C1C6
Client : Intertox, Incorporated
Analyst : GG

ALS Service Request P2103635
Instrument : Instrument 8 / FID #8
Date Acquired : 7/13/2021

SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Inject. Vol(ml)	Dilution DF	Methane	C2 as Ethane	C3 as Propane	C4 as n-Butane	C5 as n-Pentane	C6 as n-Hexane	>C6#1 as n-Hexane	>C6#2 as n-Hexane	>C6#3 as n-Hexane
STD S32-03182101	0.5	1.0	986.6	982.5	1026.8	1021.9	996.9	1051.9	0.0	0.0	0.0
ACTUAL			1000.0	1000.0	1000.0	1000.0	1000.0	1000.0			
%Difference			1.3%	1.8%	2.7%	2.2%	0.3%	5.2%			
LCS S32-03182102	0.5	1.0	995.76	987.63	1038.43	1036.44	1018.32	1075.80			
ACTUAL			1000.0	1000.0	1000.0	1000.0	1000.0	1000.0			
%Recovery			99.6%	98.8%	103.8%	103.6%	101.8%	107.6%			
LCSD S32-03182102	0.5	1.0	975.08	972.27	1024.99	1025.83	1008.21	1065.83			
ACTUAL			1000.0	1000.0	1000.0	1000.0	1000.0	1000.0			
%Recovery			97.5%	97.2%	102.5%	102.6%	100.8%	106.6%			
%RPD			2.1%	1.6%	1.3%	1.0%	1.0%	0.9%			
MB 1.0ml	1.0	1.0	0.08	0.00	0.00	0.00	0.00	0.06	0.67	0.22	0.13
P2103635-001 1.0m	1.0	1.0	1.72	0.00	0.00	0.00	0.00	0.05	0.25	0.21	0.27
P2103635-002 1.0m	1.0	1.0	1.74	0.00	0.00	0.00	0.00	0.04	0.29	0.17	0.13
P2103635-003 1.0m	1.0	1.0	5.24	0.00	0.00	0.04	0.12	0.03	0.25	0.25	0.35
P2103635-004 1.0m	1.0	1.0	2.89	0.00	0.00	0.00	0.00	0.03	0.16	0.12	0.11
P2103635-005 1.0m	1.0	1.0	2.02	0.00	0.00	0.00	0.00	0.02	0.16	0.12	0.10
P2103635-006 1.0m	1.0	1.0	2.18	0.00	0.00	0.00	0.00	0.03	0.18	0.10	0.10
P2103635-007 1.0m	1.0	1.0	4.07	0.00	0.00	0.02	0.01	0.02	0.16	0.10	0.11
P2103635-008 1.0m	1.0	1.0	1.84	0.00	0.00	0.00	0.00	0.02	0.17	0.11	0.12
P2103635-009 1.0m	1.0	1.0	1.94	0.00	0.00	0.00	0.00	0.02	0.17	0.10	0.09
P2103635-010 1.0m	1.0	1.0	1.90	0.00	0.00	0.00	0.00	0.02	0.13	0.08	0.10
STD S32-03182101	0.5	1.0	959.8	955.7	997.2	987.1	954.6	997.2			
ACTUAL			1000.0	1000.0	1000.0	1000.0	1000.0	1000.0			
%Difference			4.0%	4.4%	0.3%	1.3%	4.5%	0.3%			

FINAL SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Pi	Pf	Methane	C2 as Ethane	C3 as Propane	C4 as n-Butane	C5 as n-Pentane	C6 as n-Hexane	>C6 as n-Hexane
MRL			0.50	0.50	0.50	0.50	0.50	0.50	1.00
MB 1.0ml	0.00	0.00	ND	ND	ND	ND	ND	ND	1.03
P2103635-001 1.0m	-2.49	3.86	2.61	ND	ND	ND	ND	ND	ND
P2103635-002 1.0m	-2.09	3.90	2.57	ND	ND	ND	ND	ND	ND
P2103635-003 1.0m	-2.09	3.96	7.75	ND	ND	ND	ND	ND	ND
P2103635-004 1.0m	-1.82	3.50	4.09	ND	ND	ND	ND	ND	ND
P2103635-005 1.0m	-1.73	3.60	2.85	ND	ND	ND	ND	ND	ND
P2103635-006 1.0m	-2.04	3.62	3.15	ND	ND	ND	ND	ND	ND
P2103635-007 1.0m	-2.01	3.76	5.91	ND	ND	ND	ND	ND	ND
P2103635-008 1.0m	-1.46	3.92	2.58	ND	ND	ND	ND	ND	ND
P2103635-009 1.0m	-1.13	3.53	2.61	ND	ND	ND	ND	ND	ND
P2103635-010 1.0m	-1.96	3.75	2.75	ND	ND	ND	ND	ND	ND

TGNMO-HC RESULT SUMMARIES (as ppm Methane)

Sample ID	PiPf DF	NMOHC as Methane	NMOHC as Hexane	Total HC	Fixed Gases %
MRL(ppm Methane)	1.0	1.00	0.17	%	
MB 1.0ml	1.00	6.150	1.025	0.00	100.00
P2103635-001 1.0m	1.52	0.00	0.00	0.00	100.00
P2103635-002 1.0m	1.48	0.00	0.00	0.00	100.00
P2103635-003 1.0m	1.48	0.00	0.00	0.00	100.00
P2103635-004 1.0m	1.41	0.00	0.00	0.00	100.00
P2103635-005 1.0m	1.41	0.00	0.00	0.00	100.00
P2103635-006 1.0m	1.45	0.00	0.00	0.00	100.00
P2103635-007 1.0m	1.45	0.00	0.00	0.00	100.00
P2103635-008 1.0m	1.41	0.00	0.00	0.00	100.00
P2103635-009 1.0m	1.34	0.00	0.00	0.00	100.00
P2103635-010 1.0m	1.45	0.00	0.00	0.00	100.00

ALS Environmental

REPORT SUMMARY

7/14/21 C C3

Method : VOA-TO3C1C6
Client : Intertox, Incorporated
Analyst : GG

ALS Service Request P2103635
Instrument : Instrument 8 / FID #8
Date Acquired : 7/14/2021

SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Inject. Vol(ml)	Dilution DF	Methane	C2 as Ethane	C3 as Propane	C4 as n-Butane	C5 as n-Pentane	C6 as n-Hexane	>C6#1 as n-Hexane	>C6#2 as n-Hexane	>C6#3 as n-Hexane
STD S32-03182101	0.5	1.0	992.1	986.5	1030.4	1023.3	994.4	1043.6	0.0	0.0	0.0
ACTUAL			1000.0	1000.0	1000.0	1000.0	1000.0	1000.0			
%Difference			0.8%	1.4%	3.0%	2.3%	0.6%	4.4%			
LCS S32-03182102	0.5	1.0	952.95	947.19	996.11	994.04	976.12	1031.01			
ACTUAL			1000.0	1000.0	1000.0	1000.0	1000.0	1000.0			
%Recovery			95.3%	94.7%	99.6%	99.4%	97.6%	103.1%			
LCSD S32-03182102	0.5	1.0	975.12	971.70	1025.20	1026.29	1009.20	1067.10			
ACTUAL			1000.0	1000.0	1000.0	1000.0	1000.0	1000.0			
%Recovery			97.5%	97.2%	102.5%	102.6%	100.9%	106.7%			
%RPD			2.3%	2.6%	2.9%	3.2%	3.3%	3.4%			
MB 1.0ml	1.0	1.0	0.07	0.00	0.00	0.00	0.00	0.01	0.15	0.09	0.08
P2103635-011 1.0m	1.0	1.0	1.86	0.00	0.00	0.00	0.00	0.02	0.16	0.11	0.09
P2103635-012 1.0m	1.0	1.0	2.16	0.00	0.00	0.00	0.00	0.02	0.15	0.12	0.11
P2103635-013 1.0m	1.0	1.0	2.39	0.00	0.00	0.00	0.00	0.02	0.16	0.09	0.04
P2103635-014 1.0m	1.0	1.0	1.82	0.00	0.00	0.00	0.00	0.03	0.22	0.11	0.11
P2103635-015 1.0m	1.0	1.0	1.74	0.00	0.00	0.00	0.00	0.02	0.18	0.11	0.13
P2103635-016 1.0m	1.0	1.0	2.68	0.00	0.00	0.00	0.00	0.03	0.16	0.12	0.12
P2103635-017 1.0m	1.0	1.0	1.98	0.00	0.00	0.00	0.00	0.02	0.15	0.11	0.11
STD S32-03182101	0.5	1.0	1000.2	991.5	1031.9	1017.6	981.5	1030.0			
ACTUAL			1000.0	1000.0	1000.0	1000.0	1000.0	1000.0			
%Difference			0.0%	0.8%	3.2%	1.8%	1.9%	3.0%			

FINAL SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Pi	Pf	Methane	C2 as Ethane	C3 as Propane	C4 as n-Butane	C5 as n-Pentane	C6 as n-Hexane	>C6 as n-Hexane
MRL			0.50	0.50	0.50	0.50	0.50	0.50	1.00
MB 1.0ml	0.00	0.00	ND	ND	ND	ND	ND	ND	ND
P2103635-011 1.0m	-2.34	4.10	2.82	ND	ND	ND	ND	ND	ND
P2103635-012 1.0m	-1.87	4.21	3.18	ND	ND	ND	ND	ND	ND
P2103635-013 1.0m	-1.60	3.83	3.38	ND	ND	ND	ND	ND	ND
P2103635-014 1.0m	-1.54	3.58	2.53	ND	ND	ND	ND	ND	ND
P2103635-015 1.0m	-2.76	4.12	2.75	ND	ND	ND	ND	ND	ND
P2103635-016 1.0m	-0.82	3.62	3.53	ND	ND	ND	ND	ND	ND
P2103635-017 1.0m	-2.03	3.52	2.85	ND	ND	ND	ND	ND	ND

TGNMO-HC RESULT SUMMARIES (as ppm Methane)

Sample ID	PiPf DF	NMOHC as Methane	NMOHC as Hexane	Total HC	Fixed Gases %
MRL(ppm Methane)	1.0	1.00	0.17	%	
MB 1.0ml	1.00	0.000	0.000	0.00	100.00
P2103635-011 1.0m	1.52	0.00	0.00	0.00	100.00
P2103635-012 1.0m	1.47	0.00	0.00	0.00	100.00
P2103635-013 1.0m	1.41	0.00	0.00	0.00	100.00
P2103635-014 1.0m	1.39	0.00	0.00	0.00	100.00
P2103635-015 1.0m	1.58	0.00	0.00	0.00	100.00
P2103635-016 1.0m	1.32	0.00	0.00	0.00	100.00
P2103635-017 1.0m	1.44	0.00	0.00	0.00	100.00

Response Factor Report GC01_FXG

Method Path : I:\GC01\METHODS\
Method File : M012517.M
Title : EPA 25C TCA/FID Analysis for TGNMO
Last Update : Thu Jan 26 10:29:55 2017
Response Via : Initial Calibration

Calibration Files
0.49 =01251712.D 3.4 =01251726.D 144 =01251720.D
1000 =01251721.D 1448 =01251722.D 10K =01251723.D

	Compound	0.49	3.4	144	1000	1448	10K	Avg		%RSD
1)	Carbon Monoxide		5.849	6.187	5.594	4.963	6.160	5.751	E3	8.75
2)	Methane	5.534	5.550	6.160	5.497	4.943	6.139	5.637	E3	8.11
3)	Carbon Dioxide		7.439	6.562	5.889	5.256	6.546	6.338	E3	12.91
4)	TGNMO-1	6.690	6.290	6.176	5.634			6.094	E3	7.26
5)	TGMNO-2	6.690	6.290	6.176	5.634			6.094	E3	7.26

(#) = Out of Range ### Number of calibration levels exceeded format ###

Modified EPA Method 25C Daily QC Summary

Client : Intertox, Incorporated
Analyst : CB
Method Name : EPA 25C TCA/FID Analysis for TGNMO

Service Request # : P2103635
Instrument : 7/15/2021
Date Analyzed : 7/15/2021

RT Summaries and QC Check (minutes)

Sample ID	Carbon Monoxide	Methane	Carbon Dioxide	TGNMO-1	TGMNO-2		File ID	Time
ICAL Mean RT	1.337	1.775	3.041	5.182				
RT Windows (+/- min)	0.330	0.330	0.330	0.330				
STD S32-03052001	1.413	1.907	3.257	5.188			07152102.D	06:42
+/- 0.33min of ICAL Mean RT	Pass	Pass	Pass	Pass				
MB				N/A	N/A		07152103.D	07:05
LAB AIR		1.899 Pass	3.256 Pass	N/A	N/A		07152104.D	07:37
LCS S32-01212004	1.411 Pass	1.906 Pass	3.257 Pass	N/A	N/A		07152105.D	07:55
LCSD S32-01212004	1.412 Pass	1.909 Pass	3.261 Pass	N/A	N/A		07152106.D	08:53
P2103635-001			3.262 Pass	N/A	N/A		07152107.D	09:13
P2103635-002			3.260 Pass	N/A	N/A		07152108.D	09:42
P2103635-003		1.906 Pass	3.262 Pass	N/A	N/A		07152109.D	10:01
P2103635-004		1.913 Pass	3.263 Pass	N/A	N/A		07152110.D	10:19
P2103635-005			3.263 Pass	N/A	N/A		07152111.D	10:53
P2103635-006			3.261 Pass	N/A	N/A		07152112.D	11:18
P2103635-007		1.907 Pass	3.261 Pass	N/A	N/A		07152113.D	11:44
P2103635-008			3.268 Pass	N/A	N/A		07152114.D	12:00
P2103635-009			3.267 Pass	N/A	N/A		07152115.D	12:35
P2103635-010			3.262 Pass	N/A	N/A		07152116.D	13:16
STD S32-03052001	1.413 Pass	1.910 Pass	3.263 Pass	N/A	N/A		07152118.D	14:14
P2103635-011			3.265 Pass	N/A	N/A		07152119.D	14:56
P2103635-012			3.268 Pass	N/A	N/A		07152120.D	15:29
P2103635-013			3.265 Pass	N/A	N/A		07152121.D	15:52
P2103635-014			3.267 Pass	N/A	N/A		07152122.D	16:18
P2103635-015			3.267 Pass	N/A	N/A		07152123.D	16:52
P2103635-016			3.269 Pass	N/A	N/A		07152124.D	17:04
P2103635-017			3.268 Pass	N/A	N/A		07152125.D	17:20
STD S32-03052001	1.412 Pass	1.908 Pass	3.263 Pass	N/A	N/A		07152126.D	17:44

vv = Vent CO_2 / CH_4 v = Vent CO_2 N/A : Not Applicable

Continuing Calibration Standards Summary (ppm)

Sample ID	Carbon Monoxide	Methane	Carbon Dioxide			TGMNO	File ID	Time
ACTUAL	500.00	400.00	500.00			600.00		
CCV Criteria (+/- %D)	15.0%	15.0%	15.0%			15.0%		
STD S32-03052001	522.8 Pass	428.6 Pass	483.9 Pass			611.0 Pass	07152102.D	06:42
STD S32-03052001	530.1 Pass	432.0 Pass	488.1 Pass			612.0 Pass	07152118.D	14:14
STD S32-03052001	533.6 Pass	435.4 Pass	492.6 Pass			620.4 Pass	07152126.D	17:44

LCS / LCS Dup Summary (ppm, without DF correction)

Sample ID	Carbon Monoxide	Methane	Carbon Dioxide			TGMNO	File ID	Time
LCS Actual Conc. (ppm)	400.00	320.00	400.00			400.00		
LCS Criteria (% Range)	90%-123%	91%-125%	80%-112%			86%-121%		
LCS S32-01212004	440.5	360.1	397.9			424.8	07152105.D	07:55
LCS % Recovery	110%	113%	99%			106%		
	Pass	Pass	Pass			Pass		
LCSD S32-01212004	450.0	366.8	409.1			438.6	07152106.D	08:53
LCS % Recovery	112%	115%	102%			110%		
	Pass	Pass	Pass			Pass		
Duplicate % RPD	2.1%	1.8%	2.8%			3.2%		
Duplicate Criteria % RPD	11%	10%	11%			13%		
	Pass	Pass	Pass			Pass		

Lab Dup Summary (ppm, without DF correction)

Sample ID	Carbon Monoxide	Methane	Carbon Dioxide			TGMNO	File ID	Time

Response Factor Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793	E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594	E6	221.92
3)	Methane (TCD)						2.161	0.951	E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438	E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907	E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673	E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695	E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343	E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488	E4	4.20
11)	Isobutylene							0.652	E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS091217_R.M Wed Sep 13 15:11:48 2017

ALS Environmental

REPORT SUMMARY

Method : mod TO3
Client : Intertox, Incorporated
Analyst : CB

ALS Service Request: P2103635
Instrument : Instrument 10 / FID #10
Date Acquired : 07/16/21

CB
8/2/21

SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Inject. Vol(ml)	Dilution DF	ethane	propane
STD S32-05252101	0.1	1.0	1.417	1.388
ACTUAL			1.5	1.5
%Difference			6.8%	8.7%
LCS S32-06252002	0.1	1.0	1.496	1.489
ACTUAL			1.51	1.50
%Recovery			99.1%	99.3%
LCSD S32-06252002	0.1	1.0	1.527	1.475
ACTUAL			1.51	1.50
%Recovery			101.1%	98.3%
%RPD			2.1%	0.9%
mb 0.5ml	0.5	1.0	0.00	0.00
P2103635-001	0.50	1.0	0.000	0.000
P2103635-002	0.50	1.0	0.000	0.000
P2103635-003	0.50	1.0	0.000	0.000
P2103635-004	0.50	1.0	0.000	0.000
P2103635-005	0.50	1.0	0.000	0.000
P2103635-006	0.50	1.0	0.000	0.000
P2103635-007	0.50	1.0	0.000	0.000
P2103635-008	0.50	1.0	0.034	0.000
STD S32-05252101	0.1	1.0	1.503	1.530
ACTUAL			1.5	1.5
%Difference			1.1%	0.7%

FINAL SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Pi	Pf	ethane 0.150	propane 0.150
mb 0.5ml	0.00	0.00	ND	ND
P2103635-001	-2.49	3.86	ND	ND
P2103635-002	-2.09	3.90	ND	ND
P2103635-003	-2.09	3.96	ND	ND
P2103635-004	-1.82	3.50	ND	ND
P2103635-005	-1.73	3.60	ND	ND
P2103635-006	-2.04	3.62	ND	ND
P2103635-007	-2.01	3.76	ND	ND
P2103635-008	-1.46	3.92	ND	ND

TGNMO-HC RESULT SUMMARIES (as ppm Methane)

Sample ID	PiPf DF	NMOHC as Methane	NMOHC as Hexane	Total HC %	Fixed Gases %
mb 0.5ml	1.00				
P2103635-001	1.52	0.0	0.0	0.00	100.00
P2103635-002	1.48	0.0	0.0	0.00	100.00
P2103635-003	1.48	0.0	0.0	0.00	100.00
P2103635-004	1.41	0.0	0.0	0.00	100.00
P2103635-005	1.41	0.0	0.0	0.00	100.00
P2103635-006	1.45	0.0	0.0	0.00	100.00
P2103635-007	1.45	0.0	0.0	0.00	100.00
P2103635-008	1.41	0.0	0.0	0.00	100.00

ALS Environmental

REPORT SUMMARY

7/24/21 R CB

Method : mod TO3
Client : Intertox, Incorporated
Analyst : GG

ALS Service Request P2103635
Instrument : Instrument 10 / FID #10
Date Acquired : 07/21/21

SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Inject. Vol(ml)	Dilution DF	ethane	propane
STD S32-05252101	0.1	1.0	1.542	1.585
ACTUAL			1.5	1.5
%Difference			1.4%	4.3%
LCS S32-06252002	0.1	1.0	1.579	1.596
ACTUAL			1.51	1.50
%Recovery			104.6%	106.4%
LCSD S32-06252002	0.1	1.0	1.582	1.605
ACTUAL			1.51	1.50
%Recovery			104.8%	107.0%
%RPD			0.2%	0.6%
mb 0.5ml	0.5	1.0	0.00	0.00
P2103635-009	0.50	1.0	0.000	0.000
P2103635-010	0.50	1.0	0.000	0.000
P2103635-011	0.50	1.0	0.000	0.000
P2103635-012	0.50	1.0	0.000	0.000
P2103635-013	0.50	1.0	0.000	0.000
P2103635-014	0.50	1.0	0.000	0.000
P2103635-015	0.50	1.0	0.000	0.000
P2103635-016	0.50	1.0	0.000	0.000
P2103635-017	0.50	1.0	0.000	0.000
STD S32-05252101	0.1	1.0	1.550	1.601
ACTUAL			1.5	1.5
%Difference			2.0%	5.3%

FINAL SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Pi	Pf	ethane	propane
			0.150	0.150
mb 0.5ml	0.00	0.00	ND	ND
P2103635-009	-3.07	3.88	ND	ND
P2103635-010	-1.99	3.54	ND	ND
P2103635-011	-2.49	4.43	ND	ND
P2103635-012	-1.86	3.96	ND	ND
P2103635-013	-1.39	4.35	ND	ND
P2103635-014	-0.84	3.67	ND	ND
P2103635-015	-1.35	4.21	ND	ND
P2103635-016	-1.71	3.68	ND	ND
P2103635-017	-2.22	3.98	ND	ND

TGNMO-HC RESULT SUMMARIES (as ppm Methane)

Sample ID	PiPf DF	NMOHC as Methane	NMOHC as Hexane	Total HC %	Fixed Gases %
mb 0.5ml	1.00				
P2103635-009	1.60	0.0	0.0	0.00	100.00
P2103635-010	1.44	0.0	0.0	0.00	100.00
P2103635-011	1.57	0.0	0.0	0.00	100.00
P2103635-012	1.45	0.0	0.0	0.00	100.00
P2103635-013	1.43	0.0	0.0	0.00	100.00
P2103635-014	1.33	0.0	0.0	0.00	100.00
P2103635-015	1.42	0.0	0.0	0.00	100.00
P2103635-016	1.41	0.0	0.0	0.00	100.00
P2103635-017	1.50	0.0	0.0	0.00	100.00

Response Factor Report HP G1530A

Method Path : J:\GC13\METHODS\
Method File : GC13_080720.M
Title : ASTM D5504, VOA-8307M_SCD, VOA SH2O_SCD
Last Update : Fri Aug 07 13:29:15 2020
Response Via : Initial Calibration

Calibration Files
5ppb =08072014.D 20 =08072015.D 100 =08072016.D
1000 =08072017.D 5000 =08072018.D 10k =08072019.D

		Compound	5ppb	20	100	1000	5000	10k	Avg		%RSD
1)	Z	Hydrogen_Sulfide	5.450	4.957	3.955	4.248	4.690	4.644	4.789	E4	12.37
2)	W	Carbonyl_Sulfide	5.773	5.970	5.144	5.055	5.434	5.395	5.517	E4	6.43
3)	T	Methyl_Mercaptan	4.196	3.965	3.729	4.447	4.900	4.920	4.527	E4	13.90
4)	T	Ethyl_Mercaptan	4.196	3.965	3.729	4.447	4.900	4.920	4.527	E4	13.90
5)	T	Dimethyl_Sulfide	4.196	3.965	3.729	4.447	4.900	4.920	4.527	E4	13.90
6)	T	Carbon_Disulfide	0.839	0.793	0.746	0.889	0.980	0.984	0.905	E5	13.90
7)	T	2-Propyl_Merc...	4.196	3.965	3.729	4.447	4.900	4.920	4.527	E4	13.90
8)	T	t-Butyl_Merca...	4.196	3.965	3.729	4.447	4.900	4.920	4.527	E4	13.90
9)	T	Propyl_Mercaptan	4.196	3.965	3.729	4.447	4.900	4.920	4.527	E4	13.90
10)	T	Ethyl_Methyl_...	4.196	3.965	3.729	4.447	4.900	4.920	4.527	E4	13.90
11)	T	Thiophene	4.196	3.965	3.729	4.447	4.900	4.920	4.527	E4	13.90
12)	T	i-Butyl_Merca...	4.196	3.965	3.729	4.447	4.900	4.920	4.527	E4	13.90
13)	T	Diethyl_Sulfide	4.196	3.965	3.729	4.447	4.900	4.920	4.527	E4	13.90
14)	t	n-Butyl_Merca...	4.196	3.965	3.729	4.447	4.900	4.920	4.527	E4	13.90
15)	t	Dimethyl_Disu...	0.839	0.793	0.746	0.889	0.980	0.984	0.905	E5	13.90
16)	T	2-Methyl_Thio...	4.196	3.965	3.729	4.447	4.900	4.920	4.527	E4	13.90
17)	t	3-Methyl_Thio...	4.196	3.965	3.729	4.447	4.900	4.920	4.527	E4	13.90
18)	T	Tetrahydrothi...	4.196	3.965	3.729	4.447	4.900	4.920	4.527	E4	13.90
19)	t	2,5-Dimethyl_...	4.196	3.965	3.729	4.447	4.900	4.920	4.527	E4	13.90
20)	T	2-Ethyl_Thiop...	4.196	3.965	3.729	4.447	4.900	4.920	4.527	E4	13.90
21)	T	Diethyl_Disul...	0.839	0.793	0.746	0.889	0.980	0.984	0.905	E5	13.90
22)	T	Methyltrisulfide	1.258	1.191	1.119	1.334	1.470	1.476	1.358	E5	13.88

(#) = Out of Range ### Number of calibration levels exceeded format ###

Response Factor Report GC22

Method Path : J:\GC22\METHODS\
Method File : GC22_Quan 11082019.M
Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
Last Update : Fri Nov 08 11:32:18 2019
Response Via : Initial Calibration

Calibration Files
5 =11071919.D 10 =11071920.D 50 =11071921.D
250 =11071922.D 1000 =11071923.D 2500 =11071924.D

		Compound	5	10	50	250	1000	2500	Avg	%RSD
1)	Z	Hydrogen_Sulfide	5.119	3.482	4.046	4.064	3.640	3.605	3.908 E4	13.35
2)	W	Carbonyl_Sulfide	4.959	3.517	5.547	5.693	4.377	4.352	4.688 E4	14.12
3)	T	Methyl_Mercaptan	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
4)	T	Ethyl_Mercaptan	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
5)	T	Dimethyl_Sulfide	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
6)	T	Carbon_Disulfide	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
7)	T	2-Propyl_Merc...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
8)	T	t-Butyl_Merca...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
9)	T	Propyl_Mercaptan	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
10)	T	Ethyl_Methyl_...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
11)	T	Thiophene	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
12)	T	i-Butyl_Merca...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
13)	T	Diethyl_Sulfide	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
14)	T	n-Butyl_Merca...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
15)	T	Dimethyl_Disu...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
16)	T	2-Methylthiop...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
17)	T	3-Methylthiop...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
18)	T	Tetrahydrothi...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
19)	T	2,5-Dimethylt...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
20)	T	2-Ethylthiophene	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
21)	T	Diethyl_Disul...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
22)	T	Methyltrisulfide	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63

(#) = Out of Range ### Number of calibration levels exceeded format ###

GC22_Quan 11082019.M Fri Nov 08 11:32:28 2019

ALS Environmental

REPORT SUMMARY

Method : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
Client : Intertox, Incorporated
Analyst : GG

Service Request : P2103635
Instrument : GC13
Date Acquired : 7/13/21

Compounds	MDL	RL	MB QC		Dry Wall QC		Lab Dup			Continuing Calibration Standards Summary (ppbv)											
			MB					dup	%RSD	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff
Sample Information :	ppb	ppb	MB 1.0ml							STD S32-05242101		STD S32-05242101									
Inj. Vol. (ml)	1.0	1.0	1.00		1.0	1.0				0.10		0.10		0.10		0.10		0.10		0.10	
Dilution	1.0	1.0	1.00		1.0	1.0															
Pi:	1.0	1.0	1.0		1.0	1.0															
Pi:	1.0	1.0	1.0		1.0	1.0															
PiPf DF:	1.0	1.0	1.0		1.0	1.0															
Hydrogen_Sulfide	1.900	5.000	ND	P						941.30	5.9%	1023.881	2.4%								
Carbonyl_Sulfide	1.700	5.000	ND	P						949.92	5.0%	1030.961	3.1%								
Methyl_Mercaptan	1.200	5.000	ND	P						1048.96	4.9%	1120.553	12.1%								
Ethyl_Mercaptan	1.200	5.000	ND	P																	
Dimethyl_Sulfide	1.200	5.000	ND	P						6:22 AM		12:01 PM									
Carbon_Disulfide	0.600	2.500	ND	P						07132101.D		07132116.D									
2-Propyl_Mercaptan	1.200	5.000	ND	P																	
t-Butyl_Mercaptan	1.200	5.000	ND	P																	
Propyl_Mercaptan	1.200	5.000	ND	P																	
Ethyl_Methyl_Sulfide	1.200	5.000	ND	P																	
Thiophene	1.200	5.000	ND	P																	
i-Butyl_Mercaptan	1.200	5.000	ND	P																	
Diethyl_Sulfide	1.200	5.000	ND	P																	
n-Butyl_Mercaptan	1.200	5.000	ND	P																	
Dimethyl_Disulfide	0.600	2.500	ND	P																	
2-Methylthiophene	1.200	5.000	ND	P																	
3-Methylthiophene	1.200	5.000	ND	P																	
Tetrahydrothiophene	1.200	5.000	ND	P																	
2,5-Dimethylthiophene	1.200	5.000	ND	P																	
2-Ethylthiophene	1.200	5.000	ND	P																	
Diethyl_Disulfide	0.600	2.500	ND	P																	
Methyltrisulfide	0.600	2.500	ND	P																	
Acqisition Time			7:22 AM																		
DataFile			07132105.D																		

LCS / LCS Dup Summary (ppbv)

	ppbv	%R		ppbv	%R	%RPD	Actual
Hydrogen_Sulfide	958.23	96.9%		964.00	97.5%	0.60%	989.00
Carbonyl_Sulfide	1054.74	100.5%		1036.13	98.7%	1.78%	1050.00
Methyl_Mercaptan	1142.25	108.8%		1133.59	108.0%	0.76%	1050.00
Acqisition Time	6:38 AM			6:48 AM			
DataFile	07132102.D			07132103.D			

ALS Environmental

REPORT SUMMARY

Method : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
Client : Intertox, Incorporated
Analyst : GG

Service Request : P2103635
Instrument : GC22
Date Acquired : 7/13/21

Compounds	MDL	RL	MB QC		Dry Wall QC		Lab Dup			Continuing Calibration Standards Summary (ppbv)											
			MB					dup	%RSD	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff
Sample Information :	ppb	ppb	MB							STD S32-05242101		STD S32-05242101									
Inj. Vol. (ml)	1.0	1.0	1.00		1.0	1.0				0.10		0.10		0.10		0.10		0.10		0.10	
Dilution	1.0	1.0	1.00		1.0	1.0															
Pi:	1.0	1.0	1.0		1.0	1.0															
Pi:	1.0	1.0	1.0		1.0	1.0															
PiPf DF:	1.0	1.0	1.0		1.0	1.0															
Hydrogen_Sulfide	1.900	5.000	ND	P						942.14	5.8%	969.408	3.1%								
Carbonyl_Sulfide	1.700	5.000	ND	P						944.39	5.6%	952.352	4.8%								
Methyl_Mercaptan	1.200	5.000	ND	P						964.07	3.6%	958.103	4.2%								
Ethyl_Mercaptan	1.200	5.000	ND	P																	
Dimethyl_Sulfide	1.200	5.000	ND	P																	
Carbon_Disulfide	0.600	2.500	ND	P						6:21 AM		11:36 AM									
2-Propyl_Mercaptan	1.200	5.000	ND	P						07132101.D		07132117.D									
t-Butyl_Mercaptan	1.200	5.000	ND	P																	
Propyl_Mercaptan	1.200	5.000	ND	P																	
Ethyl_Methyl_Sulfide	1.200	5.000	ND	P																	
Thiophene	1.200	5.000	ND	P																	
i-Butyl_Mercaptan	1.200	5.000	ND	P																	
Diethyl_Sulfide	1.200	5.000	ND	P																	
n-Butyl_Mercaptan	1.200	5.000	ND	P																	
Dimethyl_Disulfide	0.600	2.500	ND	P																	
2-Methylthiophene	1.200	5.000	ND	P																	
3-Methylthiophene	1.200	5.000	ND	P																	
Tetrahydrothiophene	1.200	5.000	ND	P																	
2,5-Dimethylthiophene	1.200	5.000	ND	P																	
2-Ethylthiophene	1.200	5.000	ND	P																	
Diethyl_Disulfide	0.600	2.500	ND	P																	
Methyltrisulfide	0.600	2.500	ND	P																	
Acqisition Time			7:22 AM																		
DataFile			07132105.D																		

LCS / LCS Dup Summary (ppbv)

	ppbv	%R		ppbv	%R	%RPD	Actual
Hydrogen_Sulfide	1049.15	106.1%		987.81	99.9%	6.02%	989.00
Carbonyl_Sulfide	1096.36	104.4%		1035.22	98.6%	5.74%	1050.00
Methyl_Mercaptan	1149.95	109.5%		1065.54	101.5%	7.62%	1050.00
Acqisition Time	6:37 AM			6:47 AM			
DataFile	07132102.D			07132103.D			

Response Factor Report MS13

Method Path : I:\MS13\METHODS\
Method File : R13071821.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Sun Jul 18 21:20:17 2021
Response Via : Initial Calibration

Calibration Files
0.1 =07182102.D 0.2 =07182103.D 0.5 =07182104.D 1.0 =07182105.D 5.0 =07182106.D 25 =07182107.D 50 =07182108.D
100 =07182109.D

		Compound	0.1	0.2	0.5	1.0	5.0	25	50	100	Avg	%RSD
1)	IR	Bromochloromethane...	----------ISTD----------									
2)	T	Propene	1.648	1.511	1.480	1.535	1.477	1.562	1.508	1.181	1.488	9.12
3)	T	Dichlorodifluo...	2.535	2.389	2.463	2.457	2.412	2.398	2.358	2.054	2.383	6.04
4)	T	Chloromethane		1.678	1.782	1.656	0.923	1.259	0.928		1.371	28.31
5)	T	1,2-Dichloro-1...	1.172	1.148	1.211	1.150	1.181	1.123	1.119	1.115	1.152	2.95
6)	T	Vinyl Chloride	1.821	1.820	1.902	1.894	1.985	1.866	1.818	1.729	1.854	4.10
7)	T	1,3-Butadiene	1.334	1.530	1.560	1.679	1.766	1.680	1.609	1.551	1.589	8.22
8)	T	Bromomethane	0.958	0.922	0.977	0.952	0.976	1.008	1.009	0.884	0.961	4.41
9)	T	Chloroethane	0.689	0.748	0.792	0.838	0.877	0.874	0.891	0.889	0.825	9.09
10)	T	Ethanol	0.968	0.921	0.946	0.931	1.019	0.999	0.947	0.908	0.955	4.00
11)	T	Acetonitrile		2.606	2.456	2.575	2.789	2.752	2.710	2.635	2.646	4.33
12)	T	Acrolein		0.585	0.756	0.793	0.864	0.845	0.814	0.810	0.781	11.94
13)	T	Acetone	0.971	1.036	0.919	0.933	1.005	0.925	0.857	0.797	0.931	8.28
14)	T	Trichlorofluor...	2.139	2.083	2.203	2.176	2.241	2.161	2.137	2.127	2.158	2.26
15)	T	2-Propanol (Is...	2.984	3.230	3.502	3.446	3.894	3.922	3.622	3.282	3.485	9.30
16)	T	Acrylonitrile	1.119	1.444	1.594	1.547	1.845	1.737	1.684	1.647	1.577	14.02
17)	T	1,1-Dichloroet...	0.975	0.963	1.020	1.016	1.124	1.090	1.093	1.108	1.049	5.97
18)	T	2-Methyl-2-Pro...	2.130	2.371	2.817	2.918	2.556	3.119	2.487		2.628	13.00
19)	T	Methylene Chlo...	1.126	1.090	1.106	1.106	1.248	1.184	1.181	1.191	1.154	4.78
20)	T	3-Chloro-1-pro...		2.281	2.008	1.947	2.209	2.150	2.084	2.040	2.103	5.60
21)	T	Trichlorotrifl...	0.926	0.928	0.893	0.933	0.966	0.945	0.945	0.961	0.937	2.46
22)	T	Carbon Disulfide			4.286	4.185	4.354	4.131	3.983	3.644	4.097	6.25
23)	T	trans-1,2-Dich...	1.482	1.535	1.600	1.627	1.813	1.800	1.779	1.734	1.671	7.63
24)	T	1,1-Dichloroet...	1.920	2.039	2.154	2.093	2.229	2.148	2.111	2.013	2.088	4.60
25)	T	Methyl tert-Bu...	3.146	3.211	3.404	3.437	3.630	3.779	3.468	2.264	3.292	14.06
26)	T	Vinyl Acetate			0.201	0.221	0.264	0.246	0.239	0.233	0.234	9.23
27)	T	2-Butanone (MEK)			0.590	0.712	0.877	0.823	0.808	0.793	0.767	13.28
28)	T	cis-1,2-Dichlo...	1.768	1.614	1.609	1.653	1.793	1.741	1.708	1.642	1.691	4.22
29)	T	Diisopropyl Ether	0.886	0.930	1.012	1.018	1.139	1.049	0.894	0.853	0.973	10.04
30)	T	Ethyl Acetate			0.491	0.610	0.711	0.657	0.614	0.569	0.609	12.35
31)	T	n-Hexane	1.994	2.108	2.124	2.138	2.404	2.172	2.027	1.853	2.102	7.57
32)	T	Chloroform	2.039	1.933	2.074	2.060	2.201	2.125	2.110	2.049	2.074	3.73
33)	S	1,2-Dichloroet...	1.833	1.838	1.871	1.906	1.839	1.896	1.894	1.601	1.835	5.38
34)	T	Tetrahydrofura...	0.804	0.737	0.772	0.773	0.849	0.790	0.782	0.755	0.783	4.31
35)	T	Ethyl tert-But...	1.204	1.247	1.330	1.382	1.523	1.446	1.418	1.376	1.366	7.62
36)	T	1,2-Dichloroet...	1.645	1.501	1.660	1.651	1.828	1.714	1.708	1.676	1.673	5.44
37)	IR	1,4-Difluorobenzen...	----------ISTD----------									
38)	T	1,1,1-Trichlor...	0.400	0.406	0.419	0.406	0.411	0.415	0.404	0.374	0.404	3.40
39)	T	Isopropyl Acetate									0.000	-1.00
40)	T	1-Butanol									0.000	-1.00
41)	T	Benzene	1.011	0.990	0.990	0.987	1.023	0.997	0.947	0.889	0.979	4.36
42)	T	Carbon Tetrach...	0.354	0.349	0.373	0.361	0.370	0.372	0.455	0.349	0.373	9.25

7/19/21

C-407

Method Path : I:\MS13\METHODS\
Method File : R13071821.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)

43)	T	Cyclohexane	0.389	0.367	0.378	0.381	0.395	0.390	0.370	0.325	0.374	5.89
44)	T	tert-Amyl Meth...	0.663	0.672	0.708	0.708	0.762	0.754	0.705	0.625	0.700	6.53
45)	T	1,2-Dichloropr...	0.258	0.238	0.270	0.262	0.276	0.269	0.262	0.253	0.261	4.55
46)	T	Bromodichlorom...	0.297	0.341	0.358	0.354	0.372	0.373	0.364	0.355	0.352	6.95
47)	T	Trichloroethene	0.267	0.244	0.257	0.263	0.273	0.275	0.270	0.266	0.264	3.83
48)	T	1,4-Dioxane		0.157	0.174	0.187	0.205	0.212	0.210	0.205	0.193	10.88
49)	T	2,2,4-Trimethy...	1.182	1.106	1.207	1.191	1.201	1.168	1.110	1.016	1.148	5.72
50)	T	Methyl Methacr...	0.052	0.036	0.066	0.080	0.101	0.107	0.105	0.102	0.081	33.53
51)	T	n-Heptane	0.227	0.248	0.270	0.265	0.279	0.270	0.261	0.249	0.259	6.53
52)	T	cis-1,3-Dichlo...			0.327	0.360	0.415	0.428	0.414	0.400	0.391	9.99
53)	T	4-Methyl-2-pen...			0.222	0.229	0.261	0.261	0.246	0.226	0.241	7.31
54)	T	trans-1,3-Dich...			0.303	0.313	0.393	0.410	0.402	0.388	0.368	12.85
55)	T	1,1,2-Trichlor...	0.190	0.207	0.225	0.230	0.241	0.243	0.237	0.231	0.226	8.10
56)	IR	Chlorobenzene-d5 (...	----------	----------	ISTD	----------	----------	----------	----------	----------	----------	
57)	S	Toluene-d8 (SS2)	5.246	5.247	5.227	5.194	5.178	5.187	5.239	5.300	5.227	0.77
58)	T	Toluene	4.899	4.612	4.762	4.674	4.768	4.688	4.538	4.291	4.654	3.92
59)	T	2-Hexanone			2.683	2.875	3.222	3.133	2.882	2.548	2.890	8.88
60)	T	Dibromochlorom...	1.034	1.203	1.243	1.224	1.330	1.376	1.380	1.397	1.274	9.66
61)	T	1,2-Dibromoethane	0.741	0.919	1.092	1.159	1.251	1.285	1.285	1.291	1.128	17.95
62)	T	n-Butyl Acetate			2.357	2.861	3.547	3.575	3.314	2.833	3.081	15.56
63)	T	n-Octane	1.000	1.063	1.138	1.092	1.142	1.113	1.079	1.041	1.084	4.48
64)	T	Tetrachloroethene	1.399	1.320	1.318	1.324	1.387	1.428	1.451	1.490	1.389	4.68
65)	T	Chlorobenzene	3.132	3.026	3.195	3.011	3.125	3.178	3.135	3.049	3.106	2.23
66)	T	Ethylbenzene	5.087	4.855	5.185	5.121	5.499	5.454	5.228	4.809	5.155	4.81
67)	T	m- & p-Xylenes	4.091	3.971	4.276	4.126	4.395	4.219	4.025	3.649	4.094	5.52
68)	T	Bromoform	0.939	0.996	1.091	1.106	1.233	1.321	1.346	1.400	1.179	14.50
69)	T	Styrene	2.072	2.477	2.602	2.743	3.234	3.338	3.297	3.186	2.869	16.20
70)	T	o-Xylene	3.782	4.023	4.175	4.195	4.402	4.353	4.226	3.938	4.137	5.07
71)	T	n-Nonane	2.651	2.528	2.799	2.816	2.972	2.846	2.681	2.423	2.714	6.62
72)	T	1,1,2,2-Tetrac...	1.774	1.900	1.905	1.937	2.041	2.026	1.992	1.919	1.937	4.40
73)	S	Bromofluoroben...	1.882	1.915	1.922	1.916	1.946	2.036	2.069	2.131	1.977	4.54
74)	T	Cumene	4.968	4.924	5.131	5.174	5.398	5.330	5.100	4.669	5.087	4.59
75)	T	alpha-Pinene	2.388	2.486	2.494	2.580	2.800	2.810	2.747	2.628	2.617	6.03
76)	T	n-Propylbenzene	5.929	5.724	6.256	6.293	6.742	6.553	6.142	5.393	6.129	7.15
77)	T	3-Ethyltoluene									0.000	-1.00
78)	T	4-Ethyltoluene	3.512	3.912	4.537	4.720	5.252	5.252	5.049	4.617	4.606	13.55
79)	T	1,3,5-Trimethy...	4.795	4.567	4.590	4.473	4.546	4.457	4.333	4.046	4.476	4.88
80)	T	alpha-Methylst...									0.000	-1.00
81)	T	2-Ethyltoluene									0.000	-1.00
82)	T	1,2,4-Trimethy...	3.563	3.801	4.283	4.329	4.707	4.664	4.425	3.981	4.219	9.63
83)	T	n-Decane									0.000	-1.00
84)	T	Benzyl Chloride			2.852	3.183	3.950	4.103	3.801	3.109	3.500	14.74
85)	T	1,3-Dichlorobe...	1.735	1.929	2.312	2.334	2.651	2.709	2.720	2.637	2.378	15.80
86)	T	1,4-Dichlorobe...	2.283	2.176	2.575	2.456	2.708	2.790	2.769	2.715	2.559	9.08
87)	T	sec-Butylbenzene	5.400	5.252	5.712	5.744	6.123	5.740	5.693	5.092	5.595	5.87
88)	T	4-Isopropyltol...	4.153	4.256	4.639	4.784	5.236	5.183	5.017	4.577	4.731	8.52
89)	T	1,2,3-Trimethy...									0.000	-1.00
90)	T	1,2-Dichlorobe...	2.013	2.106	2.325	2.359	2.573	2.611	2.575	2.485	2.381	9.44
91)	T	d-Limonene	1.329	1.420	1.529	1.657	1.820	1.841	1.779	1.636	1.626	11.59
92)	T	1,2-Dibromo-3-...		0.726	0.901	0.942	1.077	1.124	1.125	1.121	1.002	15.21
93)	T	n-Undecane									0.000	-1.00
94)	T	1,2,4-Trichlor...			1.908	1.952	2.280	2.482	2.482		2.221	12.54

Method Path : I:\MS13\METHODS\
Method File : R13071821.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)

95)	T	Naphthalene			4.347	4.927	6.037	6.506	6.330	5.647	5.632	14.99
96)	T	n-Dodecane									0.000	-1.00
97)	T	Hexachlorobuta...	1.394	1.342	1.369	1.389	1.537	1.660	1.737	1.806	1.529	11.98
98)	T	Cyclohexanone									0.000	-1.00
99)	T	tert-Butylbenzene	3.860	3.763	4.026	4.123	4.428	4.331	4.109	3.733	4.047	6.27
100)	T	n-Butylbenzene	2.871	3.779	4.603	4.812	5.153	5.007	4.767	4.267	4.408	17.20
101)	T	1,1,1,2-Tetrac...	1.133	1.022	1.106	1.138	1.171	1.189	1.180	1.159	1.137	4.75

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\MS13\DATA\2021_07\22\07222101.D Vial: 1
Acq On : 22 Jul 2021 00:23 Operator: WA
Sample : CCV R13072221 5ng Inst : MS13
Misc : S34-06112101/S34-07142104 (8/14)

Quant Time: Jul 22 02:56:55 2021
Quant Method : I:\MS13\METHODS\R13071821.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Sun Jul 18 21:20:17 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

7/22/21

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	100	-0.03
2	T	Propene	1.488	1.231	17.3	84	0.00
3	T	Dichlorodifluoromethane (CF	2.383	2.143	10.1	89	0.00
4	T	Chloromethane	1.371	0.950	30.7#	103	-0.01
5	T	1,2-Dichloro-1,1,2,2-tetraf	1.152	1.061	7.9	90	-0.02
6	T	Vinyl Chloride	1.854	1.584	14.6	80	-0.02
7	T	1,3-Butadiene	1.589	1.461	8.1	83	-0.03
8	T	Bromomethane	0.961	0.939	2.3	97	-0.03
9	T	Chloroethane	0.825	0.788	4.5	90	-0.03
10	T	Ethanol	0.955	0.852	10.8	84	-0.11
11	T	Acetonitrile	2.646	2.290	13.5	82	-0.07
12	T	Acrolein	0.781	0.728	6.8	85	-0.04
13	T	Acetone	0.931	0.842	9.6	84	-0.06
14	T	Trichlorofluoromethane	2.158	1.960	9.2	88	-0.02
15	T	2-Propanol (Isopropanol)	3.485	3.505	-0.6	90	-0.07
16	T	Acrylonitrile	1.577	1.489	5.6	81	-0.07
17	T	1,1-Dichloroethene	1.049	0.999	4.8	89	-0.02
18	T	2-Methyl-2-Propanol (tert-B	2.628	3.119	-18.7	123	-0.05
19	T	Methylene Chloride	1.154	1.061	8.1	85	-0.04
20	T	3-Chloro-1-propene (Allyl C	2.103	1.811	13.9	82	-0.03
21	T	Trichlorotrifluoroethane	0.937	0.902	3.7	94	-0.02
22	T	Carbon Disulfide	4.097	3.730	9.0	86	-0.03
23	T	trans-1,2-Dichloroethene	1.671	1.554	7.0	86	-0.03
24	T	1,1-Dichloroethane	2.088	1.888	9.6	85	-0.03
25	T	Methyl tert-Butyl Ether	3.292	3.457	-5.0	96	0.00
26	T	Vinyl Acetate	0.234	0.223	4.7	85	-0.04
27	T	2-Butanone (MEK)	0.767	0.734	4.3	84	-0.02
28	T	cis-1,2-Dichloroethene	1.691	1.509	10.8	84	-0.02
29	T	Diisopropyl Ether	0.973	0.968	0.5	85	-0.01
30	T	Ethyl Acetate	0.609	0.587	3.6	83	-0.03
31	T	n-Hexane	2.102	1.926	8.4	80	-0.01
32	T	Chloroform	2.074	1.909	8.0	87	-0.04
33	S	1,2-Dichloroethane-d4(SS1)	1.835	1.749	4.7	95	-0.03
34	T	Tetrahydrofuran (THF)	0.783	0.723	7.7	86	0.00
35	T	Ethyl tert-Butyl Ether	1.366	1.338	2.0	88	-0.01
36	T	1,2-Dichloroethane	1.673	1.500	10.3	82	-0.02
37	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	95	-0.01
38	T	1,1,1-Trichloroethane	0.404	0.391	3.2	90	-0.02
39	T	Isopropyl Acetate	0.000	0.000	0.0	0#	0.00
40	T	1-Butanol	0.000	0.000	0.0	0#	-12.97#
41	T	Benzene	0.979	0.931	4.9	86	-0.02
42	T	Carbon Tetrachloride	0.373	0.344	7.8	88	-0.02
43	T	Cyclohexane	0.374	0.360	3.7	86	-0.02
44	T	tert-Amyl Methyl Ether	0.700	0.710	-1.4	88	0.00
45	T	1,2-Dichloropropane	0.261	0.242	7.3	83	-0.01
46	T	Bromodichloromethane	0.352	0.338	4.0	86	0.00
47	T	Trichloroethene	0.264	0.261	1.1	91	-0.01
48	T	1,4-Dioxane	0.193	0.192	0.5	89	0.00
49	T	2,2,4-Trimethylpentane (Iso	1.148	1.047	8.8	83	-0.02
50	T	Methyl Methacrylate	0.081	0.099	-22.2	93	-0.01
51	T	n-Heptane	0.259	0.247	4.6	84	-0.01
52	T	cis-1,3-Dichloropropene	0.391	0.378	3.3	86	0.00
53	T	4-Methyl-2-pentanone	0.241	0.234	2.9	85	-0.01
54	T	trans-1,3-Dichloropropene	0.368	0.360	2.2	87	0.00
55	T	1,1,2-Trichloroethane	0.226	0.227	-0.4	89	0.00

Evaluate Continuing Calibration Report

Data File : I:\MS13\DATA\2021_07\22\07222101.D Vial: 1
Acq On : 22 Jul 2021 00:23 Operator: WA
Sample : CCV R13072221 5ng Inst : MS13
Misc : S34-06112101/S34-07142104 (8/14)

Quant Time: Jul 22 02:56:55 2021
Quant Method : I:\MS13\METHODS\R13071821.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Sun Jul 18 21:20:17 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
56	IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	86	0.00
57	S	Toluene-d8 (SS2)	5.227	5.563	-6.4	92	-0.01
58	T	Toluene	4.654	4.888	-5.0	88	0.00
59	T	2-Hexanone	2.890	3.055	-5.7	81	-0.02
60	T	Dibromochloromethane	1.274	1.404	-10.2	90	0.00
61	T	1,2-Dibromoethane	1.128	1.298	-15.1	89	-0.01
62	T	n-Butyl Acetate	3.081	3.403	-10.5	82	0.00
63	T	n-Octane	1.084	1.100	-1.5	83	-0.01
64	T	Tetrachloroethene	1.389	1.564	-12.6	97	0.00
65	T	Chlorobenzene	3.106	3.252	-4.7	89	0.00
66	T	Ethylbenzene	5.155	5.671	-10.0	88	0.00
67	T	m- & p-Xylenes	4.094	4.441	-8.5	87	-0.01
68	T	Bromoform	1.179	1.342	-13.8	93	0.00
69	T	Styrene	2.869	3.360	-17.1	89	0.00
70	T	o-Xylene	4.137	4.437	-7.3	86	0.00
71	T	n-Nonane	2.714	2.727	-0.5	79	0.00
72	T	1,1,2,2-Tetrachloroethane	1.937	2.010	-3.8	84	0.00
73	S	Bromofluorobenzene (SS3)	1.977	2.300	-16.3	101	0.00
74	T	Cumene	5.087	5.602	-10.1	89	0.00
75	T	alpha-Pinene	2.617	2.850	-8.9	87	0.00
76	T	n-Propylbenzene	6.129	6.786	-10.7	86	0.00
77	T	3-Ethyltoluene	0.000	0.000	0.0	0#	0.00
78	T	4-Ethyltoluene	4.606	5.437	-18.0	89	0.00
79	T	1,3,5-Trimethylbenzene	4.476	4.647	-3.8	88	0.00
80	T	alpha-Methylstyrene	0.000	0.000	0.0	0#	0.00
81	T	2-Ethyltoluene	0.000	0.000	0.0	0#	0.00
82	T	1,2,4-Trimethylbenzene	4.219	4.847	-14.9	88	-0.01
83	T	n-Decane	0.000	0.000	0.0	0#	0.00
84	T	Benzyl Chloride	3.500	4.085	-16.7	89	-0.01
85	T	1,3-Dichlorobenzene	2.378	2.789	-17.3	90	-0.01
86	T	1,4-Dichlorobenzene	2.559	2.890	-12.9	91	-0.01
87	T	sec-Butylbenzene	5.595	6.251	-11.7	87	0.00
88	T	4-Isopropyltoluene (p-Cymen	4.731	5.433	-14.8	89	0.00
89	T	1,2,3-Trimethylbenzene	0.000	0.000	0.0	0#	0.00
90	T	1,2-Dichlorobenzene	2.381	2.746	-15.3	91	0.00
91	T	d-Limonene	1.626	1.829	-12.5	86	0.00
92	T	1,2-Dibromo-3-Chloropropane	1.002	1.145	-14.3	91	0.00
93	T	n-Undecane	0.000	0.000	0.0	0#	0.00
94	T	1,2,4-Trichlorobenzene	2.221	2.587	-16.5	97	0.00
95	T	Naphthalene	5.632	6.457	-14.6	92	0.00
96	T	n-Dodecane	0.000	0.000	0.0	0#	0.00
97	T	Hexachlorobutadiene	1.529	1.802	-17.9	100	0.00
98	T	Cyclohexanone	0.000	0.000	0.0	0#	0.00
99	T	tert-Butylbenzene	4.047	4.572	-13.0	88	0.00
100	T	n-Butylbenzene	4.408	5.181	-17.5	86	0.00
101	T	1,1,1,2-Tetrachloroethane	1.137	1.222	-7.5	89	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

2655 Park Center Dr., Suite A
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T: +1 805 526 7161
www.alsglobal.com

LABORATORY REPORT

August 11, 2021

Lisa Corey
Intertox, Incorporated
600 Stewart Street, Suite 1101
Seattle, WA 98101

RE: KCLF

Dear Lisa:

Enclosed are the results of the samples submitted to our laboratory on July 12, 2021. For your reference, these analyses have been assigned our service request number P2103661.

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

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

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 6:20 pm, Aug 11, 2021

Sue Anderson
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: Intertox, Incorporated
Project: KCLF

Service Request No: P2103661

CASE NARRATIVE

The samples were received intact under chain of custody on July 12, 2021 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.

Butane and Pentane Analysis

The samples were analyzed per modified EPA Method TO-3 for butane and pentane using a gas chromatograph equipped with a flame ionization detector (FID). This procedure is described in laboratory SOP VOA-TO3C1C6. This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP accreditation.

Carbon Monoxide and Total Gaseous Non-Methane Organics as Hexane Analysis

The samples were also analyzed for carbon monoxide and total gaseous non-methane organics as hexane according to modified EPA Method 25C. The analyses included a single sample injection (method modification) analyzed by gas chromatography using flame ionization detection/total combustion analysis.

Ethane and Propane Analysis

The samples were also analyzed per modified EPA Method TO-3 for ethane and propane using a gas chromatograph equipped with a flame ionization detector (FID). This procedure is described in laboratory SOP VOA-TO3C1C6. This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP accreditation.

Sulfur Analysis

The samples were also analyzed for six sulfur compounds per ASTM D 5504-12 using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). All compounds with the exception of hydrogen sulfide and carbonyl sulfide are quantitated against the initial calibration curve for methyl mercaptan. This method is included on the laboratory's NELAP scope of accreditation, however it is not part of the DoD-ELAP accreditation.

Volatile Organic Compound Analysis

The samples were also analyzed for volatile organic compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. This procedure is described

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Client: Intertox, Incorporated
Project: KCLF

Service Request No: P2103661

CASE NARRATIVE

in laboratory SOP VOA-TO15. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the NELAP or DoD-ELAP accreditation.

The containers were cleaned, prior to sampling, down to the method reporting limit (MRL) reported for this project. For projects requiring DoD QSM 5.3 compliance canisters were cleaned to <1/2 the MRL. Please note, projects which require reporting below the MRL could have results between the MRL and method detection limit (MDL) that are biased high.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

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

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

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Intertox, Incorporated
Project ID: KCLF

Service Request: P2103661

Date Received: 7/12/2021
Time Received: 10:00

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pfl (psig)	2nd Pi (psig)	2nd Pf (psig)	TO-3 Modified - C1C6+ Can	TO-3 Modified - MEEPP Can	ASTM D 5504-12 - Sulfur Can	25C Modified - TGNMO+ 1X Can	TO-15 - VOC Cans
S6	P2103661-001	Air	7/8/2021	05:15	AS01511	-1.83	4.08			X	X	X	X	X
S5	P2103661-002	Air	7/8/2021	05:29	AS00617	-1.79	3.70			X	X	X	X	X
S7	P2103661-003	Air	7/8/2021	05:43	AS00903	-2.03	4.39			X	X	X	X	X
REF1	P2103661-004	Air	7/8/2021	06:17	AS00655	-1.43	4.00	0.42	2.64	X	X	X	X	X
S13	P2103661-005	Air	7/8/2021	06:56	AS00548	-2.17	4.23			X	X	X	X	X
S12	P2103661-006	Air	7/8/2021	07:16	AS00575	-2.46	3.73			X	X	X	X	X
S11	P2103661-007	Air	7/8/2021	07:28	AS01277	-1.60	3.85	0.10	2.61	X	X	X	X	X
S11D	P2103661-008	Air	7/8/2021	07:35	AS00609	-1.58	3.54			X	X	X	X	X
S4	P2103661-009	Air	7/8/2021	07:49	AS00341	-2.30	3.60			X	X	X	X	X
S8	P2103661-010	Air	7/8/2021	08:03	AS01414	-1.78	3.88			X	X	X	X	X
S9	P2103661-011	Air	7/8/2021	08:15	AS01309	-1.89	3.62			X	X	X	X	X
S10	P2103661-012	Air	7/8/2021	08:27	AS00871	-1.59	3.54			X	X	X	X	X
S2	P2103661-013	Air	7/8/2021	09:00	AS00931	-1.63	3.58			X	X	X	X	X
S3	P2103661-014	Air	7/8/2021	09:12	AS00643	-2.51	3.63			X	X	X	X	X
S1	P2103661-015	Air	7/8/2021	09:26	AS01479	-2.26	3.64			X	X	X	X	X

Air - Chain of Custody Record & Analytical Service Request

Page 1 of 2

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

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard

ALS Project No. 2103661

Report To (Billing Information)
Intertox
600 Stewart St, Suite 1101
Seattle, WA ~~98107~~ 98101
Lisa Corey
(206) 443-2115

Project Name: KLLF
Project Number:
P.O. # / Billing Information: 600 Stewart St, Suite 1101 Seattle, WA 98101

ALS Contact: Sue Anderson

Email Address for Result Reporting: lcorey@~~gmail~~intertox.com

Sampler (Print & Sign): Lisa Corey Lisa Corey

Please see sues email

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	Analysis Method	Comments e.g. Actual Preservative or specific instructions
S6	1	7/8/21	05:15	AS01511		-32.0	-5.5				
S5	2	7/8/21	05:29	AS00617		-28.0	-5.0				
S7	3	7/8/21	05:43	AS00903		-33.0	-6.0				
REF1	4	7/8/21	06:17	AS00655		-29.5	-5.0				
S13	5	7/8/21	06:56	AS00548		-32.0	-5.5				
S12	6	7/8/21	07:10	AS00575		-29.0	-6.0				
S11	7	7/8/21	07:28	AS01277		-31.0	-5.0				
S11D	8	7/8/21	07:35	AS00609		-30.0	-5.0				
S4	9	7/8/21	07:49	AS00341		-27.0	-5.0				
S8	10	7/8/21	08:03	AS01414		-30	-5.0				
S9	11	7/8/21	08:15	AS01309		-27.5	-4.0				
S10	12	7/8/21	08:27	AS00871		-29.5	-5.0				
S2	13	7/8/21	09:00	AS00931		-29.0	-5.0				
S3	14	7/8/21	09:12	AS00643		-30.0	-5.0				

Report Tier Levels - please select

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

EDD required Yes / No
Type: _____ Units: _____

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Lisa Corey	7/8/21	13:00			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
				7-12-21	1000

Cooler / Blank Temperature ____ °C

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Air - Chain of Custody Record & Analytical Service Request

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

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard

ALS Project No. 210366

Company Name & Address (Reporting Information)	Intertox 600 Stewart St, Suite 1101 Seattle, WA ~~98107~~ 98101
Project Manager	Lisa Corey
Phone	(206)443-2115
Fax	
Email Address for Result Reporting	lcorey@intertox.com
Project Name	LCLF
Project Number	
P.O. # / Billing Information	600 Stewart St, Suite 1101 Seattle, WA 98101
Sampler (Print & Sign)	
ALS Contact:	Sue Anderson

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
									Please see Sue's email		
S1	15	7/6/21	09:26			-29.5	-5.0				

Report Tier Levels - please select

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

EDD required Yes / No
Type: _____ Units: _____

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date: 7/6/21	Time: 13:00	Received by: (Signature)	Date:	Time:	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date: 7-12-21	Time: 1000	Cooler / Blank Temperature ___°C

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ALS Environmental
Sample Acceptance Check Form

Client: Intertox, Incorporated Work order: P2103661

Project: KCLF

Sample(s) received on: 7/12/21 Date opened: 7/12/21 by: DENISE.POSADA

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	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
8	Were **custody seals** on outside of cooler/Box/Container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
9	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?	☐	☐	☒
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**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
P2103661-001.01	6.0 L Silonite Can					
P2103661-002.01	6.0 L Silonite Can					
P2103661-003.01	6.0 L Silonite Can					
P2103661-004.01	6.0 L Silonite Can					
P2103661-005.01	6.0 L Silonite Can					
P2103661-006.01	6.0 L Silonite Can					
P2103661-007.01	6.0 L Silonite Can					
P2103661-008.01	6.0 L Silonite Can					
P2103661-009.01	6.0 L Silonite Can					
P2103661-010.01	6.0 L Silonite Can					
P2103661-011.01	6.0 L Silonite Can					
P2103661-012.01	6.0 L Silonite Can					
P2103661-013.01	6.0 L Silonite Can					
P2103661-014.01	6.0 L Silonite Can					
P2103661-015.01	6.0 L Silonite Can					

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

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6**
Client Project ID: **KCLF**

ALS Project ID: P2103661
ALS Sample ID: P2103661-001

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01511

Date Collected: 7/8/21
Date Received: 7/12/21
Date Analyzed: 7/15/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.83 Final Pressure (psig): 4.08

Container Dilution Factor: 1.46

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.73	0.064	
n-Pentane	ND	0.73	0.072	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5**
Client Project ID: **KCLF**

ALS Project ID: P2103661
ALS Sample ID: P2103661-002

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00617

Date Collected: 7/8/21
Date Received: 7/12/21
Date Analyzed: 7/15/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.79 Final Pressure (psig): 3.70

Container Dilution Factor: 1.43

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.72	0.063	
n-Pentane	ND	0.72	0.070	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-003

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS00903

Initial Pressure (psig): -2.03 Final Pressure (psig): 4.39

Container Dilution Factor: 1.51

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.76	0.066	
n-Pentane	ND	0.76	0.074	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF1** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-004

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS00655

Initial Pressure (psig): -1.43 Final Pressure (psig): 4.00

Container Dilution Factor: 1.41

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.71	0.062	
n-Pentane	ND	0.71	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13**
Client Project ID: **KCLF**

ALS Project ID: P2103661
ALS Sample ID: P2103661-005

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00548

Date Collected: 7/8/21
Date Received: 7/12/21
Date Analyzed: 7/15/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.17 Final Pressure (psig): 4.23

Container Dilution Factor: 1.51

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.76	0.066	
n-Pentane	ND	0.76	0.074	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-006

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS00575

Initial Pressure (psig): -2.46 Final Pressure (psig): 3.73

Container Dilution Factor: 1.51

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.76	0.066	
n-Pentane	ND	0.76	0.074	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11**
Client Project ID: **KCLF**

ALS Project ID: P2103661
ALS Sample ID: P2103661-007

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01277

Date Collected: 7/8/21
Date Received: 7/12/21
Date Analyzed: 7/15/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.60 Final Pressure (psig): 3.85

Container Dilution Factor: 1.42

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.71	0.062	
n-Pentane	ND	0.71	0.070	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D**
Client Project ID: **KCLF**

ALS Project ID: P2103661
ALS Sample ID: P2103661-008

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00609

Date Collected: 7/8/21
Date Received: 7/12/21
Date Analyzed: 7/15/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.58 Final Pressure (psig): 3.54

Container Dilution Factor: 1.39

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.70	0.061	
n-Pentane	ND	0.70	0.068	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-009

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS00341

Initial Pressure (psig): -2.30 Final Pressure (psig): 3.60

Container Dilution Factor: 1.48

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.74	0.065	
n-Pentane	ND	0.74	0.073	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-010

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01414

Initial Pressure (psig): -1.78 Final Pressure (psig): 3.88

Container Dilution Factor: 1.44

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.72	0.063	
n-Pentane	ND	0.72	0.071	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-011

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01309

Initial Pressure (psig): -1.89 Final Pressure (psig): 3.62

Container Dilution Factor: 1.43

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.72	0.063	
n-Pentane	ND	0.72	0.070	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-012

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS00871

Initial Pressure (psig): -1.59 Final Pressure (psig): 3.54

Container Dilution Factor: 1.39

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.70	0.061	
n-Pentane	ND	0.70	0.068	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-013

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS00931

Initial Pressure (psig): -1.63 Final Pressure (psig): 3.58

Container Dilution Factor: 1.40

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.70	0.062	
n-Pentane	ND	0.70	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3**
Client Project ID: **KCLF**

ALS Project ID: P2103661
ALS Sample ID: P2103661-014

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00643

Date Collected: 7/8/21
Date Received: 7/12/21
Date Analyzed: 7/15/21
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.51 Final Pressure (psig): 3.63

Container Dilution Factor: 1.50

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.75	0.066	
n-Pentane	ND	0.75	0.074	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-015

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC8/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:
Container ID: AS01479

Initial Pressure (psig): -2.26 Final Pressure (psig): 3.64

Container Dilution Factor: 1.47

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.74	0.065	
n-Pentane	ND	0.74	0.072	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210715-MB

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890 II/GC8/FID Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 7/15/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:

Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
n-Butane	ND	0.50	0.044	
n-Pentane	ND	0.50	0.049	

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

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **KCLF**

ALS Project ID: P2103661
ALS Sample ID: P210715-DLCS

Test Code: EPA TO-3 Modified
Instrument ID: HP5890 II/GC8/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/15/21
Volume(s) Analyzed: NA ml(s)

Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
n-Butane	1,000	995	1,040	**100**	**104**	91-121	4	6	
n-Pentane	1,000	982	1,030	**98**	**103**	89-118	5	6	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-001

Test Code: EPA Method 25C Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/12/21
Analyst: Connor Barrett Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01511

Initial Pressure (psig): -1.83 Final Pressure (psig): 4.08

Container Dilution Factor: 1.46

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.3	0.77	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.70**	0.25	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-002

Test Code: EPA Method 25C Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/12/21
Analyst: Connor Barrett Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00617

Initial Pressure (psig): -1.79 Final Pressure (psig): 3.70

Container Dilution Factor: 1.43

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.2	0.76	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.76**	0.24	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-003

Test Code: EPA Method 25C Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/12/21
Analyst: Connor Barrett Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00903

Initial Pressure (psig): -2.03 Final Pressure (psig): 4.39

Container Dilution Factor: 1.51

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.6	0.80	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.71**	0.26	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF1** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-004

Test Code: EPA Method 25C Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/12/21
Analyst: Connor Barrett Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00655

Initial Pressure (psig): -1.43 Final Pressure (psig): 4.00

Container Dilution Factor: 1.41

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.1	0.75	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.57**	0.24	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-005

Test Code: EPA Method 25C Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/12/21
Analyst: Connor Barrett Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00548

Initial Pressure (psig): -2.17 Final Pressure (psig): 4.23

Container Dilution Factor: 1.51

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.6	0.80	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.67**	0.26	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-006

Test Code: EPA Method 25C Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/12/21
Analyst: Connor Barrett Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00575

Initial Pressure (psig): -2.46 Final Pressure (psig): 3.73

Container Dilution Factor: 1.51

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.6	0.80	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.50**	0.26	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-007

Test Code: EPA Method 25C Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/12/21
Analyst: Connor Barrett Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01277

Initial Pressure (psig): -1.60 Final Pressure (psig): 3.85

Container Dilution Factor: 1.42

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.1	0.75	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.55**	0.24	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-008

Test Code: EPA Method 25C Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/12/21
Analyst: Connor Barrett Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00609

Initial Pressure (psig): -1.58 Final Pressure (psig): 3.54

Container Dilution Factor: 1.39

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.0	0.74	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.63**	0.24	0.10	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-009

Test Code: EPA Method 25C Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/12/21
Analyst: Connor Barrett Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00341

Initial Pressure (psig): -2.30 Final Pressure (psig): 3.60

Container Dilution Factor: 1.48

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.4	0.78	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.69**	0.25	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-010

Test Code: EPA Method 25C Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/12/21
Analyst: Connor Barrett Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01414

Initial Pressure (psig): -1.78 Final Pressure (psig): 3.88

Container Dilution Factor: 1.44

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.2	0.76	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.82**	0.24	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-011

Test Code: EPA Method 25C Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/12/21
Analyst: Connor Barrett Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01309

Initial Pressure (psig): -1.89 Final Pressure (psig): 3.62

Container Dilution Factor: 1.43

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.2	0.76	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.77**	0.24	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-012

Test Code: EPA Method 25C Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/12/21
Analyst: Connor Barrett Date Analyzed: 7/17/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00871

Initial Pressure (psig): -1.59 Final Pressure (psig): 3.54

Container Dilution Factor: 1.39

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.0	0.74	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.60**	0.24	0.10	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-013

Test Code: EPA Method 25C Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/12/21
Analyst: Connor Barrett Date Analyzed: 7/17/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00931

Initial Pressure (psig): -1.63 Final Pressure (psig): 3.58

Container Dilution Factor: 1.40

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.0	0.74	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.75**	0.24	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-014

Test Code: EPA Method 25C Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/12/21
Analyst: Connor Barrett Date Analyzed: 7/17/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00643

Initial Pressure (psig): -2.51 Final Pressure (psig): 3.63

Container Dilution Factor: 1.50

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.5	0.80	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.91**	0.26	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-015

Test Code: EPA Method 25C Modified Date Collected: 7/8/21
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: 7/12/21
Analyst: Connor Barrett Date Analyzed: 7/17/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01479

Initial Pressure (psig): -2.26 Final Pressure (psig): 3.64

Container Dilution Factor: 1.47

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	7.4	0.78	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	**0.49**	0.25	0.11	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210716-MB

Test Code: EPA Method 25C Modified Date Collected: NA
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: NA
Analyst: Connor Barrett Date Analyzed: 7/16/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	5.0	0.53	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.17	0.075	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210717-MB

Test Code: EPA Method 25C Modified Date Collected: NA
Instrument ID: HP5890 II/GC1/FID/TCA Date Received: NA
Analyst: Connor Barrett Date Analyzed: 7/17/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:

CAS #	Compound	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
630-08-0	Carbon Monoxide	ND	5.0	0.53	
	Total Gaseous Nonmethane Organics (TGNMO) as Hexane	ND	0.17	0.075	

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

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **KCLF**

ALS Project ID: P2103661
ALS Sample ID: P210716-DLCS

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/16/21
Volume(s) Analyzed: NA ml(s)

Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
Carbon Monoxide	400	447	467	**112**	**117**	90-123	4	11	
Total Gaseous Nonmethane Organics (TGNMO) as Methane	400	435	454	**109**	**114**	86-121	4	13	

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **KCLF**

ALS Project ID: P2103661
ALS Sample ID: P210717-DLCS

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Connor Barrett
Sampling Media: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/17/21
Volume(s) Analyzed: NA ml(s)

Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
Carbon Monoxide	400	449	445	**112**	**111**	90-123	0.9	11	
Total Gaseous Nonmethane Organics (TGNMO) as Methane	400	436	432	**109**	**108**	86-121	0.9	13	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-001

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01511

Initial Pressure (psig): -1.83 Final Pressure (psig): 4.08

Container Dilution Factor: 1.46

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.54	0.076	ND	0.44	0.061	
74-98-6	Propane	ND	0.79	0.12	ND	0.44	0.067	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-002

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00617

Initial Pressure (psig): -1.79 Final Pressure (psig): 3.70

Container Dilution Factor: 1.43

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.53	0.074	ND	0.43	0.060	
74-98-6	Propane	ND	0.77	0.12	ND	0.43	0.066	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-003

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00903

Initial Pressure (psig): -2.03 Final Pressure (psig): 4.39

Container Dilution Factor: 1.51

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.56	0.079	ND	0.45	0.063	
74-98-6	Propane	ND	0.82	0.12	ND	0.45	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF1** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-004

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00655

Initial Pressure (psig): -1.43 Final Pressure (psig): 4.00

Container Dilution Factor: 1.41

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.52	0.073	ND	0.42	0.059	
74-98-6	Propane	ND	0.76	0.12	ND	0.42	0.065	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-005

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00548

Initial Pressure (psig): -2.17 Final Pressure (psig): 4.23

Container Dilution Factor: 1.51

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.56	0.079	ND	0.45	0.063	
74-98-6	Propane	ND	0.82	0.12	ND	0.45	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-006

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00575

Initial Pressure (psig): -2.46 Final Pressure (psig): 3.73

Container Dilution Factor: 1.51

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.56	0.079	ND	0.45	0.063	
74-98-6	Propane	ND	0.82	0.12	ND	0.45	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-007

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01277

Initial Pressure (psig): -1.60 Final Pressure (psig): 3.85

Container Dilution Factor: 1.42

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.52	0.074	ND	0.43	0.060	
74-98-6	Propane	ND	0.77	0.12	ND	0.43	0.065	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-008

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00609

Initial Pressure (psig): -1.58 Final Pressure (psig): 3.54

Container Dilution Factor: 1.39

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.51	0.072	ND	0.42	0.058	
74-98-6	Propane	ND	0.75	0.11	ND	0.42	0.064	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-009

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00341

Initial Pressure (psig): -2.30 Final Pressure (psig): 3.60

Container Dilution Factor: 1.48

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.55	0.077	ND	0.44	0.062	
74-98-6	Propane	ND	0.80	0.12	ND	0.44	0.068	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-010

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01414

Initial Pressure (psig): -1.78 Final Pressure (psig): 3.88

Container Dilution Factor: 1.44

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.53	0.075	ND	0.43	0.060	
74-98-6	Propane	ND	0.78	0.12	ND	0.43	0.066	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-011

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01309

Initial Pressure (psig): -1.89 Final Pressure (psig): 3.62

Container Dilution Factor: 1.43

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.53	0.074	ND	0.43	0.060	
74-98-6	Propane	ND	0.77	0.12	ND	0.43	0.066	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10**
Client Project ID: **KCLF**

ALS Project ID: P2103661
ALS Sample ID: P2103661-012

Test Code: EPA TO-3 Modified
Instrument ID: HP5890A/GC10/FID
Analyst: Gilbert Gutierrez
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00871

Date Collected: 7/8/21
Date Received: 7/12/21
Date Analyzed: 7/22/21
Volume(s) Analyzed: 0.50 ml(s)

Initial Pressure (psig): -1.59 Final Pressure (psig): 3.54

Container Dilution Factor: 1.39

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.51	0.072	ND	0.42	0.058	
74-98-6	Propane	ND	0.75	0.11	ND	0.42	0.064	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-013

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/22/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00931

Initial Pressure (psig): -1.63 Final Pressure (psig): 3.58

Container Dilution Factor: 1.40

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.52	0.073	ND	0.42	0.059	
74-98-6	Propane	ND	0.76	0.11	ND	0.42	0.064	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-014

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/22/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS00643

Initial Pressure (psig): -2.51 Final Pressure (psig): 3.63

Container Dilution Factor: 1.50

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.55	0.078	ND	0.45	0.063	
74-98-6	Propane	ND	0.81	0.12	ND	0.45	0.069	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-015

Test Code: EPA TO-3 Modified Date Collected: 7/8/21
Instrument ID: HP5890A/GC10/FID Date Received: 7/12/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/22/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:
Container ID: AS01479

Initial Pressure (psig): -2.26 Final Pressure (psig): 3.64

Container Dilution Factor: 1.47

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.54	0.076	ND	0.44	0.062	
74-98-6	Propane	ND	0.80	0.12	ND	0.44	0.068	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210721-MB

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.37	0.052	ND	0.30	0.042	
74-98-6	Propane	ND	0.54	0.082	ND	0.30	0.046	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210722-MB

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 7/22/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.50 ml(s)
Test Notes:

CAS #	Compound	Result mg/m³	MRL mg/m³	MDL mg/m³	Result ppmV	MRL ppmV	MDL ppmV	Data Qualifier
74-84-0	Ethane	ND	0.37	0.052	ND	0.30	0.042	
74-98-6	Propane	ND	0.54	0.082	ND	0.30	0.046	

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

ALS ENVIRONMENTAL

DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210721-DLCS

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 7/21/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-84-0	Ethane	1.51	1.58	1.58	**105**	**105**	70-130	0	15	
74-98-6	Propane	1.50	1.60	1.61	**107**	**107**	70-130	0	15	

ALS ENVIRONMENTAL

DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210722-DLCS

Test Code: EPA TO-3 Modified Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 7/22/21
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ppmV	Result LCS ppmV	Result DLCS ppmV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-84-0	Ethane	1.51	1.41	1.41	**93**	**93**	70-130	0	15	
74-98-6	Propane	1.50	1.43	1.39	**95**	**93**	70-130	2	15	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-001

Test Code:	ASTM D 5504-12	Date Collected:	7/8/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	05:15
Analyst:	Gilbert Gutierrez	Date Received:	7/12/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/14/21
Test Notes:		Time Analyzed:	07:49
Container ID:	AS01511	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.83 Final Pressure (psig): 4.08

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.1	ND	7.3	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.8	ND	7.3	2.8	
74-93-1	Methyl Mercaptan	ND	14	5.7	ND	7.3	2.9	
75-08-1	Ethyl Mercaptan	ND	19	7.4	ND	7.3	2.9	
75-18-3	Dimethyl Sulfide	ND	19	7.4	ND	7.3	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.7	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5**
Client Project ID: **KCLF**

ALS Project ID: P2103661
ALS Sample ID: P2103661-002

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00617

Date Collected: 7/8/21
Time Collected: 05:29
Date Received: 7/12/21
Date Analyzed: 7/14/21
Time Analyzed: 08:08
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.79 Final Pressure (psig): 3.70

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.0	ND	7.2	2.1	
463-58-1	Carbonyl Sulfide	ND	18	6.7	ND	7.2	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.6	ND	7.2	2.9	
75-08-1	Ethyl Mercaptan	ND	18	7.3	ND	7.2	2.9	
75-18-3	Dimethyl Sulfide	ND	18	7.3	ND	7.2	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.6	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7**
Client Project ID: **KCLF**

ALS Project ID: P2103661
ALS Sample ID: P2103661-003

Test Code:	ASTM D 5504-12	Date Collected:	7/8/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	05:43
Analyst:	Gilbert Gutierrez	Date Received:	7/12/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/14/21
Test Notes:		Time Analyzed:	08:26
Container ID:	AS00903	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -2.03 Final Pressure (psig): 4.39

Container Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	11	3.2	ND	7.6	2.3	
463-58-1	Carbonyl Sulfide	ND	19	7.0	ND	7.6	2.9	
74-93-1	Methyl Mercaptan	ND	15	5.9	ND	7.6	3.0	
75-08-1	Ethyl Mercaptan	ND	19	7.7	ND	7.6	3.0	
75-18-3	Dimethyl Sulfide	ND	19	7.7	ND	7.6	3.0	
75-15-0	Carbon Disulfide	ND	12	4.7	ND	3.8	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF1**
Client Project ID: **KCLF**

ALS Project ID: P2103661
ALS Sample ID: P2103661-004

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS00655

Date Collected: 7/8/21
Time Collected: 06:17
Date Received: 7/12/21
Date Analyzed: 7/14/21
Time Analyzed: 08:44
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.43 Final Pressure (psig): 4.00

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.8	2.9	ND	7.1	2.1	
463-58-1	Carbonyl Sulfide	ND	17	6.6	ND	7.1	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.5	ND	7.1	2.8	
75-08-1	Ethyl Mercaptan	ND	18	7.2	ND	7.1	2.8	
75-18-3	Dimethyl Sulfide	ND	18	7.2	ND	7.1	2.8	
75-15-0	Carbon Disulfide	ND	11	4.4	ND	3.5	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-005

Test Code:	ASTM D 5504-12	Date Collected:	7/8/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	06:56
Analyst:	Gilbert Gutierrez	Date Received:	7/12/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/14/21
Test Notes:		Time Analyzed:	09:04
Container ID:	AS00548	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -2.17 Final Pressure (psig): 4.23

Container Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	11	3.2	ND	7.6	2.3	
463-58-1	Carbonyl Sulfide	ND	19	7.0	ND	7.6	2.9	
74-93-1	Methyl Mercaptan	ND	15	5.9	ND	7.6	3.0	
75-08-1	Ethyl Mercaptan	ND	19	7.7	ND	7.6	3.0	
75-18-3	Dimethyl Sulfide	ND	19	7.7	ND	7.6	3.0	
75-15-0	Carbon Disulfide	ND	12	4.7	ND	3.8	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-006

Test Code:	ASTM D 5504-12	Date Collected:	7/8/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	07:16
Analyst:	Gilbert Gutierrez	Date Received:	7/12/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/14/21
Test Notes:		Time Analyzed:	09:23
Container ID:	AS00575	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -2.46 Final Pressure (psig): 3.73

Container Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	11	3.2	ND	7.6	2.3	
463-58-1	Carbonyl Sulfide	ND	19	7.0	ND	7.6	2.9	
74-93-1	Methyl Mercaptan	ND	15	5.9	ND	7.6	3.0	
75-08-1	Ethyl Mercaptan	ND	19	7.7	ND	7.6	3.0	
75-18-3	Dimethyl Sulfide	ND	19	7.7	ND	7.6	3.0	
75-15-0	Carbon Disulfide	ND	12	4.7	ND	3.8	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11**
Client Project ID: **KCLF**

ALS Project ID: P2103661
ALS Sample ID: P2103661-007

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: AS01277

Date Collected: 7/8/21
Time Collected: 07:28
Date Received: 7/12/21
Date Analyzed: 7/14/21
Time Analyzed: 09:43
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.60 Final Pressure (psig): 3.85

Container Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.9	3.0	ND	7.1	2.1	
463-58-1	Carbonyl Sulfide	ND	17	6.6	ND	7.1	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.6	ND	7.1	2.8	
75-08-1	Ethyl Mercaptan	ND	18	7.2	ND	7.1	2.8	
75-18-3	Dimethyl Sulfide	ND	18	7.2	ND	7.1	2.8	
75-15-0	Carbon Disulfide	ND	11	4.4	ND	3.6	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-008

Test Code:	ASTM D 5504-12	Date Collected:	7/8/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	07:35
Analyst:	Gilbert Gutierrez	Date Received:	7/12/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/14/21
Test Notes:		Time Analyzed:	10:02
Container ID:	AS00609	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.58 Final Pressure (psig): 3.54

Container Dilution Factor: 1.39

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.7	2.9	ND	7.0	2.1	
463-58-1	Carbonyl Sulfide	ND	17	6.5	ND	7.0	2.6	
74-93-1	Methyl Mercaptan	ND	14	5.5	ND	7.0	2.8	
75-08-1	Ethyl Mercaptan	ND	18	7.1	ND	7.0	2.8	
75-18-3	Dimethyl Sulfide	ND	18	7.1	ND	7.0	2.8	
75-15-0	Carbon Disulfide	ND	11	4.3	ND	3.5	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-009

Test Code:	ASTM D 5504-12	Date Collected:	7/8/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	07:49
Analyst:	Gilbert Gutierrez	Date Received:	7/12/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/14/21
Test Notes:		Time Analyzed:	10:20
Container ID:	AS00341	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -2.30 Final Pressure (psig): 3.60

Container Dilution Factor: 1.48

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.1	ND	7.4	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.9	ND	7.4	2.8	
74-93-1	Methyl Mercaptan	ND	15	5.8	ND	7.4	3.0	
75-08-1	Ethyl Mercaptan	ND	19	7.5	ND	7.4	3.0	
75-18-3	Dimethyl Sulfide	ND	19	7.5	ND	7.4	3.0	
75-15-0	Carbon Disulfide	ND	12	4.6	ND	3.7	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-010

Test Code:	ASTM D 5504-12	Date Collected:	7/8/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	08:03
Analyst:	Gilbert Gutierrez	Date Received:	7/12/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/14/21
Test Notes:		Time Analyzed:	10:40
Container ID:	AS01414	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.78 Final Pressure (psig): 3.88

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.0	ND	7.2	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.7	ND	7.2	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.7	ND	7.2	2.9	
75-08-1	Ethyl Mercaptan	ND	18	7.3	ND	7.2	2.9	
75-18-3	Dimethyl Sulfide	ND	18	7.3	ND	7.2	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.6	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9**
Client Project ID: **KCLF**

ALS Project ID: P2103661
ALS Sample ID: P2103661-011

Test Code:	ASTM D 5504-12	Date Collected:	7/8/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	08:15
Analyst:	Gilbert Gutierrez	Date Received:	7/12/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/14/21
Test Notes:		Time Analyzed:	11:15
Container ID:	AS01309	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.89 Final Pressure (psig): 3.62

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.0	ND	7.2	2.1	
463-58-1	Carbonyl Sulfide	ND	18	6.7	ND	7.2	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.6	ND	7.2	2.9	
75-08-1	Ethyl Mercaptan	ND	18	7.3	ND	7.2	2.9	
75-18-3	Dimethyl Sulfide	ND	18	7.3	ND	7.2	2.9	
75-15-0	Carbon Disulfide	ND	11	4.5	ND	3.6	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-012

Test Code:	ASTM D 5504-12	Date Collected:	7/8/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	08:27
Analyst:	Gilbert Gutierrez	Date Received:	7/12/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/14/21
Test Notes:		Time Analyzed:	11:32
Container ID:	AS00871	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.59 Final Pressure (psig): 3.54

Container Dilution Factor: 1.39

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.7	2.9	ND	7.0	2.1	
463-58-1	Carbonyl Sulfide	ND	17	6.5	ND	7.0	2.6	
74-93-1	Methyl Mercaptan	ND	14	5.5	ND	7.0	2.8	
75-08-1	Ethyl Mercaptan	ND	18	7.1	ND	7.0	2.8	
75-18-3	Dimethyl Sulfide	ND	18	7.1	ND	7.0	2.8	
75-15-0	Carbon Disulfide	ND	11	4.3	ND	3.5	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-013

Test Code:	ASTM D 5504-12	Date Collected:	7/8/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	09:00
Analyst:	Gilbert Gutierrez	Date Received:	7/12/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/14/21
Test Notes:		Time Analyzed:	11:53
Container ID:	AS00931	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -1.63 Final Pressure (psig): 3.58

Container Dilution Factor: 1.40

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.8	2.9	ND	7.0	2.1	
463-58-1	Carbonyl Sulfide	ND	17	6.5	ND	7.0	2.7	
74-93-1	Methyl Mercaptan	ND	14	5.5	ND	7.0	2.8	
75-08-1	Ethyl Mercaptan	ND	18	7.1	ND	7.0	2.8	
75-18-3	Dimethyl Sulfide	ND	18	7.1	ND	7.0	2.8	
75-15-0	Carbon Disulfide	ND	11	4.4	ND	3.5	1.4	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-014

Test Code:	ASTM D 5504-12	Date Collected:	7/8/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	09:12
Analyst:	Gilbert Gutierrez	Date Received:	7/12/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/14/21
Test Notes:		Time Analyzed:	12:22
Container ID:	AS00643	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -2.51 Final Pressure (psig): 3.63

Container Dilution Factor: 1.50

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.1	ND	7.5	2.3	
463-58-1	Carbonyl Sulfide	ND	18	7.0	ND	7.5	2.9	
74-93-1	Methyl Mercaptan	ND	15	5.9	ND	7.5	3.0	
75-08-1	Ethyl Mercaptan	ND	19	7.6	ND	7.5	3.0	
75-18-3	Dimethyl Sulfide	ND	19	7.6	ND	7.5	3.0	
75-15-0	Carbon Disulfide	ND	12	4.7	ND	3.8	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-015

Test Code:	ASTM D 5504-12	Date Collected:	7/8/21
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	09:26
Analyst:	Gilbert Gutierrez	Date Received:	7/12/21
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	7/14/21
Test Notes:		Time Analyzed:	12:42
Container ID:	AS01479	Volume(s) Analyzed:	1.0 ml(s)

Initial Pressure (psig): -2.26 Final Pressure (psig): 3.64

Container Dilution Factor: 1.47

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	3.1	ND	7.4	2.2	
463-58-1	Carbonyl Sulfide	ND	18	6.9	ND	7.4	2.8	
74-93-1	Methyl Mercaptan	ND	14	5.8	ND	7.4	2.9	
75-08-1	Ethyl Mercaptan	ND	19	7.5	ND	7.4	2.9	
75-18-3	Dimethyl Sulfide	ND	19	7.5	ND	7.4	2.9	
75-15-0	Carbon Disulfide	ND	11	4.6	ND	3.7	1.5	

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

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank**
Client Project ID: **KCLF**

ALS Project ID: P2103661
ALS Sample ID: P210714-MB

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Gilbert Gutierrez
Sample Type: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Time Collected: NA
Date Received: NA
Date Analyzed: 7/14/21
Time Analyzed: 07:14
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	2.1	ND	5.0	1.5	
463-58-1	Carbonyl Sulfide	ND	12	4.7	ND	5.0	1.9	
74-93-1	Methyl Mercaptan	ND	9.8	3.9	ND	5.0	2.0	
75-08-1	Ethyl Mercaptan	ND	13	5.1	ND	5.0	2.0	
75-18-3	Dimethyl Sulfide	ND	13	5.1	ND	5.0	2.0	
75-15-0	Carbon Disulfide	ND	7.8	3.1	ND	2.5	1.0	

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

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210714-DLCS

Test Code: ASTM D 5504-12 Date Collected: NA
Instrument ID: Agilent 7890A/GC22/SCD Date Received: NA
Analyst: Gilbert Gutierrez Date Analyzed: 7/14/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ppbV	Result LCS ppbV	Result DLCS ppbV	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
7783-06-4	Hydrogen Sulfide	989	977	1,020	**99**	**103**	72-122	4	18	
463-58-1	Carbonyl Sulfide	1,050	1,020	1,030	**97**	**98**	72-121	1	17	
74-93-1	Methyl Mercaptan	1,050	1,060	1,090	**101**	**104**	74-127	3	18	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-001

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01511

Initial Pressure (psig): -1.83 Final Pressure (psig): 4.08

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.1**	0.76	0.13	**0.42**	0.15	0.026	
74-87-3	Chloromethane	**0.22**	0.76	0.13	**0.11**	0.37	0.061	**J**
75-01-4	Vinyl Chloride	ND	0.77	0.083	ND	0.30	0.033	
75-00-3	Chloroethane	ND	0.76	0.096	ND	0.29	0.037	
64-17-5	Ethanol	**1.7**	7.7	0.54	**0.92**	4.1	0.29	**J**
67-64-1	Acetone	**3.9**	7.6	1.8	**1.6**	3.2	0.74	**J**
75-69-4	Trichlorofluoromethane	**1.1**	0.74	0.12	**0.19**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.5	0.32	ND	0.59	0.13	
107-13-1	Acrylonitrile	ND	1.5	0.16	ND	0.67	0.074	
75-35-4	1,1-Dichloroethene	ND	0.76	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.29**	0.76	0.22	**0.084**	0.22	0.063	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.77	0.11	ND	0.20	0.027	
75-34-3	1,1-Dichloroethane	ND	0.79	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	**0.24**	1.5	0.16	**0.081**	0.50	0.054	**J**
110-54-3	n-Hexane	ND	0.76	0.16	ND	0.22	0.046	
67-66-3	Chloroform	ND	0.77	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.76	0.086	ND	0.19	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.76	0.096	ND	0.14	0.018	
71-43-2	Benzene	ND	0.76	0.11	ND	0.24	0.035	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S6** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-001

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01511

Initial Pressure (psig): -1.83 Final Pressure (psig): 4.08

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.44**	0.74	0.11	**0.069**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.76	0.096	ND	0.16	0.021	
75-27-4	Bromodichloromethane	ND	0.76	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.74	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.36	0.026	
108-88-3	Toluene	**0.54**	0.76	0.095	**0.14**	0.20	0.025	**J**
106-93-4	1,2-Dibromoethane	ND	0.76	0.091	ND	0.099	0.012	
127-18-4	Tetrachloroethene	ND	0.76	0.10	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.76	0.10	ND	0.16	0.023	
100-41-4	Ethylbenzene	**0.12**	0.76	0.11	**0.027**	0.17	0.025	**J**
179601-23-1	m,p-Xylenes	**0.28**	1.5	0.20	**0.065**	0.34	0.047	**J**
95-47-6	o-Xylene	**0.14**	0.77	0.11	**0.032**	0.18	0.026	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.77	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.77	0.12	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.76	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.77	0.12	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	**0.38**	0.73	0.37	**0.11**	0.21	0.10	**J, X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.73	0.35	ND	0.17	0.083	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-002

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00617

Initial Pressure (psig): -1.79 Final Pressure (psig): 3.70

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.0**	0.74	0.12	**0.41**	0.15	0.025	
74-87-3	Chloromethane	**0.19**	0.74	0.12	**0.094**	0.36	0.060	**J**
75-01-4	Vinyl Chloride	ND	0.76	0.082	ND	0.30	0.032	
75-00-3	Chloroethane	ND	0.74	0.094	ND	0.28	0.036	
64-17-5	Ethanol	**1.7**	7.6	0.53	**0.90**	4.0	0.28	**J**
67-64-1	Acetone	**4.5**	7.4	1.7	**1.9**	3.1	0.72	**J**
75-69-4	Trichlorofluoromethane	**1.1**	0.73	0.12	**0.20**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.42**	1.4	0.31	**0.17**	0.58	0.13	**J**
107-13-1	Acrylonitrile	ND	1.4	0.16	ND	0.66	0.073	
75-35-4	1,1-Dichloroethene	ND	0.74	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.31**	0.74	0.21	**0.089**	0.21	0.062	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.76	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.77	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	ND	1.4	0.16	ND	0.49	0.053	
110-54-3	n-Hexane	ND	0.74	0.16	ND	0.21	0.045	
67-66-3	Chloroform	ND	0.76	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.74	0.084	ND	0.18	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.74	0.094	ND	0.14	0.017	
71-43-2	Benzene	**0.17**	0.74	0.11	**0.054**	0.23	0.034	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S5** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-002

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00617

Initial Pressure (psig): -1.79 Final Pressure (psig): 3.70

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.44**	0.73	0.11	**0.070**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.74	0.094	ND	0.16	0.020	
75-27-4	Bromodichloromethane	ND	0.74	0.11	ND	0.11	0.016	
79-01-6	Trichloroethene	ND	0.73	0.10	ND	0.14	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.35	0.025	
108-88-3	Toluene	**0.58**	0.74	0.093	**0.16**	0.20	0.025	**J**
106-93-4	1,2-Dibromoethane	ND	0.74	0.089	ND	0.097	0.012	
127-18-4	Tetrachloroethene	ND	0.74	0.099	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.74	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.74	0.11	ND	0.17	0.025	
179601-23-1	m,p-Xylenes	**0.30**	1.4	0.20	**0.069**	0.33	0.046	**J**
95-47-6	o-Xylene	ND	0.76	0.11	ND	0.17	0.025	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.76	0.11	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.76	0.11	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.74	0.12	ND	0.12	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.76	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.72	0.36	ND	0.20	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.72	0.34	ND	0.17	0.082	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-003

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00903

Initial Pressure (psig): -2.03 Final Pressure (psig): 4.39

Container Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.0**	0.79	0.13	**0.41**	0.16	0.027	
74-87-3	Chloromethane	**0.18**	0.79	0.13	**0.089**	0.38	0.063	**J**
75-01-4	Vinyl Chloride	ND	0.80	0.086	ND	0.31	0.034	
75-00-3	Chloroethane	ND	0.79	0.10	ND	0.30	0.038	
64-17-5	Ethanol	**1.7**	8.0	0.56	**0.90**	4.2	0.30	**J**
67-64-1	Acetone	**3.7**	7.9	1.8	**1.6**	3.3	0.76	**J**
75-69-4	Trichlorofluoromethane	**1.1**	0.77	0.12	**0.20**	0.14	0.022	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.5	0.33	ND	0.61	0.14	
107-13-1	Acrylonitrile	ND	1.5	0.17	ND	0.70	0.077	
75-35-4	1,1-Dichloroethene	ND	0.79	0.11	ND	0.20	0.028	
75-09-2	Methylene Chloride	**0.31**	0.79	0.23	**0.089**	0.23	0.065	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.80	0.11	ND	0.20	0.028	
75-34-3	1,1-Dichloroethane	ND	0.82	0.12	ND	0.20	0.029	
78-93-3	2-Butanone (MEK)	**0.38**	1.5	0.17	**0.13**	0.51	0.056	**J**
110-54-3	n-Hexane	ND	0.79	0.17	ND	0.22	0.047	
67-66-3	Chloroform	ND	0.80	0.11	ND	0.16	0.022	
107-06-2	1,2-Dichloroethane	ND	0.79	0.089	ND	0.19	0.022	
71-55-6	1,1,1-Trichloroethane	ND	0.79	0.10	ND	0.14	0.018	
71-43-2	Benzene	**0.22**	0.79	0.12	**0.068**	0.25	0.036	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S7** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-003

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00903

Initial Pressure (psig): -2.03 Final Pressure (psig): 4.39

Container Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.42**	0.77	0.11	**0.067**	0.12	0.018	**J**
78-87-5	1,2-Dichloropropane	ND	0.79	0.10	ND	0.17	0.022	
75-27-4	Bromodichloromethane	ND	0.79	0.12	ND	0.12	0.017	
79-01-6	Trichloroethene	ND	0.77	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.37	0.027	
108-88-3	Toluene	**0.58**	0.79	0.098	**0.15**	0.21	0.026	**J**
106-93-4	1,2-Dibromoethane	ND	0.79	0.094	ND	0.10	0.012	
127-18-4	Tetrachloroethene	ND	0.79	0.10	ND	0.12	0.015	
108-90-7	Chlorobenzene	ND	0.79	0.11	ND	0.17	0.023	
100-41-4	Ethylbenzene	ND	0.79	0.11	ND	0.18	0.026	
179601-23-1	m,p-Xylenes	**0.29**	1.5	0.21	**0.067**	0.35	0.049	**J**
95-47-6	o-Xylene	ND	0.80	0.12	ND	0.18	0.027	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.80	0.11	ND	0.12	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.80	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.79	0.12	ND	0.13	0.021	
95-50-1	1,2-Dichlorobenzene	ND	0.80	0.12	ND	0.13	0.020	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.76	0.38	ND	0.21	0.11	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.76	0.36	ND	0.18	0.086	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF1** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-004

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00655

Initial Pressure (psig): -1.43 Final Pressure (psig): 4.00
Initial Pressure 2 (psig): 0.42 Final Pressure 2 (psig): 2.64
Container Dilution Factor: 1.62

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.0**	0.84	0.14	**0.40**	0.17	0.029	
74-87-3	Chloromethane	**0.19**	0.84	0.14	**0.092**	0.41	0.067	**J**
75-01-4	Vinyl Chloride	ND	0.86	0.092	ND	0.34	0.036	
75-00-3	Chloroethane	ND	0.84	0.11	ND	0.32	0.041	
64-17-5	Ethanol	**1.8**	8.6	0.60	**0.93**	4.6	0.32	**J**
67-64-1	Acetone	**5.0**	8.4	1.9	**2.1**	3.5	0.82	**J**
75-69-4	Trichlorofluoromethane	**1.1**	0.83	0.13	**0.19**	0.15	0.023	
67-63-0	2-Propanol (Isopropyl Alcohol)	**29**	1.6	0.36	**12**	0.66	0.15	
107-13-1	Acrylonitrile	ND	1.6	0.18	ND	0.75	0.082	
75-35-4	1,1-Dichloroethene	ND	0.84	0.12	ND	0.21	0.030	
75-09-2	Methylene Chloride	**0.32**	0.84	0.24	**0.092**	0.24	0.070	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.86	0.12	ND	0.22	0.030	
75-34-3	1,1-Dichloroethane	ND	0.87	0.13	ND	0.22	0.031	
78-93-3	2-Butanone (MEK)	**0.21**	1.6	0.18	**0.072**	0.55	0.060	**J**
110-54-3	n-Hexane	ND	0.84	0.18	ND	0.24	0.051	
67-66-3	Chloroform	ND	0.86	0.12	ND	0.18	0.024	
107-06-2	1,2-Dichloroethane	ND	0.84	0.096	ND	0.21	0.024	
71-55-6	1,1,1-Trichloroethane	ND	0.84	0.11	ND	0.15	0.020	
71-43-2	Benzene	**0.13**	0.84	0.12	**0.040**	0.26	0.039	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **REF1** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-004

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00655

Initial Pressure (psig): -1.43 Final Pressure (psig): 4.00
Initial Pressure 2 (psig): 0.42 Final Pressure 2 (psig): 2.64
Container Dilution Factor: 1.62

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.42**	0.83	0.12	**0.066**	0.13	0.019	**J**
78-87-5	1,2-Dichloropropane	ND	0.84	0.11	ND	0.18	0.023	
75-27-4	Bromodichloromethane	ND	0.84	0.12	ND	0.13	0.019	
79-01-6	Trichloroethene	ND	0.83	0.12	ND	0.15	0.022	
108-10-1	4-Methyl-2-pentanone	ND	1.6	0.12	ND	0.40	0.029	
108-88-3	Toluene	**0.45**	0.84	0.11	**0.12**	0.22	0.028	**J**
106-93-4	1,2-Dibromoethane	ND	0.84	0.10	ND	0.11	0.013	
127-18-4	Tetrachloroethene	ND	0.84	0.11	ND	0.12	0.016	
108-90-7	Chlorobenzene	ND	0.84	0.12	ND	0.18	0.025	
100-41-4	Ethylbenzene	ND	0.84	0.12	ND	0.19	0.028	
179601-23-1	m,p-Xylenes	ND	1.6	0.23	ND	0.37	0.052	
95-47-6	o-Xylene	ND	0.86	0.12	ND	0.20	0.029	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.86	0.12	ND	0.13	0.017	
541-73-1	1,3-Dichlorobenzene	ND	0.86	0.13	ND	0.14	0.022	
106-46-7	1,4-Dichlorobenzene	ND	0.84	0.13	ND	0.14	0.022	
95-50-1	1,2-Dichlorobenzene	ND	0.86	0.13	ND	0.14	0.021	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.81	0.41	ND	0.23	0.11	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.81	0.39	ND	0.19	0.092	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-005

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00548

Initial Pressure (psig): -2.17 Final Pressure (psig): 4.23

Container Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.1**	0.79	0.13	**0.42**	0.16	0.027	
74-87-3	Chloromethane	**0.19**	0.79	0.13	**0.092**	0.38	0.063	**J**
75-01-4	Vinyl Chloride	ND	0.80	0.086	ND	0.31	0.034	
75-00-3	Chloroethane	ND	0.79	0.10	ND	0.30	0.038	
64-17-5	Ethanol	**1.4**	8.0	0.56	**0.74**	4.2	0.30	**J**
67-64-1	Acetone	**3.2**	7.9	1.8	**1.4**	3.3	0.76	**J**
75-69-4	Trichlorofluoromethane	**1.1**	0.77	0.12	**0.20**	0.14	0.022	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.85**	1.5	0.33	**0.35**	0.61	0.14	**J**
107-13-1	Acrylonitrile	ND	1.5	0.17	ND	0.70	0.077	
75-35-4	1,1-Dichloroethene	ND	0.79	0.11	ND	0.20	0.028	
75-09-2	Methylene Chloride	**0.30**	0.79	0.23	**0.086**	0.23	0.065	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.80	0.11	ND	0.20	0.028	
75-34-3	1,1-Dichloroethane	ND	0.82	0.12	ND	0.20	0.029	
78-93-3	2-Butanone (MEK)	ND	1.5	0.17	ND	0.51	0.056	
110-54-3	n-Hexane	ND	0.79	0.17	ND	0.22	0.047	
67-66-3	Chloroform	ND	0.80	0.11	ND	0.16	0.022	
107-06-2	1,2-Dichloroethane	ND	0.79	0.089	ND	0.19	0.022	
71-55-6	1,1,1-Trichloroethane	ND	0.79	0.10	ND	0.14	0.018	
71-43-2	Benzene	ND	0.79	0.12	ND	0.25	0.036	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S13** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-005

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00548

Initial Pressure (psig): -2.17 Final Pressure (psig): 4.23

Container Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.43**	0.77	0.11	**0.069**	0.12	0.018	**J**
78-87-5	1,2-Dichloropropane	ND	0.79	0.10	ND	0.17	0.022	
75-27-4	Bromodichloromethane	ND	0.79	0.12	ND	0.12	0.017	
79-01-6	Trichloroethene	ND	0.77	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.37	0.027	
108-88-3	Toluene	**0.31**	0.79	0.098	**0.081**	0.21	0.026	**J**
106-93-4	1,2-Dibromoethane	ND	0.79	0.094	ND	0.10	0.012	
127-18-4	Tetrachloroethene	ND	0.79	0.10	ND	0.12	0.015	
108-90-7	Chlorobenzene	ND	0.79	0.11	ND	0.17	0.023	
100-41-4	Ethylbenzene	ND	0.79	0.11	ND	0.18	0.026	
179601-23-1	m,p-Xylenes	ND	1.5	0.21	ND	0.35	0.049	
95-47-6	o-Xylene	ND	0.80	0.12	ND	0.18	0.027	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.80	0.11	ND	0.12	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.80	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.79	0.12	ND	0.13	0.021	
95-50-1	1,2-Dichlorobenzene	ND	0.80	0.12	ND	0.13	0.020	
75-45-6	Chlorodifluoromethane (CFC 22)	**0.40**	0.76	0.38	**0.11**	0.21	0.11	**J, X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.76	0.36	ND	0.18	0.086	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-006

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00575

Initial Pressure (psig): -2.46 Final Pressure (psig): 3.73

Container Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.9**	0.79	0.13	**0.39**	0.16	0.027	
74-87-3	Chloromethane	**0.16**	0.79	0.13	**0.077**	0.38	0.063	**J**
75-01-4	Vinyl Chloride	ND	0.80	0.086	ND	0.31	0.034	
75-00-3	Chloroethane	ND	0.79	0.10	ND	0.30	0.038	
64-17-5	Ethanol	**4.2**	8.0	0.56	**2.2**	4.2	0.30	**J**
67-64-1	Acetone	ND	7.9	1.8	ND	3.3	0.76	
75-69-4	Trichlorofluoromethane	**1.3**	0.77	0.12	**0.23**	0.14	0.022	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.62**	1.5	0.33	**0.25**	0.61	0.14	**J**
107-13-1	Acrylonitrile	ND	1.5	0.17	ND	0.70	0.077	
75-35-4	1,1-Dichloroethene	ND	0.79	0.11	ND	0.20	0.028	
75-09-2	Methylene Chloride	**0.50**	0.79	0.23	**0.14**	0.23	0.065	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.80	0.11	ND	0.20	0.028	
75-34-3	1,1-Dichloroethane	ND	0.82	0.12	ND	0.20	0.029	
78-93-3	2-Butanone (MEK)	**0.54**	1.5	0.17	**0.18**	0.51	0.056	**J**
110-54-3	n-Hexane	**0.44**	0.79	0.17	**0.12**	0.22	0.047	**J**
67-66-3	Chloroform	ND	0.80	0.11	ND	0.16	0.022	
107-06-2	1,2-Dichloroethane	**0.094**	0.79	0.089	**0.023**	0.19	0.022	**J**
71-55-6	1,1,1-Trichloroethane	ND	0.79	0.10	ND	0.14	0.018	
71-43-2	Benzene	ND	0.79	0.12	ND	0.25	0.036	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S12** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-006

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00575

Initial Pressure (psig): -2.46 Final Pressure (psig): 3.73

Container Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.41**	0.77	0.11	**0.066**	0.12	0.018	**J**
78-87-5	1,2-Dichloropropane	ND	0.79	0.10	ND	0.17	0.022	
75-27-4	Bromodichloromethane	ND	0.79	0.12	ND	0.12	0.017	
79-01-6	Trichloroethene	ND	0.77	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.37	0.027	
108-88-3	Toluene	**1.3**	0.79	0.098	**0.34**	0.21	0.026	
106-93-4	1,2-Dibromoethane	ND	0.79	0.094	ND	0.10	0.012	
127-18-4	Tetrachloroethene	**0.34**	0.79	0.10	**0.050**	0.12	0.015	**J**
108-90-7	Chlorobenzene	ND	0.79	0.11	ND	0.17	0.023	
100-41-4	Ethylbenzene	**0.19**	0.79	0.11	**0.045**	0.18	0.026	**J**
179601-23-1	m,p-Xylenes	**0.56**	1.5	0.21	**0.13**	0.35	0.049	**J**
95-47-6	o-Xylene	**0.18**	0.80	0.12	**0.042**	0.18	0.027	**J**
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.80	0.11	ND	0.12	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.80	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.79	0.12	ND	0.13	0.021	
95-50-1	1,2-Dichlorobenzene	ND	0.80	0.12	ND	0.13	0.020	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.76	0.38	ND	0.21	0.11	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.76	0.36	ND	0.18	0.086	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-007

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01277

Initial Pressure (psig): -1.60 Final Pressure (psig): 3.85
Initial Pressure 2 (psig): 0.10 Final Pressure 2 (psig): 2.61
Container Dilution Factor: 1.66

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.0**	0.86	0.14	**0.41**	0.17	0.029	
74-87-3	Chloromethane	**0.18**	0.86	0.14	**0.087**	0.42	0.069	**J**
75-01-4	Vinyl Chloride	ND	0.88	0.095	ND	0.34	0.037	
75-00-3	Chloroethane	ND	0.86	0.11	ND	0.33	0.042	
64-17-5	Ethanol	**1.9**	8.8	0.61	**1.0**	4.7	0.33	**J**
67-64-1	Acetone	**3.6**	8.6	2.0	**1.5**	3.6	0.84	**J**
75-69-4	Trichlorofluoromethane	**1.0**	0.85	0.13	**0.19**	0.15	0.024	
67-63-0	2-Propanol (Isopropyl Alcohol)	**4.6**	1.7	0.37	**1.9**	0.68	0.15	
107-13-1	Acrylonitrile	ND	1.7	0.18	ND	0.77	0.084	
75-35-4	1,1-Dichloroethene	ND	0.86	0.12	ND	0.22	0.031	
75-09-2	Methylene Chloride	**0.38**	0.86	0.25	**0.11**	0.25	0.072	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.88	0.12	ND	0.22	0.031	
75-34-3	1,1-Dichloroethane	ND	0.90	0.13	ND	0.22	0.032	
78-93-3	2-Butanone (MEK)	ND	1.7	0.18	ND	0.56	0.062	
110-54-3	n-Hexane	ND	0.86	0.18	ND	0.24	0.052	
67-66-3	Chloroform	ND	0.88	0.12	ND	0.18	0.024	
107-06-2	1,2-Dichloroethane	ND	0.86	0.098	ND	0.21	0.024	
71-55-6	1,1,1-Trichloroethane	ND	0.86	0.11	ND	0.16	0.020	
71-43-2	Benzene	ND	0.86	0.13	ND	0.27	0.040	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-007

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01277

Initial Pressure (psig): -1.60 Final Pressure (psig): 3.85
Initial Pressure 2 (psig): 0.10 Final Pressure 2 (psig): 2.61
Container Dilution Factor: 1.66

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.44**	0.85	0.12	**0.069**	0.13	0.020	**J**
78-87-5	1,2-Dichloropropane	ND	0.86	0.11	ND	0.19	0.024	
75-27-4	Bromodichloromethane	ND	0.86	0.13	ND	0.13	0.019	
79-01-6	Trichloroethene	ND	0.85	0.12	ND	0.16	0.022	
108-10-1	4-Methyl-2-pentanone	ND	1.7	0.12	ND	0.41	0.030	
108-88-3	Toluene	**0.25**	0.86	0.11	**0.067**	0.23	0.029	**J**
106-93-4	1,2-Dibromoethane	ND	0.86	0.10	ND	0.11	0.013	
127-18-4	Tetrachloroethene	ND	0.86	0.11	ND	0.13	0.017	
108-90-7	Chlorobenzene	ND	0.86	0.12	ND	0.19	0.026	
100-41-4	Ethylbenzene	ND	0.86	0.12	ND	0.20	0.029	
179601-23-1	m,p-Xylenes	ND	1.7	0.23	ND	0.38	0.054	
95-47-6	o-Xylene	ND	0.88	0.13	ND	0.20	0.029	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.88	0.12	ND	0.13	0.018	
541-73-1	1,3-Dichlorobenzene	ND	0.88	0.13	ND	0.15	0.022	
106-46-7	1,4-Dichlorobenzene	ND	0.86	0.14	ND	0.14	0.023	
95-50-1	1,2-Dichlorobenzene	ND	0.88	0.13	ND	0.15	0.022	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.83	0.42	ND	0.23	0.12	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.83	0.40	ND	0.20	0.095	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-008

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00609

Initial Pressure (psig): -1.58 Final Pressure (psig): 3.54

Container Dilution Factor: 1.39

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.0**	0.72	0.12	**0.40**	0.15	0.024	
74-87-3	Chloromethane	**0.18**	0.72	0.12	**0.088**	0.35	0.058	**J**
75-01-4	Vinyl Chloride	ND	0.74	0.079	ND	0.29	0.031	
75-00-3	Chloroethane	ND	0.72	0.092	ND	0.27	0.035	
64-17-5	Ethanol	**2.5**	7.4	0.51	**1.3**	3.9	0.27	**J**
67-64-1	Acetone	**7.4**	7.2	1.7	**3.1**	3.0	0.70	
75-69-4	Trichlorofluoromethane	**1.1**	0.71	0.11	**0.19**	0.13	0.020	
67-63-0	2-Propanol (Isopropyl Alcohol)	**5.3**	1.4	0.31	**2.1**	0.57	0.12	
107-13-1	Acrylonitrile	ND	1.4	0.15	ND	0.64	0.070	
75-35-4	1,1-Dichloroethene	ND	0.72	0.10	ND	0.18	0.026	
75-09-2	Methylene Chloride	**0.30**	0.72	0.21	**0.086**	0.21	0.060	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.74	0.10	ND	0.19	0.026	
75-34-3	1,1-Dichloroethane	ND	0.75	0.11	ND	0.19	0.027	
78-93-3	2-Butanone (MEK)	**0.64**	1.4	0.15	**0.22**	0.47	0.052	**J**
110-54-3	n-Hexane	ND	0.72	0.15	ND	0.21	0.043	
67-66-3	Chloroform	ND	0.74	0.099	ND	0.15	0.020	
107-06-2	1,2-Dichloroethane	ND	0.72	0.082	ND	0.18	0.020	
71-55-6	1,1,1-Trichloroethane	ND	0.72	0.092	ND	0.13	0.017	
71-43-2	Benzene	**0.81**	0.72	0.11	**0.26**	0.23	0.034	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S11D** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-008

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00609

Initial Pressure (psig): -1.58 Final Pressure (psig): 3.54

Container Dilution Factor: 1.39

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.43**	0.71	0.10	**0.069**	0.11	0.016	**J**
78-87-5	1,2-Dichloropropane	ND	0.72	0.092	ND	0.16	0.020	
75-27-4	Bromodichloromethane	ND	0.72	0.11	ND	0.11	0.016	
79-01-6	Trichloroethene	ND	0.71	0.10	ND	0.13	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.34	0.025	
108-88-3	Toluene	**0.28**	0.72	0.090	**0.074**	0.19	0.024	**J**
106-93-4	1,2-Dibromoethane	ND	0.72	0.086	ND	0.094	0.011	
127-18-4	Tetrachloroethene	ND	0.72	0.096	ND	0.11	0.014	
108-90-7	Chlorobenzene	ND	0.72	0.099	ND	0.16	0.021	
100-41-4	Ethylbenzene	ND	0.72	0.10	ND	0.17	0.024	
179601-23-1	m,p-Xylenes	ND	1.4	0.19	ND	0.32	0.045	
95-47-6	o-Xylene	ND	0.74	0.11	ND	0.17	0.025	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.74	0.10	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.74	0.11	ND	0.12	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.72	0.11	ND	0.12	0.019	
95-50-1	1,2-Dichlorobenzene	ND	0.74	0.11	ND	0.12	0.018	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.70	0.35	ND	0.20	0.098	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.70	0.33	ND	0.17	0.079	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-009

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00341

Initial Pressure (psig): -2.30 Final Pressure (psig): 3.60

Container Dilution Factor: 1.48

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.0**	0.77	0.13	**0.41**	0.16	0.026	
74-87-3	Chloromethane	**0.18**	0.77	0.13	**0.089**	0.37	0.062	**J**
75-01-4	Vinyl Chloride	ND	0.78	0.084	ND	0.31	0.033	
75-00-3	Chloroethane	ND	0.77	0.098	ND	0.29	0.037	
64-17-5	Ethanol	**18**	7.8	0.55	**9.4**	4.2	0.29	
67-64-1	Acetone	**6.5**	7.7	1.8	**2.8**	3.2	0.75	**J**
75-69-4	Trichlorofluoromethane	**1.1**	0.75	0.12	**0.20**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.68**	1.5	0.33	**0.28**	0.60	0.13	**J**
107-13-1	Acrylonitrile	ND	1.5	0.16	ND	0.68	0.075	
75-35-4	1,1-Dichloroethene	ND	0.77	0.11	ND	0.19	0.028	
75-09-2	Methylene Chloride	**2.3**	0.77	0.22	**0.66**	0.22	0.064	
156-60-5	trans-1,2-Dichloroethene	ND	0.78	0.11	ND	0.20	0.028	
75-34-3	1,1-Dichloroethane	ND	0.80	0.12	ND	0.20	0.029	
78-93-3	2-Butanone (MEK)	**0.45**	1.5	0.16	**0.15**	0.50	0.055	**J**
110-54-3	n-Hexane	ND	0.77	0.16	ND	0.22	0.046	
67-66-3	Chloroform	ND	0.78	0.11	ND	0.16	0.022	
107-06-2	1,2-Dichloroethane	ND	0.77	0.087	ND	0.19	0.022	
71-55-6	1,1,1-Trichloroethane	ND	0.77	0.098	ND	0.14	0.018	
71-43-2	Benzene	**0.20**	0.77	0.11	**0.063**	0.24	0.036	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S4** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-009

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00341

Initial Pressure (psig): -2.30 Final Pressure (psig): 3.60

Container Dilution Factor: 1.48

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.41**	0.75	0.11	**0.066**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.77	0.098	ND	0.17	0.021	
75-27-4	Bromodichloromethane	ND	0.77	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.75	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.36	0.026	
108-88-3	Toluene	**1.7**	0.77	0.096	**0.45**	0.20	0.026	
106-93-4	1,2-Dibromoethane	ND	0.77	0.092	ND	0.10	0.012	
127-18-4	Tetrachloroethene	ND	0.77	0.10	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.77	0.11	ND	0.17	0.023	
100-41-4	Ethylbenzene	ND	0.77	0.11	ND	0.18	0.026	
179601-23-1	m,p-Xylenes	**0.28**	1.5	0.21	**0.064**	0.34	0.048	**J**
95-47-6	o-Xylene	ND	0.78	0.11	ND	0.18	0.026	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.78	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.78	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.77	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.78	0.12	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.74	0.37	ND	0.21	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.74	0.36	ND	0.18	0.084	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-010

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01414

Initial Pressure (psig): -1.78 Final Pressure (psig): 3.88

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.0**	0.75	0.13	**0.40**	0.15	0.025	
74-87-3	Chloromethane	**0.18**	0.75	0.12	**0.086**	0.36	0.060	**J**
75-01-4	Vinyl Chloride	ND	0.76	0.082	ND	0.30	0.032	
75-00-3	Chloroethane	ND	0.75	0.095	ND	0.28	0.036	
64-17-5	Ethanol	**6.4**	7.6	0.53	**3.4**	4.1	0.28	**J**
67-64-1	Acetone	**7.6**	7.5	1.7	**3.2**	3.2	0.73	
75-69-4	Trichlorofluoromethane	**1.1**	0.73	0.12	**0.19**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.57**	1.4	0.32	**0.23**	0.59	0.13	**J**
107-13-1	Acrylonitrile	ND	1.4	0.16	ND	0.66	0.073	
75-35-4	1,1-Dichloroethene	ND	0.75	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.32**	0.75	0.22	**0.092**	0.22	0.062	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.76	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.78	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	**0.86**	1.4	0.16	**0.29**	0.49	0.054	**J**
110-54-3	n-Hexane	ND	0.75	0.16	ND	0.21	0.045	
67-66-3	Chloroform	ND	0.76	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.75	0.085	ND	0.19	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.75	0.095	ND	0.14	0.017	
71-43-2	Benzene	ND	0.75	0.11	ND	0.23	0.035	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S8** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-010

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01414

Initial Pressure (psig): -1.78 Final Pressure (psig): 3.88

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.43**	0.73	0.11	**0.069**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.75	0.095	ND	0.16	0.021	
75-27-4	Bromodichloromethane	ND	0.75	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	**0.17**	0.73	0.10	**0.031**	0.14	0.019	**J**
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.11	ND	0.35	0.026	
108-88-3	Toluene	**0.41**	0.75	0.094	**0.11**	0.20	0.025	**J**
106-93-4	1,2-Dibromoethane	ND	0.75	0.089	ND	0.097	0.012	
127-18-4	Tetrachloroethene	ND	0.75	0.099	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.75	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.75	0.11	ND	0.17	0.025	
179601-23-1	m,p-Xylenes	**0.25**	1.4	0.20	**0.057**	0.33	0.046	**J**
95-47-6	o-Xylene	ND	0.76	0.11	ND	0.18	0.026	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.76	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.76	0.12	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.75	0.12	ND	0.12	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.76	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.72	0.36	ND	0.20	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.72	0.35	ND	0.17	0.082	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-011

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01309

Initial Pressure (psig): -1.89 Final Pressure (psig): 3.62

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.1**	0.74	0.12	**0.43**	0.15	0.025	
74-87-3	Chloromethane	**0.20**	0.74	0.12	**0.096**	0.36	0.060	**J**
75-01-4	Vinyl Chloride	ND	0.76	0.082	ND	0.30	0.032	
75-00-3	Chloroethane	ND	0.74	0.094	ND	0.28	0.036	
64-17-5	Ethanol	**8.2**	7.6	0.53	**4.4**	4.0	0.28	
67-64-1	Acetone	**6.3**	7.4	1.7	**2.6**	3.1	0.72	**J**
75-69-4	Trichlorofluoromethane	**1.1**	0.73	0.12	**0.20**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.40**	1.4	0.31	**0.16**	0.58	0.13	**J**
107-13-1	Acrylonitrile	ND	1.4	0.16	ND	0.66	0.073	
75-35-4	1,1-Dichloroethene	ND	0.74	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.30**	0.74	0.21	**0.086**	0.21	0.062	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.76	0.11	ND	0.19	0.027	
75-34-3	1,1-Dichloroethane	ND	0.77	0.11	ND	0.19	0.028	
78-93-3	2-Butanone (MEK)	**0.77**	1.4	0.16	**0.26**	0.49	0.053	**J**
110-54-3	n-Hexane	ND	0.74	0.16	ND	0.21	0.045	
67-66-3	Chloroform	ND	0.76	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.74	0.084	ND	0.18	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.74	0.094	ND	0.14	0.017	
71-43-2	Benzene	**0.11**	0.74	0.11	**0.035**	0.23	0.034	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S9** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-011

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01309

Initial Pressure (psig): -1.89 Final Pressure (psig): 3.62

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.44**	0.73	0.11	**0.069**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.74	0.094	ND	0.16	0.020	
75-27-4	Bromodichloromethane	ND	0.74	0.11	ND	0.11	0.016	
79-01-6	Trichloroethene	ND	0.73	0.10	ND	0.14	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.35	0.025	
108-88-3	Toluene	**0.35**	0.74	0.093	**0.093**	0.20	0.025	**J**
106-93-4	1,2-Dibromoethane	ND	0.74	0.089	ND	0.097	0.012	
127-18-4	Tetrachloroethene	ND	0.74	0.099	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.74	0.10	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.74	0.11	ND	0.17	0.025	
179601-23-1	m,p-Xylenes	ND	1.4	0.20	ND	0.33	0.046	
95-47-6	o-Xylene	ND	0.76	0.11	ND	0.17	0.025	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.76	0.11	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.76	0.11	ND	0.13	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.74	0.12	ND	0.12	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.76	0.11	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	**0.36**	0.72	0.36	**0.10**	0.20	0.10	**J, X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.72	0.34	ND	0.17	0.082	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-012

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/26/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00871

Initial Pressure (psig): -1.59 Final Pressure (psig): 3.54

Container Dilution Factor: 1.39

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.9**	0.72	0.12	**0.38**	0.15	0.024	
74-87-3	Chloromethane	**0.14**	0.72	0.12	**0.067**	0.35	0.058	**J**
75-01-4	Vinyl Chloride	ND	0.74	0.079	ND	0.29	0.031	
75-00-3	Chloroethane	ND	0.72	0.092	ND	0.27	0.035	
64-17-5	Ethanol	**15**	7.4	0.51	**7.9**	3.9	0.27	
67-64-1	Acetone	**5.3**	7.2	1.7	**2.2**	3.0	0.70	**J**
75-69-4	Trichlorofluoromethane	**1.0**	0.71	0.11	**0.18**	0.13	0.020	
67-63-0	2-Propanol (Isopropyl Alcohol)	**0.52**	1.4	0.31	**0.21**	0.57	0.12	**J**
107-13-1	Acrylonitrile	ND	1.4	0.15	ND	0.64	0.070	
75-35-4	1,1-Dichloroethene	ND	0.72	0.10	ND	0.18	0.026	
75-09-2	Methylene Chloride	**0.49**	0.72	0.21	**0.14**	0.21	0.060	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.74	0.10	ND	0.19	0.026	
75-34-3	1,1-Dichloroethane	ND	0.75	0.11	ND	0.19	0.027	
78-93-3	2-Butanone (MEK)	**0.95**	1.4	0.15	**0.32**	0.47	0.052	**J**
110-54-3	n-Hexane	ND	0.72	0.15	ND	0.21	0.043	
67-66-3	Chloroform	ND	0.74	0.099	ND	0.15	0.020	
107-06-2	1,2-Dichloroethane	ND	0.72	0.082	ND	0.18	0.020	
71-55-6	1,1,1-Trichloroethane	ND	0.72	0.092	ND	0.13	0.017	
71-43-2	Benzene	**0.16**	0.72	0.11	**0.051**	0.23	0.034	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S10** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-012

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/26/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00871

Initial Pressure (psig): -1.59 Final Pressure (psig): 3.54

Container Dilution Factor: 1.39

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.40**	0.71	0.10	**0.063**	0.11	0.016	**J**
78-87-5	1,2-Dichloropropane	ND	0.72	0.092	ND	0.16	0.020	
75-27-4	Bromodichloromethane	ND	0.72	0.11	ND	0.11	0.016	
79-01-6	Trichloroethene	ND	0.71	0.10	ND	0.13	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.34	0.025	
108-88-3	Toluene	**0.51**	0.72	0.090	**0.14**	0.19	0.024	**J**
106-93-4	1,2-Dibromoethane	ND	0.72	0.086	ND	0.094	0.011	
127-18-4	Tetrachloroethene	ND	0.72	0.096	ND	0.11	0.014	
108-90-7	Chlorobenzene	ND	0.72	0.099	ND	0.16	0.021	
100-41-4	Ethylbenzene	ND	0.72	0.10	ND	0.17	0.024	
179601-23-1	m,p-Xylenes	**0.23**	1.4	0.19	**0.052**	0.32	0.045	**J**
95-47-6	o-Xylene	ND	0.74	0.11	ND	0.17	0.025	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.74	0.10	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.74	0.11	ND	0.12	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.72	0.11	ND	0.12	0.019	
95-50-1	1,2-Dichlorobenzene	ND	0.74	0.11	ND	0.12	0.018	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.70	0.35	ND	0.20	0.098	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.70	0.33	ND	0.17	0.079	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-013

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/26/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00931

Initial Pressure (psig): -1.63 Final Pressure (psig): 3.58

Container Dilution Factor: 1.40

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.0**	0.73	0.12	**0.40**	0.15	0.025	
74-87-3	Chloromethane	**0.18**	0.73	0.12	**0.085**	0.35	0.058	**J**
75-01-4	Vinyl Chloride	ND	0.74	0.080	ND	0.29	0.031	
75-00-3	Chloroethane	ND	0.73	0.092	ND	0.28	0.035	
64-17-5	Ethanol	**2.0**	7.4	0.52	**1.1**	3.9	0.28	**J**
67-64-1	Acetone	**4.3**	7.3	1.7	**1.8**	3.1	0.71	**J**
75-69-4	Trichlorofluoromethane	**1.1**	0.71	0.11	**0.20**	0.13	0.020	
67-63-0	2-Propanol (Isopropyl Alcohol)	**3.3**	1.4	0.31	**1.4**	0.57	0.13	
107-13-1	Acrylonitrile	ND	1.4	0.15	ND	0.65	0.071	
75-35-4	1,1-Dichloroethene	ND	0.73	0.10	ND	0.18	0.026	
75-09-2	Methylene Chloride	**0.30**	0.73	0.21	**0.085**	0.21	0.060	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.74	0.10	ND	0.19	0.026	
75-34-3	1,1-Dichloroethane	ND	0.76	0.11	ND	0.19	0.027	
78-93-3	2-Butanone (MEK)	**0.22**	1.4	0.15	**0.073**	0.47	0.052	**J**
110-54-3	n-Hexane	ND	0.73	0.15	ND	0.21	0.044	
67-66-3	Chloroform	ND	0.74	0.099	ND	0.15	0.020	
107-06-2	1,2-Dichloroethane	ND	0.73	0.083	ND	0.18	0.020	
71-55-6	1,1,1-Trichloroethane	ND	0.73	0.092	ND	0.13	0.017	
71-43-2	Benzene	**0.11**	0.73	0.11	**0.034**	0.23	0.034	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S2** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-013

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Wida Ang Date Analyzed: 7/26/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00931

Initial Pressure (psig): -1.63 Final Pressure (psig): 3.58

Container Dilution Factor: 1.40

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.41**	0.71	0.10	**0.065**	0.11	0.016	**J**
78-87-5	1,2-Dichloropropane	ND	0.73	0.092	ND	0.16	0.020	
75-27-4	Bromodichloromethane	ND	0.73	0.11	ND	0.11	0.016	
79-01-6	Trichloroethene	ND	0.71	0.10	ND	0.13	0.019	
108-10-1	4-Methyl-2-pentanone	ND	1.4	0.10	ND	0.34	0.025	
108-88-3	Toluene	**0.41**	0.73	0.091	**0.11**	0.19	0.024	**J**
106-93-4	1,2-Dibromoethane	ND	0.73	0.087	ND	0.095	0.011	
127-18-4	Tetrachloroethene	ND	0.73	0.097	ND	0.11	0.014	
108-90-7	Chlorobenzene	ND	0.73	0.099	ND	0.16	0.022	
100-41-4	Ethylbenzene	ND	0.73	0.11	ND	0.17	0.024	
179601-23-1	m,p-Xylenes	**0.21**	1.4	0.20	**0.047**	0.32	0.045	**J**
95-47-6	o-Xylene	ND	0.74	0.11	ND	0.17	0.025	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.74	0.10	ND	0.11	0.015	
541-73-1	1,3-Dichlorobenzene	ND	0.74	0.11	ND	0.12	0.019	
106-46-7	1,4-Dichlorobenzene	ND	0.73	0.11	ND	0.12	0.019	
95-50-1	1,2-Dichlorobenzene	ND	0.74	0.11	ND	0.12	0.018	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.70	0.35	ND	0.20	0.099	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.70	0.34	ND	0.17	0.080	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-014

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Topacio Zavala Date Analyzed: 7/26/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00643

Initial Pressure (psig): -2.51 Final Pressure (psig): 3.63

Container Dilution Factor: 1.50

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.9**	0.78	0.13	**0.38**	0.16	0.026	
74-87-3	Chloromethane	**0.15**	0.78	0.13	**0.074**	0.38	0.062	**J**
75-01-4	Vinyl Chloride	ND	0.80	0.086	ND	0.31	0.033	
75-00-3	Chloroethane	ND	0.78	0.099	ND	0.30	0.038	
64-17-5	Ethanol	**1.7**	8.0	0.56	**0.89**	4.2	0.29	**J**
67-64-1	Acetone	**3.6**	7.8	1.8	**1.5**	3.3	0.76	**J**
75-69-4	Trichlorofluoromethane	**1.1**	0.77	0.12	**0.19**	0.14	0.022	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.5	0.33	ND	0.61	0.13	
107-13-1	Acrylonitrile	ND	1.5	0.17	ND	0.69	0.076	
75-35-4	1,1-Dichloroethene	ND	0.78	0.11	ND	0.20	0.028	
75-09-2	Methylene Chloride	**0.29**	0.78	0.23	**0.083**	0.22	0.065	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.80	0.11	ND	0.20	0.028	
75-34-3	1,1-Dichloroethane	ND	0.81	0.12	ND	0.20	0.029	
78-93-3	2-Butanone (MEK)	ND	1.5	0.17	ND	0.51	0.056	
110-54-3	n-Hexane	ND	0.78	0.17	ND	0.22	0.047	
67-66-3	Chloroform	ND	0.80	0.11	ND	0.16	0.022	
107-06-2	1,2-Dichloroethane	ND	0.78	0.089	ND	0.19	0.022	
71-55-6	1,1,1-Trichloroethane	ND	0.78	0.099	ND	0.14	0.018	
71-43-2	Benzene	**0.13**	0.78	0.12	**0.041**	0.24	0.036	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S3** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-014

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Topacio Zavala Date Analyzed: 7/26/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00643

Initial Pressure (psig): -2.51 Final Pressure (psig): 3.63

Container Dilution Factor: 1.50

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.41**	0.77	0.11	**0.065**	0.12	0.018	**J**
78-87-5	1,2-Dichloropropane	ND	0.78	0.099	ND	0.17	0.021	
75-27-4	Bromodichloromethane	ND	0.78	0.12	ND	0.12	0.017	
79-01-6	Trichloroethene	ND	0.77	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.37	0.027	
108-88-3	Toluene	**0.40**	0.78	0.098	**0.11**	0.21	0.026	**J**
106-93-4	1,2-Dibromoethane	ND	0.78	0.093	ND	0.10	0.012	
127-18-4	Tetrachloroethene	ND	0.78	0.10	ND	0.12	0.015	
108-90-7	Chlorobenzene	ND	0.78	0.11	ND	0.17	0.023	
100-41-4	Ethylbenzene	ND	0.78	0.11	ND	0.18	0.026	
179601-23-1	m,p-Xylenes	ND	1.5	0.21	ND	0.35	0.048	
95-47-6	o-Xylene	ND	0.80	0.12	ND	0.18	0.027	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.80	0.11	ND	0.12	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.80	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.78	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.80	0.12	ND	0.13	0.020	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.75	0.38	ND	0.21	0.11	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.75	0.36	ND	0.18	0.086	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-015

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Topacio Zavala Date Analyzed: 7/26/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01479

Initial Pressure (psig): -2.26 Final Pressure (psig): 3.64

Container Dilution Factor: 1.47

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.1**	0.76	0.13	**0.42**	0.15	0.026	
74-87-3	Chloromethane	**0.20**	0.76	0.13	**0.095**	0.37	0.061	**J**
75-01-4	Vinyl Chloride	ND	0.78	0.084	ND	0.30	0.033	
75-00-3	Chloroethane	ND	0.76	0.097	ND	0.29	0.037	
64-17-5	Ethanol	**1.9**	7.8	0.54	**1.0**	4.1	0.29	**J**
67-64-1	Acetone	**5.9**	7.6	1.8	**2.5**	3.2	0.74	**J**
75-69-4	Trichlorofluoromethane	**1.1**	0.75	0.12	**0.20**	0.13	0.021	
67-63-0	2-Propanol (Isopropyl Alcohol)	**1.1**	1.5	0.32	**0.43**	0.60	0.13	**J**
107-13-1	Acrylonitrile	ND	1.5	0.16	ND	0.68	0.075	
75-35-4	1,1-Dichloroethene	ND	0.76	0.11	ND	0.19	0.027	
75-09-2	Methylene Chloride	**0.35**	0.76	0.22	**0.10**	0.22	0.063	**J**
156-60-5	trans-1,2-Dichloroethene	ND	0.78	0.11	ND	0.20	0.027	
75-34-3	1,1-Dichloroethane	ND	0.79	0.11	ND	0.20	0.028	
78-93-3	2-Butanone (MEK)	ND	1.5	0.16	ND	0.50	0.055	
110-54-3	n-Hexane	ND	0.76	0.16	ND	0.22	0.046	
67-66-3	Chloroform	ND	0.78	0.10	ND	0.16	0.021	
107-06-2	1,2-Dichloroethane	ND	0.76	0.087	ND	0.19	0.021	
71-55-6	1,1,1-Trichloroethane	ND	0.76	0.097	ND	0.14	0.018	
71-43-2	Benzene	**0.13**	0.76	0.11	**0.040**	0.24	0.035	**J**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **S1** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P2103661-015

Test Code: EPA TO-15 Date Collected: 7/8/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/12/21
Analyst: Topacio Zavala Date Analyzed: 7/26/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01479

Initial Pressure (psig): -2.26 Final Pressure (psig): 3.64

Container Dilution Factor: 1.47

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	**0.43**	0.75	0.11	**0.069**	0.12	0.017	**J**
78-87-5	1,2-Dichloropropane	ND	0.76	0.097	ND	0.17	0.021	
75-27-4	Bromodichloromethane	ND	0.76	0.11	ND	0.11	0.017	
79-01-6	Trichloroethene	ND	0.75	0.11	ND	0.14	0.020	
108-10-1	4-Methyl-2-pentanone	ND	1.5	0.11	ND	0.36	0.026	
108-88-3	Toluene	**0.42**	0.76	0.096	**0.11**	0.20	0.025	**J**
106-93-4	1,2-Dibromoethane	ND	0.76	0.091	ND	0.10	0.012	
127-18-4	Tetrachloroethene	ND	0.76	0.10	ND	0.11	0.015	
108-90-7	Chlorobenzene	ND	0.76	0.10	ND	0.17	0.023	
100-41-4	Ethylbenzene	ND	0.76	0.11	ND	0.18	0.025	
179601-23-1	m,p-Xylenes	**0.21**	1.5	0.21	**0.047**	0.34	0.047	**J**
95-47-6	o-Xylene	ND	0.78	0.11	ND	0.18	0.026	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.78	0.11	ND	0.11	0.016	
541-73-1	1,3-Dichlorobenzene	ND	0.78	0.12	ND	0.13	0.020	
106-46-7	1,4-Dichlorobenzene	ND	0.76	0.12	ND	0.13	0.020	
95-50-1	1,2-Dichlorobenzene	ND	0.78	0.12	ND	0.13	0.019	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.74	0.37	ND	0.21	0.10	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.74	0.35	ND	0.17	0.084	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210725-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.52	0.087	ND	0.11	0.018	
74-87-3	Chloromethane	ND	0.52	0.086	ND	0.25	0.042	
75-01-4	Vinyl Chloride	ND	0.53	0.057	ND	0.21	0.022	
75-00-3	Chloroethane	ND	0.52	0.066	ND	0.20	0.025	
64-17-5	Ethanol	ND	5.3	0.37	ND	2.8	0.20	
67-64-1	Acetone	ND	5.2	1.2	ND	2.2	0.51	
75-69-4	Trichlorofluoromethane	ND	0.51	0.081	ND	0.091	0.014	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.0	0.22	ND	0.41	0.090	
107-13-1	Acrylonitrile	ND	1.0	0.11	ND	0.46	0.051	
75-35-4	1,1-Dichloroethene	ND	0.52	0.074	ND	0.13	0.019	
75-09-2	Methylene Chloride	ND	0.52	0.15	ND	0.15	0.043	
156-60-5	trans-1,2-Dichloroethene	ND	0.53	0.074	ND	0.13	0.019	
75-34-3	1,1-Dichloroethane	ND	0.54	0.078	ND	0.13	0.019	
78-93-3	2-Butanone (MEK)	ND	1.0	0.11	ND	0.34	0.037	
110-54-3	n-Hexane	ND	0.52	0.11	ND	0.15	0.031	
67-66-3	Chloroform	ND	0.53	0.071	ND	0.11	0.015	
107-06-2	1,2-Dichloroethane	ND	0.52	0.059	ND	0.13	0.015	
71-55-6	1,1,1-Trichloroethane	ND	0.52	0.066	ND	0.095	0.012	
71-43-2	Benzene	ND	0.52	0.077	ND	0.16	0.024	

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

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210725-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	ND	0.51	0.074	ND	0.081	0.012	
78-87-5	1,2-Dichloropropane	ND	0.52	0.066	ND	0.11	0.014	
75-27-4	Bromodichloromethane	ND	0.52	0.077	ND	0.078	0.011	
79-01-6	Trichloroethene	ND	0.51	0.072	ND	0.095	0.013	
108-10-1	4-Methyl-2-pentanone	ND	1.0	0.073	ND	0.24	0.018	
108-88-3	Toluene	ND	0.52	0.065	ND	0.14	0.017	
106-93-4	1,2-Dibromoethane	ND	0.52	0.062	ND	0.068	0.0081	
127-18-4	Tetrachloroethene	ND	0.52	0.069	ND	0.077	0.010	
108-90-7	Chlorobenzene	ND	0.52	0.071	ND	0.11	0.015	
100-41-4	Ethylbenzene	ND	0.52	0.075	ND	0.12	0.017	
179601-23-1	m,p-Xylenes	ND	1.0	0.14	ND	0.23	0.032	
95-47-6	o-Xylene	ND	0.53	0.077	ND	0.12	0.018	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.53	0.074	ND	0.077	0.011	
541-73-1	1,3-Dichlorobenzene	ND	0.53	0.080	ND	0.088	0.013	
106-46-7	1,4-Dichlorobenzene	ND	0.52	0.082	ND	0.087	0.014	
95-50-1	1,2-Dichlorobenzene	ND	0.53	0.079	ND	0.088	0.013	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.50	0.25	ND	0.14	0.071	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.50	0.24	ND	0.12	0.057	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210726-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/26/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.52	0.087	ND	0.11	0.018	
74-87-3	Chloromethane	ND	0.52	0.086	ND	0.25	0.042	
75-01-4	Vinyl Chloride	ND	0.53	0.057	ND	0.21	0.022	
75-00-3	Chloroethane	ND	0.52	0.066	ND	0.20	0.025	
64-17-5	Ethanol	ND	5.3	0.37	ND	2.8	0.20	
67-64-1	Acetone	ND	5.2	1.2	ND	2.2	0.51	
75-69-4	Trichlorofluoromethane	ND	0.51	0.081	ND	0.091	0.014	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.0	0.22	ND	0.41	0.090	
107-13-1	Acrylonitrile	ND	1.0	0.11	ND	0.46	0.051	
75-35-4	1,1-Dichloroethene	ND	0.52	0.074	ND	0.13	0.019	
75-09-2	Methylene Chloride	ND	0.52	0.15	ND	0.15	0.043	
156-60-5	trans-1,2-Dichloroethene	ND	0.53	0.074	ND	0.13	0.019	
75-34-3	1,1-Dichloroethane	ND	0.54	0.078	ND	0.13	0.019	
78-93-3	2-Butanone (MEK)	ND	1.0	0.11	ND	0.34	0.037	
110-54-3	n-Hexane	ND	0.52	0.11	ND	0.15	0.031	
67-66-3	Chloroform	ND	0.53	0.071	ND	0.11	0.015	
107-06-2	1,2-Dichloroethane	ND	0.52	0.059	ND	0.13	0.015	
71-55-6	1,1,1-Trichloroethane	ND	0.52	0.066	ND	0.095	0.012	
71-43-2	Benzene	ND	0.52	0.077	ND	0.16	0.024	

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

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210726-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/26/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	ND	0.51	0.074	ND	0.081	0.012	
78-87-5	1,2-Dichloropropane	ND	0.52	0.066	ND	0.11	0.014	
75-27-4	Bromodichloromethane	ND	0.52	0.077	ND	0.078	0.011	
79-01-6	Trichloroethene	ND	0.51	0.072	ND	0.095	0.013	
108-10-1	4-Methyl-2-pentanone	ND	1.0	0.073	ND	0.24	0.018	
108-88-3	Toluene	ND	0.52	0.065	ND	0.14	0.017	
106-93-4	1,2-Dibromoethane	ND	0.52	0.062	ND	0.068	0.0081	
127-18-4	Tetrachloroethene	ND	0.52	0.069	ND	0.077	0.010	
108-90-7	Chlorobenzene	ND	0.52	0.071	ND	0.11	0.015	
100-41-4	Ethylbenzene	ND	0.52	0.075	ND	0.12	0.017	
179601-23-1	m,p-Xylenes	ND	1.0	0.14	ND	0.23	0.032	
95-47-6	o-Xylene	ND	0.53	0.077	ND	0.12	0.018	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.53	0.074	ND	0.077	0.011	
541-73-1	1,3-Dichlorobenzene	ND	0.53	0.080	ND	0.088	0.013	
106-46-7	1,4-Dichlorobenzene	ND	0.52	0.082	ND	0.087	0.014	
95-50-1	1,2-Dichlorobenzene	ND	0.53	0.079	ND	0.088	0.013	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.50	0.25	ND	0.14	0.071	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.50	0.24	ND	0.12	0.057	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
X = See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210726-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Topacio Zavala Date Analyzed: 7/26/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.52	0.087	ND	0.11	0.018	
74-87-3	Chloromethane	ND	0.52	0.086	ND	0.25	0.042	
75-01-4	Vinyl Chloride	ND	0.53	0.057	ND	0.21	0.022	
75-00-3	Chloroethane	ND	0.52	0.066	ND	0.20	0.025	
64-17-5	Ethanol	ND	5.3	0.37	ND	2.8	0.20	
67-64-1	Acetone	ND	5.2	1.2	ND	2.2	0.51	
75-69-4	Trichlorofluoromethane	ND	0.51	0.081	ND	0.091	0.014	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.0	0.22	ND	0.41	0.090	
107-13-1	Acrylonitrile	ND	1.0	0.11	ND	0.46	0.051	
75-35-4	1,1-Dichloroethene	ND	0.52	0.074	ND	0.13	0.019	
75-09-2	Methylene Chloride	ND	0.52	0.15	ND	0.15	0.043	
156-60-5	trans-1,2-Dichloroethene	ND	0.53	0.074	ND	0.13	0.019	
75-34-3	1,1-Dichloroethane	ND	0.54	0.078	ND	0.13	0.019	
78-93-3	2-Butanone (MEK)	ND	1.0	0.11	ND	0.34	0.037	
110-54-3	n-Hexane	ND	0.52	0.11	ND	0.15	0.031	
67-66-3	Chloroform	ND	0.53	0.071	ND	0.11	0.015	
107-06-2	1,2-Dichloroethane	ND	0.52	0.059	ND	0.13	0.015	
71-55-6	1,1,1-Trichloroethane	ND	0.52	0.066	ND	0.095	0.012	
71-43-2	Benzene	ND	0.52	0.077	ND	0.16	0.024	

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

Client: **Intertox, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210726-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Topacio Zavala Date Analyzed: 7/26/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	ND	0.51	0.074	ND	0.081	0.012	
78-87-5	1,2-Dichloropropane	ND	0.52	0.066	ND	0.11	0.014	
75-27-4	Bromodichloromethane	ND	0.52	0.077	ND	0.078	0.011	
79-01-6	Trichloroethene	ND	0.51	0.072	ND	0.095	0.013	
108-10-1	4-Methyl-2-pentanone	ND	1.0	0.073	ND	0.24	0.018	
108-88-3	Toluene	ND	0.52	0.065	ND	0.14	0.017	
106-93-4	1,2-Dibromoethane	ND	0.52	0.062	ND	0.068	0.0081	
127-18-4	Tetrachloroethene	ND	0.52	0.069	ND	0.077	0.010	
108-90-7	Chlorobenzene	ND	0.52	0.071	ND	0.11	0.015	
100-41-4	Ethylbenzene	ND	0.52	0.075	ND	0.12	0.017	
179601-23-1	m,p-Xylenes	ND	1.0	0.14	ND	0.23	0.032	
95-47-6	o-Xylene	ND	0.53	0.077	ND	0.12	0.018	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.53	0.074	ND	0.077	0.011	
541-73-1	1,3-Dichlorobenzene	ND	0.53	0.080	ND	0.088	0.013	
106-46-7	1,4-Dichlorobenzene	ND	0.52	0.082	ND	0.087	0.014	
95-50-1	1,2-Dichlorobenzene	ND	0.53	0.079	ND	0.088	0.013	
75-45-6	Chlorodifluoromethane (CFC 22)	ND	0.50	0.25	ND	0.14	0.071	**X**
75-43-4	Dichlorofluoromethane (CFC 21)	ND	0.50	0.24	ND	0.12	0.057	**X**

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
X = See case narrative.

ALS ENVIRONMENTAL

SURROGATE SPIKE RECOVERY RESULTS

Client: **Intertox, Incorporated**
Client Project ID: **KCLF** ALS Project ID: P2103661

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date(s) Collected: 7/8/21
Analyst: Topacio Zavala/Wida Ang Date(s) Received: 7/12/21
Sample Type: 6.0 L Silonite Canister(s) Date(s) Analyzed: 7/25 - 7/26/21
Test Notes:

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4 Percent Recovered	Toluene-d8 Percent Recovered	Bromofluorobenzene Percent Recovered	Acceptance Limits	Data Qualifier
Method Blank	P210725-MB	**82**	**113**	**113**	70-130	
Method Blank	P210726-MB	**82**	**113**	**113**	70-130	
Method Blank	P210726-MB	**86**	**113**	**106**	70-130	
Lab Control Sample	P210725-LCS	**82**	**109**	**115**	70-130	
Lab Control Sample	P210726-LCS	**85**	**110**	**110**	70-130	
Lab Control Sample	P210726-LCS	**81**	**113**	**115**	70-130	
Duplicate Lab Control Sample	P210725-DLCS	**82**	**110**	**116**	70-130	
Duplicate Lab Control Sample	P210726-DLCS	**83**	**111**	**112**	70-130	
Duplicate Lab Control Sample	P210726-DLCS	**81**	**112**	**115**	70-130	
S6	P2103661-001	**85**	**109**	**112**	70-130	
S5	P2103661-002	**85**	**109**	**111**	70-130	
S7	P2103661-003	**85**	**108**	**111**	70-130	
REF1	P2103661-004	**84**	**107**	**112**	70-130	
S13	P2103661-005	**84**	**107**	**111**	70-130	
S12	P2103661-006	**82**	**109**	**110**	70-130	
S11	P2103661-007	**84**	**110**	**113**	70-130	
S11D	P2103661-008	**84**	**108**	**110**	70-130	
S4	P2103661-009	**85**	**109**	**111**	70-130	
S8	P2103661-010	**84**	**109**	**112**	70-130	
S9	P2103661-011	**86**	**108**	**111**	70-130	
S10	P2103661-012	**82**	**117**	**112**	70-130	
S2	P2103661-013	**82**	**115**	**111**	70-130	
S3	P2103661-014	**86**	**109**	**105**	70-130	
S1	P2103661-015	**87**	**109**	**106**	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210725-DLCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	210	171	173	**81**	**82**	71-112	1	25	
74-87-3	Chloromethane	206	160	165	**78**	**80**	53-126	3	25	
75-01-4	Vinyl Chloride	208	216	220	**104**	**106**	63-123	2	25	
75-00-3	Chloroethane	204	200	204	**98**	**100**	66-117	2	25	
64-17-5	Ethanol	998	984	1000	**99**	**100**	57-117	1	25	
67-64-1	Acetone	1,030	976	998	**95**	**97**	60-117	2	25	
75-69-4	Trichlorofluoromethane	204	166	168	**81**	**82**	71-114	1	25	
67-63-0	2-Propanol (Isopropyl Alcohol)	408	345	351	**85**	**86**	61-124	1	25	
107-13-1	Acrylonitrile	410	419	428	**102**	**104**	65-130	2	25	
75-35-4	1,1-Dichloroethene	212	214	217	**101**	**102**	74-114	1	25	
75-09-2	Methylene Chloride	208	200	205	**96**	**99**	75-112	3	25	
156-60-5	trans-1,2-Dichloroethene	212	212	217	**100**	**102**	76-119	2	25	
75-34-3	1,1-Dichloroethane	212	198	201	**93**	**95**	70-114	2	25	
78-93-3	2-Butanone (MEK)	412	430	436	**104**	**106**	74-121	2	25	
110-54-3	n-Hexane	212	212	215	**100**	**101**	55-130	1	25	
67-66-3	Chloroform	214	190	192	**89**	**90**	71-114	1	25	
107-06-2	1,2-Dichloroethane	208	173	174	**83**	**84**	71-119	1	25	
71-55-6	1,1,1-Trichloroethane	206	174	177	**84**	**86**	73-119	2	25	
71-43-2	Benzene	204	193	197	**95**	**97**	72-113	2	25	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210725-DLCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/25/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
56-23-5	Carbon Tetrachloride	210	170	172	**81**	**82**	67-123	1	25	
78-87-5	1,2-Dichloropropane	206	208	212	**101**	**103**	70-118	2	25	
75-27-4	Bromodichloromethane	210	188	190	**90**	**90**	74-119	0	25	
79-01-6	Trichloroethene	206	198	201	**96**	**98**	74-115	2	25	
108-10-1	4-Methyl-2-pentanone	416	439	446	**106**	**107**	73-129	0.9	25	
108-88-3	Toluene	206	222	228	**108**	**111**	70-118	3	25	
106-93-4	1,2-Dibromoethane	208	233	240	**112**	**115**	76-128	3	25	
127-18-4	Tetrachloroethene	206	227	232	**110**	**113**	63-130	3	25	
108-90-7	Chlorobenzene	206	224	228	**109**	**111**	70-118	2	25	
100-41-4	Ethylbenzene	206	242	247	**117**	**120**	71-123	3	25	
179601-23-1	m,p-Xylenes	412	468	479	**114**	**116**	67-127	2	25	
95-47-6	o-Xylene	206	231	236	**112**	**115**	69-124	3	25	
79-34-5	1,1,2,2-Tetrachloroethane	206	233	239	**113**	**116**	69-128	3	25	
541-73-1	1,3-Dichlorobenzene	206	214	221	**104**	**107**	67-136	3	25	
106-46-7	1,4-Dichlorobenzene	204	213	220	**104**	**108**	63-134	4	25	
95-50-1	1,2-Dichlorobenzene	206	231	238	**112**	**116**	64-139	4	25	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210726-DLCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/26/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	210	183	176	**87**	**84**	71-112	4	25	
74-87-3	Chloromethane	206	177	155	**86**	**75**	53-126	14	25	
75-01-4	Vinyl Chloride	208	226	221	**109**	**106**	63-123	3	25	
75-00-3	Chloroethane	204	210	207	**103**	**101**	66-117	2	25	
64-17-5	Ethanol	998	1050	1030	**105**	**103**	57-117	2	25	
67-64-1	Acetone	1,030	1020	1000	**99**	**97**	60-117	2	25	
75-69-4	Trichlorofluoromethane	204	177	171	**87**	**84**	71-114	4	25	
67-63-0	2-Propanol (Isopropyl Alcohol)	408	361	350	**88**	**86**	61-124	2	25	
107-13-1	Acrylonitrile	410	441	435	**108**	**106**	65-130	2	25	
75-35-4	1,1-Dichloroethene	212	224	221	**106**	**104**	74-114	2	25	
75-09-2	Methylene Chloride	208	212	208	**102**	**100**	75-112	2	25	
156-60-5	trans-1,2-Dichloroethene	212	224	219	**106**	**103**	76-119	3	25	
75-34-3	1,1-Dichloroethane	212	208	203	**98**	**96**	70-114	2	25	
78-93-3	2-Butanone (MEK)	412	451	443	**109**	**108**	74-121	0.9	25	
110-54-3	n-Hexane	212	222	218	**105**	**103**	55-130	2	25	
67-66-3	Chloroform	214	200	196	**93**	**92**	71-114	1	25	
107-06-2	1,2-Dichloroethane	208	185	179	**89**	**86**	71-119	3	25	
71-55-6	1,1,1-Trichloroethane	206	183	178	**89**	**86**	73-119	3	25	
71-43-2	Benzene	204	200	197	**98**	**97**	72-113	1	25	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210726-DLCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 7/26/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
56-23-5	Carbon Tetrachloride	210	178	172	**85**	**82**	67-123	4	25	
78-87-5	1,2-Dichloropropane	206	214	215	**104**	**104**	70-118	0	25	
75-27-4	Bromodichloromethane	210	195	192	**93**	**91**	74-119	2	25	
79-01-6	Trichloroethene	206	204	203	**99**	**99**	74-115	0	25	
108-10-1	4-Methyl-2-pentanone	416	455	449	**109**	**108**	73-129	0.9	25	
108-88-3	Toluene	206	234	233	**114**	**113**	70-118	0.9	25	
106-93-4	1,2-Dibromoethane	208	243	245	**117**	**118**	76-128	0.9	25	
127-18-4	Tetrachloroethene	206	235	237	**114**	**115**	63-130	0.9	25	
108-90-7	Chlorobenzene	206	231	235	**112**	**114**	70-118	2	25	
100-41-4	Ethylbenzene	206	251	254	**122**	**123**	71-123	0.8	25	
179601-23-1	m,p-Xylenes	412	488	494	**118**	**120**	67-127	2	25	
95-47-6	o-Xylene	206	243	244	**118**	**118**	69-124	0	25	
79-34-5	1,1,2,2-Tetrachloroethane	206	243	247	**118**	**120**	69-128	2	25	
541-73-1	1,3-Dichlorobenzene	206	224	226	**109**	**110**	67-136	0.9	25	
106-46-7	1,4-Dichlorobenzene	204	224	225	**110**	**110**	63-134	0	25	
95-50-1	1,2-Dichlorobenzene	206	245	247	**119**	**120**	64-139	0.8	25	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210726-DLCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Topacio Zavala Date Analyzed: 7/27/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	210	176	174	**84**	**83**	71-112	1	25	
74-87-3	Chloromethane	206	170	167	**83**	**81**	53-126	2	25	
75-01-4	Vinyl Chloride	208	223	222	**107**	**107**	63-123	0	25	
75-00-3	Chloroethane	204	206	208	**101**	**102**	66-117	1	25	
64-17-5	Ethanol	998	1030	1040	**103**	**104**	57-117	1	25	
67-64-1	Acetone	1,030	1010	1010	**98**	**98**	60-117	0	25	
75-69-4	Trichlorofluoromethane	204	168	167	**82**	**82**	71-114	0	25	
67-63-0	2-Propanol (Isopropyl Alcohol)	408	382	373	**94**	**91**	61-124	3	25	
107-13-1	Acrylonitrile	410	433	437	**106**	**107**	65-130	0.9	25	
75-35-4	1,1-Dichloroethene	212	219	222	**103**	**105**	74-114	2	25	
75-09-2	Methylene Chloride	208	205	206	**99**	**99**	75-112	0	25	
156-60-5	trans-1,2-Dichloroethene	212	218	217	**103**	**102**	76-119	1	25	
75-34-3	1,1-Dichloroethane	212	203	203	**96**	**96**	70-114	0	25	
78-93-3	2-Butanone (MEK)	412	442	442	**107**	**107**	74-121	0	25	
110-54-3	n-Hexane	212	219	219	**103**	**103**	55-130	0	25	
67-66-3	Chloroform	214	193	192	**90**	**90**	71-114	0	25	
107-06-2	1,2-Dichloroethane	208	175	173	**84**	**83**	71-119	1	25	
71-55-6	1,1,1-Trichloroethane	206	177	175	**86**	**85**	73-119	1	25	
71-43-2	Benzene	204	200	199	**98**	**98**	72-113	0	25	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Intertox, Incorporated**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2103661
Client Project ID: **KCLF** ALS Sample ID: P210726-DLCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Topacio Zavala Date Analyzed: 7/27/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
56-23-5	Carbon Tetrachloride	210	172	171	**82**	**81**	67-123	1	25	
78-87-5	1,2-Dichloropropane	206	216	215	**105**	**104**	70-118	1	25	
75-27-4	Bromodichloromethane	210	191	190	**91**	**90**	74-119	1	25	
79-01-6	Trichloroethene	206	203	202	**99**	**98**	74-115	1	25	
108-10-1	4-Methyl-2-pentanone	416	454	456	**109**	**110**	73-129	0.9	25	
108-88-3	Toluene	206	232	234	**113**	**114**	70-118	0.9	25	
106-93-4	1,2-Dibromoethane	208	241	244	**116**	**117**	76-128	0.9	25	
127-18-4	Tetrachloroethene	206	233	236	**113**	**115**	63-130	2	25	
108-90-7	Chlorobenzene	206	230	232	**112**	**113**	70-118	0.9	25	
100-41-4	Ethylbenzene	206	248	250	**120**	**121**	71-123	0.8	25	
179601-23-1	m,p-Xylenes	412	483	484	**117**	**117**	67-127	0	25	
95-47-6	o-Xylene	206	238	239	**116**	**116**	69-124	0	25	
79-34-5	1,1,2,2-Tetrachloroethane	206	241	244	**117**	**118**	69-128	0.9	25	
541-73-1	1,3-Dichlorobenzene	206	223	223	**108**	**108**	67-136	0	25	
106-46-7	1,4-Dichlorobenzene	204	221	222	**108**	**109**	63-134	0.9	25	
95-50-1	1,2-Dichlorobenzene	206	242	243	**117**	**118**	64-139	0.9	25	

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.

Response Factor Report HP5890

Method Path : J:\GC08\METHODS\
Method File : TF110917.M
Title : VOA-TO3C1C6
Last Update : Thu Nov 09 10:49:40 2017
Response Via : Initial Calibration

Calibration Files
1 =11091703.D 2 =11091704.D 3 =11091705.D
4 =11091706.D 5 =11091707.D 6 =11091708.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Methane	2.284	2.219	2.090	2.282	2.348	2.379	2.248	E4	4.76
2)	C2 as Ethane	3.795	4.014	3.953	4.280	4.337	4.363	4.124	E4	5.70
3)	C3 as Propane	5.437	5.733	5.664	6.150	6.218	6.259	5.910	E4	5.81
4)	C4 as Butane	7.122	7.470	7.429	8.187	8.262	8.339	7.802	E4	6.68
5)	C5 as Pentane	0.889	0.942	0.911	1.039	1.049	1.067	0.983	E5	7.94
6)	C6 as Hexane	0.958	1.027	0.961	1.149	1.166	1.205	1.078	E5	10.12
7)	>C6_1 as Hexane	0.958	1.027	0.961	1.149	1.166	1.205	1.078	E5	10.12
8)	>C6_2 as Hexane	0.958	1.027	0.961	1.149	1.166	1.205	1.078	E5	10.12
9)	>C6_3 as Hexane	0.958	1.027	0.961	1.149	1.166	1.205	1.078	E5	10.12

(#) = Out of Range ### Number of calibration levels exceeded format ###

TF110917.M Thu Nov 09 10:50:04 2017

11/9/17

ALS Environmental

REPORT SUMMARY

7/26/21
C

Method : VOA-TO3C1C6
Client : Intertox, Incorporated
Analyst : GG

ALS Service Request P2103661
Instrument : Instrument 8 / FID #8
Date Acquired : 7/15/2021

SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Inject. Vol(ml)	Dilution DF	Methane	C2 as Ethane	C3 as Propane	C4 as n-Butane	C5 as n-Pentane	C6 as n-Hexane	>C6#1 as n-Hexane	>C6#2 as n-Hexane	>C6#3 as n-Hexane
STD S32-03182101	0.5	1.0	990.7	989.8	1039.2	1040.8	1021.0	1080.6	0.0	0.0	0.0
ACTUAL			1000.0	1000.0	1000.0	1000.0	1000.0	1000.0			
%Difference			0.9%	1.0%	3.9%	4.1%	2.1%	8.1%			
LCS S32-0318210	0.5	1.0	956.12	946.06	994.90	995.21	982.16	1043.31			
ACTUAL			1000.0	1000.0	1000.0	1000.0	1000.0	1000.0			
%Recovery			95.6%	94.6%	99.5%	99.5%	98.2%	104.3%			
LCSD S32-0318210	0.5	1.0	988.09	985.50	1040.40	1044.19	1031.00	1097.61			
ACTUAL			1000.0	1000.0	1000.0	1000.0	1000.0	1000.0			
%Recovery			98.8%	98.6%	104.0%	104.4%	103.1%	109.8%			
%RPD			3.3%	4.1%	4.5%	4.8%	4.9%	5.1%			
MB 1.0ml	1.0	1.0	0.13	0.00	0.00	0.00	0.00	0.02	0.17	0.11	0.37
P2103661-001 1.0m	1.0	1.0	1.85	0.00	0.00	0.02	0.00	0.04	0.23	0.09	0.31
P2103661-002 1.0m	1.0	1.0	1.85	0.00	0.00	0.02	0.00	0.04	0.20	0.12	0.22
P2103661-003 1.0m	1.0	1.0	1.84	0.00	0.00	0.02	0.00	0.03	0.14	0.11	0.12
P2103661-004 1.0m	1.0	1.0	2.01	0.00	0.00	0.02	0.00	0.03	0.15	0.12	0.28
P2103661-005 1.0m	1.0	1.0	2.17	0.00	0.00	0.00	0.00	0.03	0.14	0.11	0.25
P2103661-006 1.0m	1.0	1.0	4.60	0.00	0.00	0.00	0.00	0.03	0.17	0.13	0.27
P2103661-007 1.0m	1.0	1.0	1.85	0.00	0.00	0.00	0.00	0.03	0.17	0.13	0.29
P2103661-008 1.0m	1.0	1.0	1.87	0.00	0.00	0.00	0.00	0.03	0.13	0.11	0.12
P2103661-009 1.0m	1.0	1.0	1.89	0.00	0.00	0.00	0.03	0.04	0.20	0.14	0.16
P2103661-010 1.0m	1.0	1.0	1.83	0.00	0.00	0.00	0.00	0.03	0.15	0.12	0.24
P2103661-011 1.0m	1.0	1.0	1.89	0.00	0.00	0.03	0.00	0.03	0.17	0.12	0.27
P2103661-012 1.0m	1.0	1.0	2.05	0.00	0.00	0.02	0.00	0.03	0.15	0.13	0.33
P2103661-013 1.0m	1.0	1.0	1.87	0.00	0.00	0.00	0.00	0.02	0.14	0.08	0.12
P2103661-014 1.0m	1.0	1.0	1.76	0.00	0.00	0.00	0.00	0.02	0.13	0.07	0.12
P2103661-015 1.0m	1.0	1.0	1.82	0.00	0.00	0.00	0.00	0.02	0.14	0.08	0.12
STD S32-03182101	0.5	1.0	952.6	948.4	990.4	981.2	948.5	987.0			
ACTUAL			1000.0	1000.0	1000.0	1000.0	1000.0	1000.0			
%Difference			4.7%	5.2%	1.0%	1.9%	5.1%	1.3%			

FINAL SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Pi	Pf	Methane	C2 as Ethane	C3 as Propane	C4 as n-Butane	C5 as n-Pentane	C6 as n-Hexane	>C6 as n-Hexane
MRL			0.50	0.50	0.50	0.50	0.50	0.50	1.00
MB 1.0ml	0.00	0.00	ND	ND	ND	ND	ND	ND	ND
P2103661-001 1.0m	-1.83	4.08	2.69	ND	ND	ND	ND	ND	ND
P2103661-002 1.0m	-1.79	3.70	2.64	ND	ND	ND	ND	ND	ND
P2103661-003 1.0m	-2.03	4.39	2.78	ND	ND	ND	ND	ND	ND
P2103661-004 1.0m	-1.43	4.00	2.84	ND	ND	ND	ND	ND	ND
P2103661-005 1.0m	-2.17	4.23	3.27	ND	ND	ND	ND	ND	ND
P2103661-006 1.0m	-2.46	3.73	6.93	ND	ND	ND	ND	ND	ND
P2103661-007 1.0m	-1.60	3.85	2.61	ND	ND	ND	ND	ND	ND
P2103661-008 1.0m	-1.58	3.54	2.60	ND	ND	ND	ND	ND	ND
P2103661-009 1.0m	-2.30	3.60	2.79	ND	ND	ND	ND	ND	ND
P2103661-010 1.0m	-1.78	3.88	2.62	ND	ND	ND	ND	ND	ND
P2103661-011 1.0m	-1.89	3.62	2.70	ND	ND	ND	ND	ND	ND
P2103661-012 1.0m	-1.59	3.54	2.85	ND	ND	ND	ND	ND	ND
P2103661-013 1.0m	-1.63	3.58	2.62	ND	ND	ND	ND	ND	ND
P2103661-014 1.0m	-2.51	3.63	2.64	ND	ND	ND	ND	ND	ND
P2103661-015 1.0m	-2.26	3.64	2.68	ND	ND	ND	ND	ND	ND

TGNMO-HC RESULT SUMMARIES (as ppm Methane)

Sample ID	PiPf DF	NMOHC as Methane	NMOHC as Hexane	Total HC	Fixed Gases %
MRL(ppm Methane)	1.0	1.00	0.17	%	
MB 1.0ml	1.00	0.000	0.000	0.00	100.00
P2103661-001 1.0m	1.46	0.00	0.00	0.00	100.00
P2103661-002 1.0m	1.43	0.00	0.00	0.00	100.00
P2103661-003 1.0m	1.51	0.00	0.00	0.00	100.00
P2103661-004 1.0m	1.41	0.00	0.00	0.00	100.00
P2103661-005 1.0m	1.51	0.00	0.00	0.00	100.00
P2103661-006 1.0m	1.51	0.00	0.00	0.00	100.00
P2103661-007 1.0m	1.42	0.00	0.00	0.00	100.00
P2103661-008 1.0m	1.39	0.00	0.00	0.00	100.00
P2103661-009 1.0m	1.48	0.00	0.00	0.00	100.00
P2103661-010 1.0m	1.44	0.00	0.00	0.00	100.00
P2103661-011 1.0m	1.43	0.00	0.00	0.00	100.00
P2103661-012 1.0m	1.39	0.00	0.00	0.00	100.00
P2103661-013 1.0m	1.40	0.00	0.00	0.00	100.00
P2103661-014 1.0m	1.50	0.00	0.00	0.00	100.00
P2103661-015 1.0m	1.47	0.00	0.00	0.00	100.00

Response Factor Report GC01_FXG

Method Path : I:\GC01\METHODS\
Method File : M012517.M
Title : EPA 25C TCA/FID Analysis for TGNMO
Last Updáte : Thu Jan 26 10:29:55 2017
Response Via : Initial Calibration

Calibration Files
0.49 =01251712.D 3.4 =01251726.D 144 =01251720.D
1000 =01251721.D 1448 =01251722.D 10K =01251723.D

	Compound	0.49	3.4	144	1000	1448	10K	Avg		%RSD
1)	Carbon Monoxide		5.849	6.187	5.594	4.963	6.160	5.751	E3	8.75
2)	Methane	5.534	5.550	6.160	5.497	4.943	6.139	5.637	E3	8.11
3)	Carbon Dioxide		7.439	6.562	5.889	5.256	6.546	6.338	E3	12.91
4)	TGNMO-1	6.690	6.290	6.176	5.634			6.094	E3	7.26
5)	TGMNO-2	6.690	6.290	6.176	5.634			6.094	E3	7.26

(#) = Out of Range ### Number of calibration levels exceeded format ###

Modified EPA Method 25C Daily QC Summary

Client : Intertox, Incorporated
Analyst : CB
Method Name : EPA 25C TCA/FID Analysis for TGNMO

Service Request # : P2103661
Instrument : 7/16/2021
Date Analyzed : 7/16/2021

RT Summaries and QC Check (minutes)

Sample ID	Carbon Monoxide	Methane	Carbon Dioxide	TGNMO-1	TGMNO-2		File ID	Time
ICAL Mean RT	**1.337**	**1.775**	**3.041**	**5.182**				
RT Windows (+/- min)	**0.330**	**0.330**	**0.330**	**0.330**				
STD S32-03052001	1.416	1.914	3.268	5.188			07162101.D	05:16
+/- 0.33min of ICAL Mean RT	Pass	Pass	Pass	Pass				
MB				N/A	N/A		07162102.D	06:29
LAB AIR		1.905 Pass	3.253 Pass	N/A	N/A		07162103.D	06:51
LCS S32-01212004	1.411 Pass	1.907 Pass	3.258 Pass	N/A	N/A		07162104.D	07:19
LCSD S32-01212004	1.409 Pass	1.905 Pass	3.256 Pass	N/A	N/A		07162105.D	07:54
P2103661-001			3.262 Pass	N/A	N/A		07162107.D	10:33
P2103661-002			3.265 Pass	N/A	N/A		07162111.D	12:01
P2103661-003			3.261 Pass	N/A	N/A		07162112.D	12:27
P2103661-004			3.265 Pass	N/A	N/A		07162113.D	13:09
P2103661-005			3.263 Pass	N/A	N/A		07162114.D	14:16
P2103661-006		1.914 Pass	3.268 Pass	N/A	N/A		07162115.D	14:34
STD S32-03052001	1.413 Pass	1.910 Pass	3.264 Pass	N/A	N/A		07162116.D	14:52
P2103661-007			3.267 Pass	N/A	N/A		07162117.D	15:46
P2103661-008			3.267 Pass	N/A	N/A		07162118.D	16:04
P2103661-009			3.268 Pass	N/A	N/A		07162119.D	16:23
P2103661-010			3.269 Pass	N/A	N/A		07162120.D	16:44
P2103661-011			3.268 Pass	N/A	N/A		07162121.D	17:09
STD S32-03052001	1.414 Pass	1.914 Pass	3.271 Pass	N/A	N/A		07162122.D	17:26

vv = Vent CO_2 / CH_4 v = Vent CO_2 N/A : Not Applicable

Continuing Calibration Standards Summary (ppm)

Sample ID	Carbon Monoxide	Methane	Carbon Dioxide			TGMNO	File ID	Time
ACTUAL	500.00	400.00	500.00			600.00		
CCV Criteria (+/- %D)	**15.0%**	**15.0%**	**15.0%**			**15.0%**		
STD S32-03052001	499.3 Pass	407.7 Pass	459.8 Pass			580.8 Pass	07162101.D	05:16
STD S32-03052001	518.6 Pass	423.1 Pass	476.6 Pass			598.1 Pass	07162116.D	14:52
STD S32-03052001	504.2 Pass	413.5 Pass	466.0 Pass			587.8 Pass	07162122.D	17:26

LCS / LCS Dup Summary (ppm, without DF correction)

Sample ID	Carbon Monoxide	Methane	Carbon Dioxide			TGMNO	File ID	Time
LCS Actual Conc. (ppm)	400.00	320.00	400.00			400.00		
LCS Criteria (% Range)	**90%-123%**	**91%-125%**	**80%-112%**			**86%-121%**		
LCS S32-01212004	446.9	366.3	408.4			435.4	07162104.D	07:19
LCS % Recovery	112%	114%	102%			109%		
	Pass	Pass	Pass			Pass		
LCSD S32-01212004	467.0	380.2	424.2			453.6	07162105.D	07:54
LCS % Recovery	117%	119%	106%			113%		
	Pass	Pass	Pass			Pass		
Duplicate % RPD	4.4%	3.7%	3.8%			4.1%		
Duplicate Criteria % RPD	**11%**	**10%**	**11%**			**13%**		
	Pass	Pass	Pass			Pass		

Lab Dup Summary (ppm, without DF correction)

Sample ID	Carbon Monoxide	Methane	Carbon Dioxide			TGMNO	File ID	Time

Modified EPA Method 25C Daily QC Summary

Client : Intertox, Incorporated
Analyst : CB
Method Name : EPA 25C TCA/FID Analysis for TGNMO

Service Request # : P2103661
Instrument : 7/17/2021
Date Analyzed : 7/17/2021

RT Summaries and QC Check (minutes)

Sample ID	Carbon Monoxide	Methane	Carbon Dioxide	TGNMO-1	TGMNO-2		File ID	Time
ICAL Mean RT	1.337	1.775	3.041	5.182				
RT Windows (+/- min)	0.330	0.330	0.330	0.330				
STD S32-03052001	1.406	1.901	3.255	5.187			07172101.D	09:52
+/- 0.33min of ICAL Mean RT	Pass	Pass	Pass	Pass				
MB				N/A	N/A		07172102.D	10:03
Lab Air		1.914 Pass	3.257 Pass	N/A	N/A		07172103.D	10:21
LCS S32-01212004	1.405 Pass	1.902 Pass	3.256 Pass	N/A	N/A		07172104.D	10:38
LCSD S32-01212004	1.406 Pass	1.902 Pass	3.257 Pass	N/A	N/A		07172105.D	10:55
P2103661-012			3.260 Pass	N/A	N/A		07172108.D	12:07
P2103661-013			3.261 Pass	N/A	N/A		07172109.D	12:20
P2103661-014			3.264 Pass	N/A	N/A		07172110.D	12:38
P2103661-015			3.263 Pass	N/A	N/A		07172111.D	12:51
STD S32-03052001	1.414 Pass	1.912 Pass	3.266 Pass	N/A	N/A		07172112.D	13:20

vv = Vent CO_2 / CH_4 v = Vent CO_2 N/A : Not Applicable

Continuing Calibration Standards Summary (ppm)

Sample ID	Carbon Monoxide	Methane	Carbon Dioxide			TGMNO	File ID	Time
ACTUAL	500.00	400.00	500.00			600.00		
CCV Criteria (+/- %D)	15.0%	15.0%	15.0%			15.0%		
STD S32-03052001	517.9 Pass	423.6 Pass	475.3 Pass			598.7 Pass	07172101.D	09:52
STD S32-03052001	533.0 Pass	435.2 Pass	490.1 Pass			616.1 Pass	07172112.D	13:20

LCS / LCS Dup Summary (ppm, without DF correction)

Sample ID	Carbon Monoxide	Methane	Carbon Dioxide			TGMNO	File ID	Time
LCS Actual Conc. (ppm)	400.00	320.00	400.00			400.00		
LCS Criteria (% Range)	90%-123%	91%-125%	80%-112%			86%-121%		
LCS S32-01212004	449.1	366.6	408.6			436.1	07172104.D	10:38
LCS % Recovery	112%	115%	102%			109%		
	Pass	Pass	Pass			Pass		
LCSD S32-01212004	444.7	363.3	404.4			432.4	07172105.D	10:55
LCS % Recovery	111%	114%	101%			108%		
	Pass	Pass	Pass			Pass		
Duplicate % RPD	1.0%	0.9%	1.0%			0.9%		
Duplicate Criteria % RPD	11%	10%	11%			13%		
	Pass	Pass	Pass			Pass		

Lab Dup Summary (ppm, without DF correction)

Sample ID	Carbon Monoxide	Methane	Carbon Dioxide			TGMNO	File ID	Time

Response Factor Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793	E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594	E6	221.92
3)	Methane (TCD)						2.161	0.951	E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438	E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907	E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673	E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695	E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343	E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488	E4	4.20
11)	Isobutylene							0.652	E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS091217_R.M Wed Sep 13 15:11:48 2017

ALS Environmental

REPORT SUMMARY

7/28/21 BJ 8/2/21

Method : mod TO3
Client : Intertox, Incorporated
Analyst : GG

ALS Service Request P2103661
Instrument : Instrument 10 / FID #1C
Date Acquired : 07/21/21

SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Inject. Vol(ml)	Dilution DF	ethane	propane
STD S32-05252101	0.1	1.0	1.542	1.585
ACTUAL			1.5	1.5
%Difference			1.4%	4.3%
LCS S32-06252002	0.1	1.0	1.579	1.596
ACTUAL			1.51	1.50
%Recovery			104.6%	106.4%
LCSD S32-06252002	0.1	1.0	1.582	1.605
ACTUAL			1.51	1.50
%Recovery			104.8%	107.0%
%RPD			0.2%	0.6%
mb 0.5ml	0.5	1.0	0.00	0.00
P2103661-001	0.50	1.0	0.000	0.000
P2103274-002	0.50	1.0	0.000	0.000
P2103274-003	0.50	1.0	0.000	0.000
P2103274-004	0.50	1.0	0.000	0.000
P2103274-005	0.50	1.0	0.000	0.000
P2103274-006	0.50	1.0	0.000	0.000
P2103274-007	0.50	1.0	0.000	0.000
P2103274-008	0.50	1.0	0.000	0.000
P2103274-009	0.50	1.0	0.000	0.000
P2103274-010	0.50	1.0	0.000	0.000
P2103274-011	0.50	1.0	0.000	0.000
STD S32-05252101	0.1	1.0	1.451	1.502
ACTUAL			1.5	1.5
%Difference			4.5%	1.2%

FINAL SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Pi	Pf	ethane	propane
			0.150	0.150
mb 0.5ml	0.00	0.00	ND	ND
P2103661-001	-3.07	3.88	ND	ND
P2103274-002	-1.99	3.54	ND	ND
P2103274-003	-2.49	4.43	ND	ND
P2103274-004	-1.86	3.96	ND	ND
P2103274-005	-1.39	4.35	ND	ND
P2103274-006	-0.84	3.67	ND	ND
P2103274-007	-1.35	4.21	ND	ND
P2103274-008	-1.71	3.68	ND	ND
P2103274-009	-2.22	3.98	ND	ND
P2103274-010	-2.15	3.95	ND	ND
P2103274-011	-2.51	3.91	ND	ND

TGNMO-HC RESULT SUMMARIES (as ppm Methane)

Sample ID	PiPf DF	NMOHC as Methane	NMOHC as Hexane	Total HC %	Fixed Gases %
mb 0.5ml	1.00				
P2103661-001	1.60	0.0	0.0	0.00	100.00
P2103274-002	1.44	0.0	0.0	0.00	100.00
P2103274-003	1.57	0.0	0.0	0.00	100.00
P2103274-004	1.45	0.0	0.0	0.00	100.00
P2103274-005	1.43	0.0	0.0	0.00	100.00
P2103274-006	1.33	0.0	0.0	0.00	100.00
P2103274-007	1.42	0.0	0.0	0.00	100.00
P2103274-008	1.41	0.0	0.0	0.00	100.00
P2103274-009	1.50	0.0	0.0	0.00	100.00
P2103274-010	1.49	0.0	0.0	0.00	100.00
P2103274-011	1.53	0.0	0.0	0.00	100.00

ALS Environmental

REPORT SUMMARY

Method : mod TO3
Client : Intertox, Incorporated
Analyst : CB

ALS Service Request: P2103661
Instrument : Instrument 10 / FID #10
Date Acquired : 07/22/21

CB 8/2/21

BS 8/2/21

SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Inject. Vol(ml)	Dilution DF	ethane	propane
STD S32-05252101	0.1	1.0	1.415	1.585
ACTUAL			1.5	1.5
%Difference			6.9%	4.3%
LCS S32-06252002	0.1	1.0	1.414	1.429
ACTUAL			1.51	1.50
%Recovery			93.6%	95.3%
LCSD S32-06252002	0.1	1.0	1.411	1.391
ACTUAL			1.51	1.50
%Recovery			93.4%	92.7%
%RPD			0.2%	2.7%
mb 0.5ml	0.5	1.0	0.00	0.00
P2103661-012	0.50	1.0	0.000	0.000
P2103661-013	0.50	1.0	0.000	0.000
P2103661-014	0.50	1.0	0.000	0.000
P2103661-015	0.50	1.0	0.000	0.000

8/4/21

STD S32-05252101	0.1	1.0	1.467	1.494
ACTUAL			1.5	1.5
%Difference			3.5%	1.7%

FINAL SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Pi	Pf	ethane 0.150	propane 0.150
mb 0.5ml	0.00	0.00	ND	ND
P2103661-012	-1.59	3.54	ND	ND
P2103661-013	-1.63	3.58	ND	ND
P2103661-014	-2.51	3.63	ND	ND
P2103661-015	-2.27	3.64	ND	ND

TGNMO-HC RESULT SUMMARIES (as ppm Methane)

Sample ID	PiPf DF	NMOHC as Methane	NMOHC as Hexane	Total HC %	Fixed Gases %
mb 0.5ml	1.00				
P2103661-012	1.39	0.0	0.0	0.00	100.00
P2103661-013	1.40	0.0	0.0	0.00	100.00
P2103661-014	1.50	0.0	0.0	0.00	100.00
P2103661-015	1.48	0.0	0.0	0.00	100.00

Response Factor Report GC22

Method Path : J:\GC22\METHODS\
Method File : GC22_Quan 11082019.M
Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
Last Update : Fri Nov 08 11:32:18 2019
Response Via : Initial Calibration

Calibration Files
5 =11071919.D 10 =11071920.D 50 =11071921.D
250 =11071922.D 1000 =11071923.D 2500 =11071924.D

		Compound	5	10	50	250	1000	2500	Avg	%RSD
1)	Z	Hydrogen_Sulfide	5.119	3.482	4.046	4.064	3.640	3.605	3.908 E4	13.35
2)	W	Carbonyl_Sulfide	4.959	3.517	5.547	5.693	4.377	4.352	4.688 E4	14.12
3)	T	Methyl_Mercaptan	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
4)	T	Ethyl_Mercaptan	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
5)	T	Dimethyl_Sulfide	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
6)	T	Carbon_Disulfide	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
7)	T	2-Propyl_Merc...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
8)	T	t-Butyl_Merca...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
9)	T	Propyl_Mercaptan	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
10)	T	Ethyl_Methyl_...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
11)	T	Thiophene	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
12)	T	i-Butyl_Merca...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
13)	T	Diethyl_Sulfide	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
14)	T	n-Butyl_Merca...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
15)	T	Dimethyl_Disu...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
16)	T	2-Methylthiop...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
17)	T	3-Methylthiop...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
18)	T	Tetrahydrothi...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
19)	T	2,5-Dimethylt...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
20)	T	2-Ethylthiophene	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
21)	T	Diethyl_Disul...	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63
22)	T	Methyltrisulfide	2.867	3.051	4.251	4.578	3.497	3.676	3.715 E4	14.63

(#) = Out of Range ### Number of calibration levels exceeded format ###

GC22_Quan 11082019.M Fri Nov 08 11:32:28 2019

ALS Environmental

REPORT SUMMARY

Method : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
Client : Intertox, Incorporated
Analyst : GG

Service Request : P2103661
Instrument : GC22
Date Acquired : 7/14/21

Compounds	MDL	RL	MB QC		Dry Wall QC		Lab Dup			Continuing Calibration Standards Summary (ppbv)											
			MB				dup	%RSD		ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff
Sample Information :	ppb	ppb	MB 1.0ml							STD S32-05242101		STD S32-05242101		STD S32-05242101							
Inj. Vol. (ml)	1.0	1.0	1.00		1.0	1.0				0.10		0.10		0.10		0.10		0.10		0.10	
Dilution	1.0	1.0	1.00		1.0	1.0															
Pi:	1.0	1.0	1.0		1.0	1.0															
Pi:	1.0	1.0	1.0		1.0	1.0															
PiPf DF:	1.0	1.0	1.0		1.0	1.0															
Hydrogen_Sulfide	1.900	5.000	ND	P						934.30	6.6%	973.570	2.6%	998.182	0.2%						
Carbonyl_Sulfide	1.700	5.000	ND	P						937.17	6.3%	940.953	5.9%	1016.175	1.6%						
Methyl_Mercaptan	1.200	5.000	ND	P						950.53	4.9%	975.113	2.5%	1034.050	3.4%						
Ethyl_Mercaptan	1.200	5.000	ND	P																	
Dimethyl_Sulfide	1.200	5.000	ND	P						6:30 AM		10:57 AM		3:27 PM							
Carbon_Disulfide	0.600	2.500	ND	P						07142101.D		07142116.D		07142122.D							
2-Propyl_Mercaptan	1.200	5.000	ND	P																	
t-Butyl_Mercaptan	1.200	5.000	ND	P																	
Propyl_Mercaptan	1.200	5.000	ND	P																	
Ethyl_Methyl_Sulfide	1.200	5.000	ND	P																	
Thiophene	1.200	5.000	ND	P																	
i-Butyl_Mercaptan	1.200	5.000	ND	P																	
Diethyl_Sulfide	1.200	5.000	ND	P																	
n-Butyl_Mercaptan	1.200	5.000	ND	P																	
Dimethyl_Disulfide	0.600	2.500	ND	P																	
2-Methylthiophene	1.200	5.000	ND	P																	
3-Methylthiophene	1.200	5.000	ND	P																	
Tetrahydrothiophene	1.200	5.000	ND	P																	
2,5-Dimethylthiophene	1.200	5.000	ND	P																	
2-Ethylthiophene	1.200	5.000	ND	P																	
Diethyl_Disulfide	0.600	2.500	ND	P																	
Methyltrisulfide	0.600	2.500	ND	P																	
Acqisition Time			7:14 AM																		
DataFile			07142105.D																		

LCS / LCS Dup Summary (ppbv)

	ppbv	%R		ppbv	%R	%RPD	Actual
Hydrogen_Sulfide	977.47	98.8%		1022.63	103.4%	4.52%	989.00
Carbonyl_Sulfide	1021.61	97.3%		1028.38	97.9%	0.66%	1050.00
Methyl_Mercaptan	1061.75	101.1%		1085.39	103.4%	2.20%	1050.00
Acqisition Time	6:39 AM			6:47 AM			
DataFile	07142102.D			07142103.D			

Response Factor Report MS13

Method Path : I:\MS13\METHODS\
Method File : R13071821.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Sun Jul 18 21:20:17 2021
Response Via : Initial Calibration

Calibration Files
0.1 =07182102.D 0.2 =07182103.D 0.5 =07182104.D 1.0 =07182105.D 5.0 =07182106.D 25 =07182107.D 50 =07182108.D
100 =07182109.D

		Compound	0.1	0.2	0.5	1.0	5.0	25	50	100	Avg	%RSD
1)	IR	Bromochloromethane...	----------	----------	----------	ISTD	----------	----------	----------	----------		
2)	T	Propene	1.648	1.511	1.480	1.535	1.477	1.562	1.508	1.181	1.488	9.12
3)	T	Dichlorodifluo...	2.535	2.389	2.463	2.457	2.412	2.398	2.358	2.054	2.383	6.04
4)	T	Chloromethane		1.678	1.782	1.656	0.923	1.259	0.928		1.371	28.31
5)	T	1,2-Dichloro-1...	1.172	1.148	1.211	1.150	1.181	1.123	1.119	1.115	1.152	2.95
6)	T	Vinyl Chloride	1.821	1.820	1.902	1.894	1.985	1.866	1.818	1.729	1.854	4.10
7)	T	1,3-Butadiene	1.334	1.530	1.560	1.679	1.766	1.680	1.609	1.551	1.589	8.22
8)	T	Bromomethane	0.958	0.922	0.977	0.952	0.976	1.008	1.009	0.884	0.961	4.41
9)	T	Chloroethane	0.689	0.748	0.792	0.838	0.877	0.874	0.891	0.889	0.825	9.09
10)	T	Ethanol	0.968	0.921	0.946	0.931	1.019	0.999	0.947	0.908	0.955	4.00
11)	T	Acetonitrile		2.606	2.456	2.575	2.789	2.752	2.710	2.635	2.646	4.33
12)	T	Acrolein		0.585	0.756	0.793	0.864	0.845	0.814	0.810	0.781	11.94
13)	T	Acetone	0.971	1.036	0.919	0.933	1.005	0.925	0.857	0.797	0.931	8.28
14)	T	Trichlorofluor...	2.139	2.083	2.203	2.176	2.241	2.161	2.137	2.127	2.158	2.26
15)	T	2-Propanol (Is...	2.984	3.230	3.502	3.446	3.894	3.922	3.622	3.282	3.485	9.30
16)	T	Acrylonitrile	1.119	1.444	1.594	1.547	1.845	1.737	1.684	1.647	1.577	14.02
17)	T	1,1-Dichloroet...	0.975	0.963	1.020	1.016	1.124	1.090	1.093	1.108	1.049	5.97
18)	T	2-Methyl-2-Pro...	2.130	2.371	2.817	2.918	2.556	3.119	2.487		2.628	13.00
19)	T	Methylene Chlo...	1.126	1.090	1.106	1.106	1.248	1.184	1.181	1.191	1.154	4.78
20)	T	3-Chloro-1-pro...		2.281	2.008	1.947	2.209	2.150	2.084	2.040	2.103	5.60
21)	T	Trichlorotrifl...	0.926	0.928	0.893	0.933	0.966	0.945	0.945	0.961	0.937	2.46
22)	T	Carbon Disulfide			4.286	4.185	4.354	4.131	3.983	3.644	4.097	6.25
23)	T	trans-1,2-Dich...	1.482	1.535	1.600	1.627	1.813	1.800	1.779	1.734	1.671	7.63
24)	T	1,1-Dichloroet...	1.920	2.039	2.154	2.093	2.229	2.148	2.111	2.013	2.088	4.60
25)	T	Methyl tert-Bu...	3.146	3.211	3.404	3.437	3.630	3.779	3.468	2.264	3.292	14.06
26)	T	Vinyl Acetate			0.201	0.221	0.264	0.246	0.239	0.233	0.234	9.23
27)	T	2-Butanone (MEK)			0.590	0.712	0.877	0.823	0.808	0.793	0.767	13.28
28)	T	cis-1,2-Dichlo...	1.768	1.614	1.609	1.653	1.793	1.741	1.708	1.642	1.691	4.22
29)	T	Diisopropyl Ether	0.886	0.930	1.012	1.018	1.139	1.049	0.894	0.853	0.973	10.04
30)	T	Ethyl Acetate			0.491	0.610	0.711	0.657	0.614	0.569	0.609	12.35
31)	T	n-Hexane	1.994	2.108	2.124	2.138	2.404	2.172	2.027	1.853	2.102	7.57
32)	T	Chloroform	2.039	1.933	2.074	2.060	2.201	2.125	2.110	2.049	2.074	3.73
33)	S	1,2-Dichloroet...	1.833	1.838	1.871	1.906	1.839	1.896	1.894	1.601	1.835	5.38
34)	T	Tetrahydrofura...	0.804	0.737	0.772	0.773	0.849	0.790	0.782	0.755	0.783	4.31
35)	T	Ethyl tert-But...	1.204	1.247	1.330	1.382	1.523	1.446	1.418	1.376	1.366	7.62
36)	T	1,2-Dichloroet...	1.645	1.501	1.660	1.651	1.828	1.714	1.708	1.676	1.673	5.44
37)	IR	1,4-Difluorobenzen...	----------	----------	----------	ISTD	----------	----------	----------	----------		
38)	T	1,1,1-Trichlor...	0.400	0.406	0.419	0.406	0.411	0.415	0.404	0.374	0.404	3.40
39)	T	Isopropyl Acetate									0.000	-1.00
40)	T	1-Butanol									0.000	-1.00
41)	T	Benzene	1.011	0.990	0.990	0.987	1.023	0.997	0.947	0.889	0.979	4.36
42)	T	Carbon Tetrach...	0.354	0.349	0.373	0.361	0.370	0.372	0.455	0.349	0.373	9.25

7/19/21

C-548

Method Path : I:\MS13\METHODS\
Method File : R13071821.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)

43)	T	Cyclohexane	0.389	0.367	0.378	0.381	0.395	0.390	0.370	0.325	0.374	5.89
44)	T	tert-Amyl Meth...	0.663	0.672	0.708	0.708	0.762	0.754	0.705	0.625	0.700	6.53
45)	T	1,2-Dichloropr...	0.258	0.238	0.270	0.262	0.276	0.269	0.262	0.253	0.261	4.55
46)	T	Bromodichlorom...	0.297	0.341	0.358	0.354	0.372	0.373	0.364	0.355	0.352	6.95
47)	T	Trichloroethene	0.267	0.244	0.257	0.263	0.273	0.275	0.270	0.266	0.264	3.83
48)	T	1,4-Dioxane		0.157	0.174	0.187	0.205	0.212	0.210	0.205	0.193	10.88
49)	T	2,2,4-Trimethy...	1.182	1.106	1.207	1.191	1.201	1.168	1.110	1.016	1.148	5.72
50)	T	Methyl Methacr...	0.052	0.036	0.066	0.080	0.101	0.107	0.105	0.102	0.081	33.53
51)	T	n-Heptane	0.227	0.248	0.270	0.265	0.279	0.270	0.261	0.249	0.259	6.53
52)	T	cis-1,3-Dichlo...			0.327	0.360	0.415	0.428	0.414	0.400	0.391	9.99
53)	T	4-Methyl-2-pen...			0.222	0.229	0.261	0.261	0.246	0.226	0.241	7.31
54)	T	trans-1,3-Dich...			0.303	0.313	0.393	0.410	0.402	0.388	0.368	12.85
55)	T	1,1,2-Trichlor...	0.190	0.207	0.225	0.230	0.241	0.243	0.237	0.231	0.226	8.10
56)	IR	Chlorobenzene-d5 (...	----------	----------	ISTD	----------	----------					
57)	S	Toluene-d8 (SS2)	5.246	5.247	5.227	5.194	5.178	5.187	5.239	5.300	5.227	0.77
58)	T	Toluene	4.899	4.612	4.762	4.674	4.768	4.688	4.538	4.291	4.654	3.92
59)	T	2-Hexanone			2.683	2.875	3.222	3.133	2.882	2.548	2.890	8.88
60)	T	Dibromochlorom...	1.034	1.203	1.243	1.224	1.330	1.376	1.380	1.397	1.274	9.66
61)	T	1,2-Dibromoethane	0.741	0.919	1.092	1.159	1.251	1.285	1.285	1.291	1.128	17.95
62)	T	n-Butyl Acetate			2.357	2.861	3.547	3.575	3.314	2.833	3.081	15.56
63)	T	n-Octane	1.000	1.063	1.138	1.092	1.142	1.113	1.079	1.041	1.084	4.48
64)	T	Tetrachloroethene	1.399	1.320	1.318	1.324	1.387	1.428	1.451	1.490	1.389	4.68
65)	T	Chlorobenzene	3.132	3.026	3.195	3.011	3.125	3.178	3.135	3.049	3.106	2.23
66)	T	Ethylbenzene	5.087	4.855	5.185	5.121	5.499	5.454	5.228	4.809	5.155	4.81
67)	T	m- & p-Xylenes	4.091	3.971	4.276	4.126	4.395	4.219	4.025	3.649	4.094	5.52
68)	T	Bromoform	0.939	0.996	1.091	1.106	1.233	1.321	1.346	1.400	1.179	14.50
69)	T	Styrene	2.072	2.477	2.602	2.743	3.234	3.338	3.297	3.186	2.869	16.20
70)	T	o-Xylene	3.782	4.023	4.175	4.195	4.402	4.353	4.226	3.938	4.137	5.07
71)	T	n-Nonane	2.651	2.528	2.799	2.816	2.972	2.846	2.681	2.423	2.714	6.62
72)	T	1,1,2,2-Tetrac...	1.774	1.900	1.905	1.937	2.041	2.026	1.992	1.919	1.937	4.40
73)	S	Bromofluoroben...	1.882	1.915	1.922	1.916	1.946	2.036	2.069	2.131	1.977	4.54
74)	T	Cumene	4.968	4.924	5.131	5.174	5.398	5.330	5.100	4.669	5.087	4.59
75)	T	alpha-Pinene	2.388	2.486	2.494	2.580	2.800	2.810	2.747	2.628	2.617	6.03
76)	T	n-Propylbenzene	5.929	5.724	6.256	6.293	6.742	6.553	6.142	5.393	6.129	7.15
77)	T	3-Ethyltoluene									0.000	-1.00
78)	T	4-Ethyltoluene	3.512	3.912	4.537	4.720	5.252	5.252	5.049	4.617	4.606	13.55
79)	T	1,3,5-Trimethy...	4.795	4.567	4.590	4.473	4.546	4.457	4.333	4.046	4.476	4.88
80)	T	alpha-Methylst...									0.000	-1.00
81)	T	2-Ethyltoluene									0.000	-1.00
82)	T	1,2,4-Trimethy...	3.563	3.801	4.283	4.329	4.707	4.664	4.425	3.981	4.219	9.63
83)	T	n-Decane									0.000	-1.00
84)	T	Benzyl Chloride			2.852	3.183	3.950	4.103	3.801	3.109	3.500	14.74
85)	T	1,3-Dichlorobe...	1.735	1.929	2.312	2.334	2.651	2.709	2.720	2.637	2.378	15.80
86)	T	1,4-Dichlorobe...	2.283	2.176	2.575	2.456	2.708	2.790	2.769	2.715	2.559	9.08
87)	T	sec-Butylbenzene	5.400	5.252	5.712	5.744	6.123	5.740	5.693	5.092	5.595	5.87
88)	T	4-Isopropyltol...	4.153	4.256	4.639	4.784	5.236	5.183	5.017	4.577	4.731	8.52
89)	T	1,2,3-Trimethy...									0.000	-1.00
90)	T	1,2-Dichlorobe...	2.013	2.106	2.325	2.359	2.573	2.611	2.575	2.485	2.381	9.44
91)	T	d-Limonene	1.329	1.420	1.529	1.657	1.820	1.841	1.779	1.636	1.626	11.59
92)	T	1,2-Dibromo-3-...		0.726	0.901	0.942	1.077	1.124	1.125	1.121	1.002	15.21
93)	T	n-Undecane									0.000	-1.00
94)	T	1,2,4-Trichlor...			1.908	1.952	2.280	2.482	2.482		2.221	12.54

Method Path : I:\MS13\METHODS\
Method File : R13071821.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)

95)	T	Naphthalene			4.347	4.927	6.037	6.506	6.330	5.647	5.632	14.99
96)	T	n-Dodecane									0.000	-1.00
97)	T	Hexachlorobuta...	1.394	1.342	1.369	1.389	1.537	1.660	1.737	1.806	1.529	11.98
98)	T	Cyclohexanone									0.000	-1.00
99)	T	tert-Butylbenzene	3.860	3.763	4.026	4.123	4.428	4.331	4.109	3.733	4.047	6.27
100)	T	n-Butylbenzene	2.871	3.779	4.603	4.812	5.153	5.007	4.767	4.267	4.408	17.20
101)	T	1,1,1,2-Tetrac...	1.133	1.022	1.106	1.138	1.171	1.189	1.180	1.159	1.137	4.75

(#) = Out of Range

Response Factor Report MS13

Method Path : I:\MS13\METHODS\
Method File : C13071821.M
Title : TO-15 Tekmar AutoCan/HP 6890/HP 5975 MSD
Last Update : Tue Jul 20 06:41:17 2021
Response Via : Initial Calibration

Calibration Files
0.40=07182114.D 1.0 =07182115.D 2.5 =07182116.D 5.0 =07182117.D 25 =07182118.D 50 =07182119.D 100 =07182120.D

	Compound	0.40	1.0	2.5	5.0	25	50	100	Avg	%RSD
1) IR	Bromochloromethane...	----------ISTD----------								
2) T	Chloropentaflu...	1.430	1.285	1.185	1.051	1.129	1.000	0.727	1.115	20.08
3) T	1,1,1,2-Tetraf...	1.217	1.133	0.957	0.807	0.942	0.761	0.481	0.900	27.35
4) T	1,1-Difluoroet...	0.991	0.901	0.731	0.596	0.734	0.564		0.753	22.23
5) T	Chlorodifluoro...	0.373	0.341	0.323	0.278	0.314	0.259	0.165	0.293	23.21
6) T	1-Chloro-1,1-D...	2.442	2.409	2.549	2.704	2.474	2.549	2.243	2.481	5.75
7) T	Dichlorofluoro...	2.694	2.528	2.605	2.756	2.513	2.679	2.426	2.600	4.51
8) T	Vinylbromide	0.978	0.942	0.995	1.058	0.988	1.056	0.963	0.997	4.43
9) T	2,2-Dichloro-1...	1.618	1.550	1.559	1.613	1.504	1.577	1.433	1.550	4.19
10) T	2-Methylbutane	1.264	1.157	1.178	1.205	1.137	1.173	1.039	1.165	5.90
11) T	Methyl Acetate	3.014	3.093	3.350	3.567	3.483	3.597	3.202	3.329	6.97
12) T	2-Methylpentane	1.242	1.182	1.224	1.350	1.251	1.291	1.142	1.240	5.52
13) T	2,2-Dichloropr...	1.957	1.843	1.853	1.857	1.859	1.829	1.545	1.821	7.06
14) T	1,1-Dichloropr...	1.678	1.655	1.737	1.871	1.762	1.845	1.647	1.742	5.14
15) T	Thiophene	2.693	2.477	2.577	2.798	2.613	2.694	2.377	2.604	5.48
16) IR	1,4-Difluorobenzen...	----------ISTD----------								
17) T	2,3-Dimethylpe...	0.568	0.529	0.528	0.528	0.521	0.502	0.457	0.519	6.43
18) T	Dibromomethane	0.201	0.189	0.193	0.192	0.198	0.200	0.196	0.196	2.21
19) IR	Chlorobenzene-d5 (...	----------ISTD----------								
20) T	Methyl Cyclohe...	2.020	1.928	1.939	1.959	1.940	1.927	1.780	1.928	3.77
21) T	1,3-Dichloropr...	1.735	1.760	1.854	1.877	1.873	1.874	1.767	1.820	3.46
22) T	1,1,1,2-Tetrac...	1.143	1.145	1.149	1.164	1.169	1.174	1.127	1.153	1.43
23) T	1-Chlorohexane	1.742	1.684	1.781	1.804	1.797	1.776	1.647	1.747	3.44
24) T	1,2,3-Trichlor...	1.869	1.747	1.760	1.804	1.803	1.809	1.696	1.784	3.09
25) T	Bromobenzene	2.340	2.131	2.154	2.152	2.146	2.136	1.993	2.150	4.71
26) T	2-Chlorotoluene	3.834	3.690	3.791	3.791	3.763	3.707	3.373	3.707	4.19
27) T	4-Chlorotoluene	3.635	3.682	3.915	4.054	4.018	3.976	3.561	3.834	5.28
28) T	Indane	4.340	4.213	4.417	4.455	4.403	4.293	3.801	4.275	5.25
29) T	Indene	3.245	3.413	3.705	3.856	3.993	3.926	3.553	3.670	7.60
30) T	1,2,4,5-Tetram...	4.369	4.459	4.919	5.161	5.062	4.825	4.498	4.756	6.61
31) T	1,2,3,4-Tetram...	5.140	4.642	4.640	4.651	4.568	4.590	3.813	4.578	8.53
32) T	1,2,3,5-Tetram...	4.622	4.475	4.597	4.746	4.634	4.553	4.083	4.530	4.72
33) T	1,2,3-Trichlor...	1.880	1.823	1.896	1.981	2.077	2.139	2.099	1.985	6.19

(#) = Out of Range

7/20/21

C-551

Evaluate Continuing Calibration Report

Data File : I:\MS16\DATA\2021_07\25\07252201.D Vial: 2
Acq On : 25 Jul 2021 11:31 Operator: WA
Sample : CCV R16072521_25ng Inst : GCMS-16
Misc : S34-05172101/S34-07142104 (8/13)

Quant Time: Jul 25 22:33:11 2021
Quant Method : I:\MS16\METHODS\R16071921.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Jul 20 08:18:44 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

WA 7/25/21

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	104	0.00
2	T	Propene	2.271	2.470	-8.8	99	0.00
3	T	Dichlorodifluoromethane (CF	3.679	3.085	16.1	83	0.00
4	T	Chloromethane	1.937	1.881	2.9	104	0.00
5	T	1,2-Dichloro-1,1,2,2-tetraf	1.408	1.325	5.9	93	0.00
6	T	Vinyl Chloride	2.029	2.159	-6.4	99	0.00
7	T	1,3-Butadiene	1.407	1.838	-30.6#	117	-0.01
8	T	Bromomethane	1.062	1.154	-8.7	103	-0.01
9	T	Chloroethane	1.008	1.026	-1.8	104	-0.01
10	T	Ethanol	1.002	1.123	-12.1	118	-0.06
11	T	Acetonitrile	3.143	3.084	1.9	104	-0.03
12	T	Acrolein	0.954	1.041	-9.1	107	-0.02
13	T	Acetone	1.158	1.142	1.4	104	-0.03
14	T	Trichlorofluoromethane	3.470	2.902	16.4	84	-0.01
15	T	2-Propanol (Isopropanol)	3.956	3.693	6.6	102	-0.04
16	T	Acrylonitrile	2.199	2.285	-3.9	103	-0.03
17	T	1,1-Dichloroethene	1.211	1.279	-5.6	101	-0.01
18	T	2-Methyl-2-Propanol (tert-B	3.903	4.037	-3.4	94	-0.02
19	T	Methylene Chloride	1.377	1.365	0.9	102	-0.01
20	T	3-Chloro-1-propene (Allyl C	2.423	2.601	-7.3	100	-0.01
21	T	Trichlorotrifluoroethane	1.223	1.194	2.4	98	0.00
22	T	Carbon Disulfide	4.917	5.092	-3.6	101	0.00
23	T	trans-1,2-Dichloroethene	2.317	2.358	-1.8	95	0.00
24	T	1,1-Dichloroethane	2.851	2.748	3.6	97	0.00
25	T	Methyl tert-Butyl Ether	4.262	4.535	-6.4	98	0.00
26	T	Vinyl Acetate	0.234	0.264	-12.8	101	-0.02
27	T	2-Butanone (MEK)	0.896	0.953	-6.4	103	-0.02
28	T	cis-1,2-Dichloroethene	2.296	2.318	-1.0	94	-0.01
29	T	Diisopropyl Ether	1.162	1.117	3.9	97	-0.01
30	T	Ethyl Acetate	0.793	0.816	-2.9	103	-0.02
31	T	n-Hexane	2.634	2.727	-3.5	100	0.00
32	T	Chloroform	2.909	2.699	7.2	91	-0.02
33	S	1,2-Dichloroethane-d4(SS1)	2.859	2.313	19.1	87	-0.01
34	T	Tetrahydrofuran (THF)	0.857	0.904	-5.5	103	0.00
35	T	Ethyl tert-Butyl Ether	1.598	1.721	-7.7	99	0.00
36	T	1,2-Dichloroethane	2.892	2.423	16.2	83	0.00
37	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	105	0.00
38	T	1,1,1-Trichloroethane	0.655	0.562	14.2	84	0.00
39	T	Isopropyl Acetate	0.000	0.000	0.0	0#	0.00
40	T	1-Butanol	0.000	0.000	0.0	0#	0.00
41	T	Benzene	1.293	1.254	3.0	101	0.00
42	T	Carbon Tetrachloride	0.568	0.468	17.6	83	0.00
43	T	Cyclohexane	0.424	0.450	-6.1	100	0.00
44	T	tert-Amyl Methyl Ether	0.845	0.941	-11.4	101	0.00
45	T	1,2-Dichloropropane	0.322	0.330	-2.5	102	0.00
46	T	Bromodichloromethane	0.539	0.496	8.0	90	0.00
47	T	Trichloroethene	0.307	0.310	-1.0	100	0.00
48	T	1,4-Dioxane	0.231	0.251	-8.7	100	0.00
49	T	2,2,4-Trimethylpentane (Iso	1.410	1.491	-5.7	101	-0.01
50	T	Methyl Methacrylate	0.123	0.126	-2.4	98	-0.01
51	T	n-Heptane	0.287	0.309	-7.7	100	-0.01
52	T	cis-1,3-Dichloropropene	0.536	0.539	-0.6	96	0.00
53	T	4-Methyl-2-pentanone	0.321	0.336	-4.7	100	-0.01
54	T	trans-1,3-Dichloropropene	0.556	0.545	2.0	90	0.00
55	T	1,1,2-Trichloroethane	0.288	0.294	-2.1	97	-0.01

Evaluate Continuing Calibration Report

Data File : I:\MS16\DATA\2021_07\25\07252201.D Vial: 2
Acq On : 25 Jul 2021 11:31 Operator: WA
Sample : CCV R16072521_25ng Inst : GCMS-16
Misc : S34-05172101/S34-07142104 (8/13)

Quant Time: Jul 25 22:33:11 2021
Quant Method : I:\MS16\METHODS\R16071921.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Jul 20 08:18:44 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
56	IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	90	0.00
57	S	Toluene-d8 (SS2)	3.768	4.214	-11.8	100	0.00
58	T	Toluene	4.377	5.013	-14.5	97	0.00
59	T	2-Hexanone	3.228	3.771	-16.8	95	-0.01
60	T	Dibromochloromethane	1.330	1.459	-9.7	90	0.00
61	T	1,2-Dibromoethane	1.158	1.358	-17.3	95	-0.01
62	T	n-Butyl Acetate	3.165	4.187	-32.3#	95	0.00
63	T	n-Octane	1.028	1.273	-23.8	98	0.00
64	T	Tetrachloroethene	1.112	1.282	-15.3	97	0.00
65	T	Chlorobenzene	2.753	3.098	-12.5	94	0.00
66	T	Ethylbenzene	4.958	6.003	-21.1	93	0.00
67	T	m- & p-Xylenes	4.010	4.730	-18.0	91	0.00
68	T	Bromoform	1.109	1.266	-14.2	90	0.00
69	T	Styrene	2.995	3.506	-17.1	93	0.00
70	T	o-Xylene	4.130	4.746	-14.9	90	0.00
71	T	n-Nonane	2.643	3.198	-21.0	94	0.00
72	T	1,1,2,2-Tetrachloroethane	1.823	2.108	-15.6	95	-0.01
73	S	Bromofluorobenzene (SS3)	1.315	1.512	-15.0	100	0.00
74	T	Cumene	5.059	5.833	-15.3	90	0.00
75	T	alpha-Pinene	2.542	3.119	-22.7	94	0.00
76	T	n-Propylbenzene	6.061	7.298	-20.4	90	0.00
77	T	3-Ethyltoluene	0.000	0.000	0.0	0#	0.00
78	T	4-Ethyltoluene	5.204	5.799	-11.4	90	0.00
79	T	1,3,5-Trimethylbenzene	4.191	4.871	-16.2	88	0.00
80	T	alpha-Methylstyrene	0.000	0.000	0.0	0#	0.00
81	T	2-Ethyltoluene	0.000	0.000	0.0	0#	0.00
82	T	1,2,4-Trimethylbenzene	4.781	5.139	-7.5	87	0.00
83	T	n-Decane	0.000	0.000	0.0	0#	0.00
84	T	Benzyl Chloride	4.285	4.888	-14.1	87	0.00
85	T	1,3-Dichlorobenzene	2.326	2.546	-9.5	91	-0.01
86	T	1,4-Dichlorobenzene	2.365	2.564	-8.4	92	0.00
87	T	sec-Butylbenzene	5.786	6.302	-8.9	90	0.00
88	T	4-Isopropyltoluene (p-Cymen	4.810	5.291	-10.0	89	0.00
89	T	1,2,3-Trimethylbenzene	0.000	0.000	0.0	0#	0.00
90	T	1,2-Dichlorobenzene	2.093	2.422	-15.7	91	0.00
91	T	d-Limonene	1.907	2.139	-12.2	91	0.00
92	T	1,2-Dibromo-3-Chloropropane	0.987	1.059	-7.3	89	0.00
93	T	n-Undecane	0.000	0.000	0.0	0#	0.01
94	T	1,2,4-Trichlorobenzene	1.957	2.207	-12.8	89	0.00
95	T	Naphthalene	5.452	6.534	-19.8	90	0.00
96	T	n-Dodecane	0.000	0.000	0.0	0#	0.00
97	T	Hexachlorobutadiene	1.233	1.313	-6.5	85	0.00
98	T	Cyclohexanone	0.000	0.000	0.0	0#	0.00
99	T	tert-Butylbenzene	3.866	4.428	-14.5	88	0.00
100	T	n-Butylbenzene	5.135	5.694	-10.9	88	0.00
101	T	1,1,1,2-Tetrachloroethane	1.094	1.184	-8.2	90	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data File : I:\MS16\DATA\2021_07\25\07252202.D Vial: 3
Acq On : 25 Jul 2021 12:05 Operator: WA
Sample : CCV C16072521_25ng Inst : GCMS-16
Misc : S34-05172101/S34-07162103 (8/15)

Quant Time: Jul 25 22:38:28 2021
Quant Method : I:\MS16\METHODS\C16071921.M
Quant Title : TO-15 Tekmar AutoCan/HP 6890/HP 5975 MSD
QLast Update : Sun Jul 25 09:28:01 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

WA 7/25/21

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	93	0.00
2	T	Chloropentafluoroethane	1.568	1.502	4.2	81	0.00
3	T	1,1,1,2-Tetrafluoroethane (	1.322	1.294	2.1	79	0.00
4	T	1,1-Difluoroethane	0.924	1.045	-13.1	95	0.00
5	T	Chlorodifluoromethane (CFC	0.495	0.464	6.3	77	0.00
6	T	1-Chloro-1,1-Difluoroethane	4.048	3.352	17.2	74	0.00
7	T	Dichlorofluoromethane (CFC	3.543	3.327	6.1	84	0.00
8	T	Vinylbromide	1.093	1.094	-0.1	90	0.00
9	T	2,2-Dichloro-1,1,1-trifluor	1.856	1.819	2.0	89	0.00
10	T	2-Methylbutane	1.573	1.555	1.1	91	0.00
11	T	Methyl Acetate	3.984	4.044	-1.5	89	0.00
12	T	2-Methylpentane	1.273	1.334	-4.8	93	0.00
13	T	2,2-Dichloropropane	2.945	2.642	10.3	79	0.00
14	T	1,1-Dichloropropene	2.183	2.161	1.0	87	0.00
15	T	Thiophene	2.915	2.942	-0.9	91	0.00
16	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	94	0.00
17	T	2,3-Dimethylpentane	0.662	0.661	0.2	91	0.00
18	T	Dibromomethane	0.227	0.224	1.3	89	0.00
19	IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	82	0.00
20	T	Methyl Cyclohexane	1.924	2.189	-13.8	90	0.00
21	T	1,3-Dichloropropane	1.858	2.069	-11.4	90	0.00
22	T	1,1,1,2-Tetrachloroethane	1.083	1.163	-7.4	86	0.00
23	T	1-Chlorohexane	1.621	1.866	-15.1	91	0.00
24	T	1,2,3-Trichloropropane	1.833	1.995	-8.8	88	0.00
25	T	Bromobenzene	2.201	2.396	-8.9	87	0.00
26	T	2-Chlorotoluene	3.862	4.218	-9.2	87	0.00
27	T	4-Chlorotoluene	4.098	4.456	-8.7	86	0.00
28	T	Indane	4.057	4.600	-13.4	88	0.00
29	T	Indene	3.562	4.064	-14.1	86	0.00
30	T	1,2,4,5-Tetramethylbenzene	4.511	4.936	-9.4	84	0.00
31	T	1,2,3,4-Tetramethylbenzene	4.498	5.001	-11.2	84	0.00
32	T	1,2,3,5-Tetramethylbenzene	4.399	4.807	-9.3	84	0.00
33	T	1,2,3-Trichlorobenzene	1.764	1.900	-7.7	85	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data File : I:\MS16\DATA\2021_07\26\07262102.D Vial: 2
Acq On : 26 Jul 2021 4:08 Operator: WA
Sample : CCV R16072621_25ng Inst : GCMS-16
Misc : S34-05172101/S34-07142104 (8/13)

Quant Time: Jul 26 07:57:42 2021
Quant Method : I:\MS16\METHODS\R16071921.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Jul 20 08:18:44 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

MC 7/27/21

WSA 7/28/21

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	95	-0.02
2	T	Propene	2.271	2.633	-15.9	96	-0.02
3	T	Dichlorodifluoromethane (CF	3.679	3.233	12.1	79	-0.02
4	T	Chloromethane	1.937	1.910	1.4	96	-0.02
5	T	1,2-Dichloro-1,1,2,2-tetraf	1.408	1.353	3.9	87	-0.02
6	T	Vinyl Chloride	2.029	2.188	-7.8	92	-0.02
7	T	1,3-Butadiene	1.407	1.783	-26.7	104	-0.03
8	T	Bromomethane	1.062	1.133	-6.7	93	-0.03
9	T	Chloroethane	1.008	1.022	-1.4	94	-0.03
10	T	Ethanol	1.002	1.123	-12.1	108	-0.09
11	T	Acetonitrile	3.143	3.107	1.1	96	-0.06
12	T	Acrolein	0.954	1.031	-8.1	97	-0.04
13	T	Acetone	1.158	1.127	2.7	94	-0.06
14	T	Trichlorofluoromethane	3.470	3.029	12.7	80	-0.02
15	T	2-Propanol (Isopropanol)	3.956	3.571	9.7	89	-0.06
16	T	Acrylonitrile	2.199	2.336	-6.2	96	-0.06
17	T	1,1-Dichloroethene	1.211	1.322	-9.2	95	-0.02
18	T	2-Methyl-2-Propanol (tert-B	3.903	4.172	-6.9	88	-0.04
19	T	Methylene Chloride	1.377	1.390	-0.9	95	-0.03
20	T	3-Chloro-1-propene (Allyl C	2.423	2.651	-9.4	93	-0.03
21	T	Trichlorotrifluoroethane	1.223	1.201	1.8	90	-0.02
22	T	Carbon Disulfide	4.917	5.200	-5.8	94	-0.02
23	T	trans-1,2-Dichloroethene	2.317	2.440	-5.3	89	-0.02
24	T	1,1-Dichloroethane	2.851	2.838	0.5	91	-0.02
25	T	Methyl tert-Butyl Ether	4.262	4.654	-9.2	91	-0.02
26	T	Vinyl Acetate	0.234	0.261	-11.5	92	-0.03
27	T	2-Butanone (MEK)	0.896	0.972	-8.5	95	-0.03
28	T	cis-1,2-Dichloroethene	2.296	2.404	-4.7	89	-0.02
29	T	Diisopropyl Ether	1.162	1.145	1.5	91	-0.02
30	T	Ethyl Acetate	0.793	0.832	-4.9	96	-0.03
31	T	n-Hexane	2.634	2.815	-6.9	94	-0.01
32	T	Chloroform	2.909	2.811	3.4	86	-0.03
33	S	1,2-Dichloroethane-d4(SS1)	2.859	2.399	16.1	82	-0.02
34	T	Tetrahydrofuran (THF)	0.857	0.917	-7.0	95	-0.02
35	T	Ethyl tert-Butyl Ether	1.598	1.772	-10.9	93	-0.02
36	T	1,2-Dichloroethane	2.892	2.578	10.9	80	-0.02
37	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	95	-0.01
38	T	1,1,1-Trichloroethane	0.655	0.596	9.0	81	-0.01
39	T	Isopropyl Acetate	0.000	0.000	0.0	0#	0.00
40	T	1-Butanol	0.000	0.000	0.0	0#	0.00
41	T	Benzene	1.293	1.290	0.2	94	-0.01
42	T	Carbon Tetrachloride	0.568	0.496	12.7	79	-0.01
43	T	Cyclohexane	0.424	0.467	-10.1	93	-0.01
44	T	tert-Amyl Methyl Ether	0.845	0.981	-16.1	94	0.00
45	T	1,2-Dichloropropane	0.322	0.344	-6.8	96	-0.02
46	T	Bromodichloromethane	0.539	0.518	3.9	85	-0.01
47	T	Trichloroethene	0.307	0.317	-3.3	92	-0.01
48	T	1,4-Dioxane	0.231	0.258	-11.7	93	-0.01
49	T	2,2,4-Trimethylpentane (Iso	1.410	1.558	-10.5	95	-0.02
50	T	Methyl Methacrylate	0.123	0.131	-6.5	92	-0.01
51	T	n-Heptane	0.287	0.321	-11.8	94	-0.01
52	T	cis-1,3-Dichloropropene	0.536	0.556	-3.7	89	0.00
53	T	4-Methyl-2-pentanone	0.321	0.348	-8.4	93	-0.02
54	T	trans-1,3-Dichloropropene	0.556	0.563	-1.3	84	-0.01
55	T	1,1,2-Trichloroethane	0.288	0.302	-4.9	90	-0.01

Evaluate Continuing Calibration Report

Data File : I:\MS16\DATA\2021_07\26\07262102.D Vial: 2
Acq On : 26 Jul 2021 4:08 Operator: WA
Sample : CCV R16072621_25ng Inst : GCMS-16
Misc : S34-05172101/S34-07142104 (8/13)

Quant Time: Jul 26 07:57:42 2021
Quant Method : I:\MS16\METHODS\R16071921.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Jul 20 08:18:44 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
56	IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	85	0.00
57	S	Toluene-d8 (SS2)	3.768	4.110	-9.1	92	0.00
58	T	Toluene	4.377	4.956	-13.2	91	0.00
59	T	2-Hexanone	3.228	3.783	-17.2	89	-0.01
60	T	Dibromochloromethane	1.330	1.456	-9.5	85	0.00
61	T	1,2-Dibromoethane	1.158	1.347	-16.3	89	-0.01
62	T	n-Butyl Acetate	3.165	4.221	-33.4#	90	0.00
63	T	n-Octane	1.028	1.278	-24.3	92	-0.01
64	T	Tetrachloroethene	1.112	1.270	-14.2	90	0.00
65	T	Chlorobenzene	2.753	3.073	-11.6	88	-0.01
66	T	Ethylbenzene	4.958	6.009	-21.2	87	0.00
67	T	m- & p-Xylenes	4.010	4.711	-17.5	85	0.00
68	T	Bromoform	1.109	1.269	-14.4	85	0.00
69	T	Styrene	2.995	3.519	-17.5	88	0.00
70	T	o-Xylene	4.130	4.769	-15.5	85	0.00
71	T	n-Nonane	2.643	3.252	-23.0	90	0.00
72	T	1,1,2,2-Tetrachloroethane	1.823	2.112	-15.9	90	-0.01
73	S	Bromofluorobenzene (SS3)	1.315	1.497	-13.8	93	0.00
74	T	Cumene	5.059	5.933	-17.3	86	0.00
75	T	alpha-Pinene	2.542	3.132	-23.2	88	0.00
76	T	n-Propylbenzene	6.061	7.451	-22.9	86	0.00
77	T	3-Ethyltoluene	0.000	0.000	0.0	0#	0.00
78	T	4-Ethyltoluene	5.204	5.875	-12.9	85	0.00
79	T	1,3,5-Trimethylbenzene	4.191	4.920	-17.4	84	0.00
80	T	alpha-Methylstyrene	0.000	0.000	0.0	0#	0.00
81	T	2-Ethyltoluene	0.000	0.000	0.0	0#	0.00
82	T	1,2,4-Trimethylbenzene	4.781	5.164	-8.0	83	0.00
83	T	n-Decane	0.000	0.000	0.0	0#	0.00
84	T	Benzyl Chloride	4.285	4.882	-13.9	82	0.00
85	T	1,3-Dichlorobenzene	2.326	2.514	-8.1	84	-0.01
86	T	1,4-Dichlorobenzene	2.365	2.580	-9.1	87	0.00
87	T	sec-Butylbenzene	5.786	6.318	-9.2	85	0.00
88	T	4-Isopropyltoluene (p-Cymen	4.810	5.310	-10.4	83	0.00
89	T	1,2,3-Trimethylbenzene	0.000	0.000	0.0	0#	0.00
90	T	1,2-Dichlorobenzene	2.093	2.406	-15.0	85	0.00
91	T	d-Limonene	1.907	2.127	-11.5	85	0.00
92	T	1,2-Dibromo-3-Chloropropane	0.987	1.056	-7.0	83	0.00
93	T	n-Undecane	0.000	0.000	0.0	0#	0.03
94	T	1,2,4-Trichlorobenzene	1.957	2.192	-12.0	83	-0.01
95	T	Naphthalene	5.452	6.482	-18.9	84	0.00
96	T	n-Dodecane	0.000	0.000	0.0	0#	0.00
97	T	Hexachlorobutadiene	1.233	1.318	-6.9	80	0.00
98	T	Cyclohexanone	0.000	0.000	0.0	0#	0.00
99	T	tert-Butylbenzene	3.866	4.430	-14.6	83	-0.01
100	T	n-Butylbenzene	5.135	5.769	-12.3	84	0.00
101	T	1,1,1,2-Tetrachloroethane	1.094	1.177	-7.6	84	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data File : I:\MS16\DATA\2021_07\26\07262201.D Vial: 3
Acq On : 26 Jul 2021 3:34 Operator: WA
Sample : CCV C16072621_25ng Inst : GCMS-16
Misc : S34-05172101/S34-07162103 (8/15)

Quant Time: Jul 26 08:14:17 2021
Quant Method : I:\MS16\METHODS\C16071921.M
Quant Title : TO-15 Tekmar AutoCan/HP 6890/HP 5975 MSD
QLast Update : Sun Jul 25 09:28:01 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

MC 7/26/21

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	80	0.00
2	T	Chloropentafluoroethane	1.568	1.361	13.2	63	0.00
3	T	1,1,1,2-Tetrafluoroethane (	1.322	1.225	7.3	64	0.00
4	T	1,1-Difluoroethane	0.924	0.962	-4.1	75	0.00
5	T	Chlorodifluoromethane (CFC	0.495	0.424	14.3	60	0.00
6	T	1-Chloro-1,1-Difluoroethane	4.048	3.174	21.6	60	0.00
7	T	Dichlorofluoromethane (CFC	3.543	3.123	11.9	68	0.00
8	T	Vinylbromide	1.093	1.071	2.0	76	0.00
9	T	2,2-Dichloro-1,1,1-trifluor	1.856	1.763	5.0	75	0.00
10	T	2-Methylbutane	1.573	1.462	7.1	74	0.00
11	T	Methyl Acetate	3.984	3.921	1.6	74	0.00
12	T	2-Methylpentane	1.273	1.299	-2.0	78	0.00
13	T	2,2-Dichloropropane	2.945	2.731	7.3	71	0.00
14	T	1,1-Dichloropropene	2.183	2.229	-2.1	77	0.00
15	T	Thiophene	2.915	3.011	-3.3	80	0.00
16	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	81	0.00
17	T	2,3-Dimethylpentane	0.662	0.671	-1.4	80	0.00
18	T	Dibromomethane	0.227	0.227	0.0	79	0.00
19	IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	73	0.00
20	T	Methyl Cyclohexane	1.924	2.154	-12.0	79	0.00
21	T	1,3-Dichloropropane	1.858	2.067	-11.2	80	0.00
22	T	1,1,1,2-Tetrachloroethane	1.083	1.182	-9.1	78	0.00
23	T	1-Chlorohexane	1.621	1.869	-15.3	81	0.00
24	T	1,2,3-Trichloropropane	1.833	2.014	-9.9	79	0.00
25	T	Bromobenzene	2.201	2.419	-9.9	78	0.00
26	T	2-Chlorotoluene	3.862	4.279	-10.8	78	0.00
27	T	4-Chlorotoluene	4.098	4.509	-10.0	77	0.00
28	T	Indane	4.057	4.621	-13.9	79	0.00
29	T	Indene	3.562	4.120	-15.7	77	0.00
30	T	1,2,4,5-Tetramethylbenzene	4.511	5.055	-12.1	77	0.00
31	T	1,2,3,4-Tetramethylbenzene	4.498	5.062	-12.5	76	0.00
32	T	1,2,3,5-Tetramethylbenzene	4.399	4.905	-11.5	76	0.00
33	T	1,2,3-Trichlorobenzene	1.764	1.922	-9.0	76	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data File : I:\MS16\DATA\2021_07\26\07262110.D Vial: 2
Acq On : 26 Jul 2021 10:54 Operator: WA
Sample : CCV2 R16072621_25ng Inst : GCMS-16
Misc : S34-05172101/S34-07142104 (8/13)

Quant Time: Jul 26 13:55:13 2021
Quant Method : I:\MS16\METHODS\R16071921.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Jul 20 08:18:44 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

MZ 7/27/21

WA 7/28/21

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	99	-0.02
2	T	Propene	2.271	2.733	-20.3	104	-0.02
3	T	Dichlorodifluoromethane (CF	3.679	3.228	12.3	82	-0.01
4	T	Chloromethane	1.937	1.924	0.7	101	-0.02
5	T	1,2-Dichloro-1,1,2,2-tetraf	1.408	1.370	2.7	91	-0.02
6	T	Vinyl Chloride	2.029	2.264	-11.6	99	-0.02
7	T	1,3-Butadiene	1.407	1.827	-29.9	111	-0.02
8	T	Bromomethane	1.062	1.165	-9.7	99	-0.03
9	T	Chloroethane	1.008	1.059	-5.1	101	-0.02
10	T	Ethanol	1.002	1.140	-13.8	114	-0.08
11	T	Acetonitrile	3.143	3.178	-1.1	102	-0.06
12	T	Acrolein	0.954	1.044	-9.4	102	-0.04
13	T	Acetone	1.158	1.140	1.6	98	-0.06
14	T	Trichlorofluoromethane	3.470	2.980	14.1	82	-0.02
15	T	2-Propanol (Isopropanol)	3.956	3.486	11.9	91	-0.06
16	T	Acrylonitrile	2.199	2.348	-6.8	100	-0.05
17	T	1,1-Dichloroethene	1.211	1.321	-9.1	98	-0.02
18	T	2-Methyl-2-Propanol (tert-B	3.903	4.081	-4.6	90	-0.04
19	T	Methylene Chloride	1.377	1.401	-1.7	99	-0.03
20	T	3-Chloro-1-propene (Allyl C	2.423	2.658	-9.7	97	-0.02
21	T	Trichlorotrifluoroethane	1.223	1.208	1.2	94	-0.02
22	T	Carbon Disulfide	4.917	5.222	-6.2	99	-0.02
23	T	trans-1,2-Dichloroethene	2.317	2.436	-5.1	93	-0.02
24	T	1,1-Dichloroethane	2.851	2.837	0.5	95	-0.02
25	T	Methyl tert-Butyl Ether	4.262	4.664	-9.4	95	-0.02
26	T	Vinyl Acetate	0.234	0.262	-12.0	95	-0.03
27	T	2-Butanone (MEK)	0.896	0.970	-8.3	99	-0.03
28	T	cis-1,2-Dichloroethene	2.296	2.378	-3.6	92	-0.02
29	T	Diisopropyl Ether	1.162	1.138	2.1	94	-0.02
30	T	Ethyl Acetate	0.793	0.839	-5.8	101	-0.03
31	T	n-Hexane	2.634	2.790	-5.9	97	-0.01
32	T	Chloroform	2.909	2.781	4.4	89	-0.03
33	S	1,2-Dichloroethane-d4(SS1)	2.859	2.373	17.0	84	-0.02
34	T	Tetrahydrofuran (THF)	0.857	0.913	-6.5	98	-0.02
35	T	Ethyl tert-Butyl Ether	1.598	1.761	-10.2	96	-0.02
36	T	1,2-Dichloroethane	2.892	2.521	12.8	81	-0.02
37	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	101	-0.01
38	T	1,1,1-Trichloroethane	0.655	0.575	12.2	83	-0.01
39	T	Isopropyl Acetate	0.000	0.000	0.0	0#	0.00
40	T	1-Butanol	0.000	0.000	0.0	0#	0.00
41	T	Benzene	1.293	1.266	2.1	98	-0.01
42	T	Carbon Tetrachloride	0.568	0.475	16.4	81	-0.01
43	T	Cyclohexane	0.424	0.456	-7.5	97	-0.01
44	T	tert-Amyl Methyl Ether	0.845	0.963	-14.0	99	0.00
45	T	1,2-Dichloropropane	0.322	0.337	-4.7	100	-0.02
46	T	Bromodichloromethane	0.539	0.507	5.9	88	-0.01
47	T	Trichloroethene	0.307	0.310	-1.0	96	-0.01
48	T	1,4-Dioxane	0.231	0.254	-10.0	97	-0.01
49	T	2,2,4-Trimethylpentane (Iso	1.410	1.529	-8.4	99	-0.02
50	T	Methyl Methacrylate	0.123	0.129	-4.9	96	-0.01
51	T	n-Heptane	0.287	0.318	-10.8	98	-0.01
52	T	cis-1,3-Dichloropropene	0.536	0.551	-2.8	94	0.00
53	T	4-Methyl-2-pentanone	0.321	0.345	-7.5	99	-0.02
54	T	trans-1,3-Dichloropropene	0.556	0.556	0.0	88	-0.01
55	T	1,1,2-Trichloroethane	0.288	0.301	-4.5	96	-0.01

Evaluate Continuing Calibration Report

Data File : I:\MS16\DATA\2021_07\26\07262110.D Vial: 2
Acq On : 26 Jul 2021 10:54 Operator: WA
Sample : CCV2 R16072621_25ng Inst : GCMS-16
Misc : S34-05172101/S34-07142104 (8/13)

Quant Time: Jul 26 13:55:13 2021
Quant Method : I:\MS16\METHODS\R16071921.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Jul 20 08:18:44 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
56	IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	85	0.00
57	S	Toluene-d8 (SS2)	3.768	4.242	-12.6	96	0.00
58	T	Toluene	4.377	5.121	-17.0	94	0.00
59	T	2-Hexanone	3.228	3.912	-21.2	93	-0.01
60	T	Dibromochloromethane	1.330	1.495	-12.4	88	0.00
61	T	1,2-Dibromoethane	1.158	1.391	-20.1	93	-0.01
62	T	n-Butyl Acetate	3.165	4.365	-37.9#	94	0.00
63	T	n-Octane	1.028	1.316	-28.0	96	0.00
64	T	Tetrachloroethene	1.112	1.320	-18.7	94	0.00
65	T	Chlorobenzene	2.753	3.199	-16.2	92	-0.01
66	T	Ethylbenzene	4.958	6.249	-26.0	91	0.00
67	T	m- & p-Xylenes	4.010	4.878	-21.6	89	0.00
68	T	Bromoform	1.109	1.314	-18.5	88	0.00
69	T	Styrene	2.995	3.638	-21.5	91	0.00
70	T	o-Xylene	4.130	4.931	-19.4	88	0.00
71	T	n-Nonane	2.643	3.349	-26.7	94	0.00
72	T	1,1,2,2-Tetrachloroethane	1.823	2.188	-20.0	94	-0.01
73	S	Bromofluorobenzene (SS3)	1.315	1.472	-11.9	92	0.00
74	T	Cumene	5.059	6.048	-19.5	88	0.00
75	T	alpha-Pinene	2.542	3.220	-26.7	92	0.00
76	T	n-Propylbenzene	6.061	7.600	-25.4	89	0.00
77	T	3-Ethyltoluene	0.000	0.000	0.0	0#	0.00
78	T	4-Ethyltoluene	5.204	5.989	-15.1	88	0.00
79	T	1,3,5-Trimethylbenzene	4.191	5.063	-20.8	87	0.00
80	T	alpha-Methylstyrene	0.000	0.000	0.0	0#	0.00
81	T	2-Ethyltoluene	0.000	0.000	0.0	0#	0.00
82	T	1,2,4-Trimethylbenzene	4.781	5.303	-10.9	86	0.00
83	T	n-Decane	0.000	0.000	0.0	0#	0.00
84	T	Benzyl Chloride	4.285	4.995	-16.6	84	0.00
85	T	1,3-Dichlorobenzene	2.326	2.587	-11.2	88	-0.01
86	T	1,4-Dichlorobenzene	2.365	2.660	-12.5	90	0.00
87	T	sec-Butylbenzene	5.786	6.485	-12.1	88	0.00
88	T	4-Isopropyltoluene (p-Cymen	4.810	5.437	-13.0	86	0.00
89	T	1,2,3-Trimethylbenzene	0.000	0.000	0.0	0#	0.00
90	T	1,2-Dichlorobenzene	2.093	2.472	-18.1	89	0.00
91	T	d-Limonene	1.907	2.200	-15.4	89	0.00
92	T	1,2-Dibromo-3-Chloropropane	0.987	1.089	-10.3	87	0.00
93	T	n-Undecane	0.000	0.000	0.0	0#	0.03
94	T	1,2,4-Trichlorobenzene	1.957	2.261	-15.5	87	0.00
95	T	Naphthalene	5.452	6.682	-22.6	88	0.00
96	T	n-Dodecane	0.000	0.000	0.0	0#	0.00
97	T	Hexachlorobutadiene	1.233	1.346	-9.2	83	0.00
98	T	Cyclohexanone	0.000	0.000	0.0	0#	0.01
99	T	tert-Butylbenzene	3.866	4.563	-18.0	86	-0.01
100	T	n-Butylbenzene	5.135	5.876	-14.4	86	0.00
101	T	1,1,1,2-Tetrachloroethane	1.094	1.218	-11.3	88	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data File : I:\MS16\DATA\2021_07\26\07262109.D Vial: 3
Acq On : 26 Jul 2021 10:20 Operator: WA
Sample : CCV2 C16072621_25ng Inst : GCMS-16
Misc : S34-05172101/S34-07162103 (8/15)

Quant Time: Jul 26 13:56:26 2021
Quant Method : I:\MS16\METHODS\C16071921.M
Quant Title : TO-15 Tekmar AutoCan/HP 6890/HP 5975 MSD
QLast Update : Sun Jul 25 09:28:01 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

MZ 7/27/21

WA 7/28/21

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	92	0.00
2	T	Chloropentafluoroethane	1.568	1.497	4.5	80	-0.01
3	T	1,1,1,2-Tetrafluoroethane (	1.322	1.332	-0.8	80	-0.01
4	T	1,1-Difluoroethane	0.924	1.053	-14.0	95	0.00
5	T	Chlorodifluoromethane (CFC	0.495	0.466	5.9	76	-0.01
6	T	1-Chloro-1,1-Difluoroethane	4.048	3.443	14.9	75	0.00
7	T	Dichlorofluoromethane (CFC	3.543	3.302	6.8	83	0.00
8	T	Vinylbromide	1.093	1.077	1.5	88	0.00
9	T	2,2-Dichloro-1,1,1-trifluor	1.856	1.793	3.4	87	0.00
10	T	2-Methylbutane	1.573	1.523	3.2	88	0.00
11	T	Methyl Acetate	3.984	4.001	-0.4	87	0.00
12	T	2-Methylpentane	1.273	1.290	-1.3	89	0.00
13	T	2,2-Dichloropropane	2.945	2.592	12.0	77	0.00
14	T	1,1-Dichloropropene	2.183	2.111	3.3	84	0.00
15	T	Thiophene	2.915	2.867	1.6	88	0.00
16	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	92	0.00
17	T	2,3-Dimethylpentane	0.662	0.652	1.5	88	0.00
18	T	Dibromomethane	0.227	0.218	4.0	86	0.00
19	IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	81	0.00
20	T	Methyl Cyclohexane	1.924	2.131	-10.8	87	0.00
21	T	1,3-Dichloropropane	1.858	2.013	-8.3	86	0.00
22	T	1,1,1,2-Tetrachloroethane	1.083	1.147	-5.9	84	0.00
23	T	1-Chlorohexane	1.621	1.824	-12.5	88	0.00
24	T	1,2,3-Trichloropropane	1.833	1.950	-6.4	85	0.00
25	T	Bromobenzene	2.201	2.348	-6.7	85	0.00
26	T	2-Chlorotoluene	3.862	4.124	-6.8	84	0.00
27	T	4-Chlorotoluene	4.098	4.363	-6.5	83	0.00
28	T	Indane	4.057	4.467	-10.1	85	0.00
29	T	Indene	3.562	3.973	-11.5	83	0.00
30	T	1,2,4,5-Tetramethylbenzene	4.511	4.808	-6.6	81	0.00
31	T	1,2,3,4-Tetramethylbenzene	4.498	4.904	-9.0	81	0.00
32	T	1,2,3,5-Tetramethylbenzene	4.399	4.705	-7.0	81	0.00
33	T	1,2,3-Trichlorobenzene	1.764	1.834	-4.0	81	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

APPENDIX D
SAMPLING BY DAY

Toxic Air Pollutant	CAS #	Total number of detections	Number of sites with at least one day of detection	Min concentration ($\mu g/m^3$)	Max concentration (µg/m3)
Dichlorodifluoromethane (CFC	75-71-8	56	14	1.4	2.9
Ethanol	64-17-5	56	14	1.4	320
Trichlorofluoromethane	75-69-4	56	14	1	2.6
Dichloromethane (Methylene C	75-09-2	56	14	0.25	2.6
Carbon Tetrachloride	56-23-5	56	14	0.37	0.54
Toluene	108-88-3	56	14	0.25	9
Acetone	67-64-1	55	14	3.2	41
Chloromethane	74-87-3	50	14	0.13	0.22
2-Butanone (MEK)	78-93-3	44	14	0.22	33
2-Propanol (Isopropyl Alcohol)	67-63-0	43	14	0.38	44
Benzene	71-43-2	39	14	0.1	4.3
m,p-Xylenes	179601-23-1	28	13	0.2	4.5
Chloroform	67-66-3	18	14	0.1	0.6
Ethylbenzene	100-41-4	16	9	0.11	1.3
o-Xylene	95-47-6	16	8	0.1	1.7
Hexane	110-54-3	14	10	0.16	1
Tetrachloroethene	127-18-4	11	8	0.12	0.69
Chlorodifluoromethane (CFC 2	75-45-6	10	9	0.36	0.55
4-Methyl-2-pentanone	108-10-1	7	5	0.13	3.4
Bromodichloromethane	75-27-4	6	6	0.11	0.21
1,2-Dichloroethane	107-06-2	5	4	0.094	0.18
Hydrogen Sulfide	778-06-4	3	3	6	24
Trichloroethene	79-01-6	3	2	0.17	0.19
Carbon Disulfide	75-15-0	1	1	10	10
1,1,1-Trichloroethane	71-55-6	1	1	2	2
Carbon Monoxide	630-08-0	0	0	ND	
Carbonyl Sulfide	463-58-1	0	0	ND	
Methyl Mercaptan	74-93-1	0	0	ND	
Ethyl Mercaptan	75-08-1	0	0	ND	
Dimethyl Sulfide	75-18-3	0	0	ND	
n-Butane	106-97-8	0	0	ND	
n-Pentane	109-66-0	0	0	ND	
Ethane	74-84-0	0	0	ND	
Propane	74-98-6	0	0	ND	
Vinyl Chloride	75-01-4	0	0	ND	
Chloroethane	75-00-3	0	0	ND	
Acrylonitrile	107-13-1	0	0	ND	
1,1-Dichloroethene	75-35-4	0	0	ND	
trans-1,2-Dichloroethene	156-60-5	0	0	ND	
1,1-Dichloroethane	75-34-3	0	0	ND	
1,2-Dichloropropane	78-87-5	0	0	ND	
1,2-Dibromoethane	106-93-4	0	0	ND	
Chlorobenzene	108-90-7	0	0	ND	
1,1,2,2-Tetrachloroethane	79-34-5	0	0	ND	
1,3-Dichlorobenzene	541-73-1	0	0	ND	
1,4-Dichlorobenzene	106-46-7	0	0	ND	
1,2-Dichlorobenzene	95-50-1	0	0	ND	
Dichlorofluoromethane (CFC 2	75-43-4	0	0	ND	

Collection date 6/22/21

Concentration in Air (µg/m^3)

Toxic Air Pollutant	CAS #	R1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S11D	S12	S13	DL
Carbon Monoxide	630-08-0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	610
Hydrogen Sulfide	778-06-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.1
Carbonyl Sulfide	463-58-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.7
Methyl Mercaptan	74-93-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4
Ethyl Mercaptan	75-08-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Dimethyl Sulfide	75-18-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Carbon Disulfide	75-15-0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6
n-Butane	106-97-8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
n-Pentane	109-66-0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	140
Ethane	74-84-0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	52
Propane	74-98-6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	83
Dichlorodifluoromethane (CFC 12)	75-71-8	2.8	2.9	2.8	2.7	2.7	1.6	1.8	1.7	2.5	2.8	2.9	2.3	2.3	2.4	2.3	0.7
Chloromethane	74-87-3	0.16	0.13	0.14	ND	ND	0.19	0.2	0.18	0.16	0.15	0.15	ND	ND	0.13	ND	0.69
Vinyl Chloride	75-01-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.46
Chloroethane	75-00-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53
Ethanol	64-17-5	11	4.7	6	5.4	20	49	9	14	10	100	15	19	19	47	35	3
Acetone	67-64-1	8.2	6.3	11	5.9	8.7	14	12	12	7	10	6.7	41	31	15	17	9.6
Trichlorofluoromethane	75-69-4	1.6	1.5	1.5	1.5	1.4	1.3	1.2	1.3	1.3	1.5	1.5	1.2	1.3	1.6	1.3	0.65
2-Propanol (Isopropyl Alcohol)	67-63-0	2	0.75	44	1.1	1.1	2.8	0.76	1.1	0.81	7	1.5	7.3	8	1.9	1.2	1.8
Acrylonitrile	107-13-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.88
1,1-Dichloroethene	75-35-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59
Dichloromethane (Methylene Chloride)	75-09-2	0.23	0.25	0.28	1.2	0.25	1	0.37	0.37	0.26	0.36	0.26	0.35	1.2	1	0.48	1.2
trans-1,2-Dichloroethene	156-60-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59
1,1-Dichloroethane	75-34-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.62
2-Butanone (MEK)	78-93-3	0.39	0.85	0.48	0.39	4.7	1.5	0.65	0.57	2.8	0.67	0.46	33	27	4.2	4.2	0.88
Hexane	110-54-3	ND	ND	ND	ND	ND	0.29	0.16	0.19	ND	0.2	ND	ND	ND	0.58	0.27	0.88
Chloroform	67-66-3	0.11	0.35	0.31	0.32	0.33	0.11	ND	0.2	0.39	0.11	ND	0.55	0.32	0.39	0.6	0.57
1,2-Dichloroethane	107-06-2	ND	ND	ND	ND	ND	0.12	ND	ND	ND	ND	ND	ND	ND	0.14	ND	0.47
1,1,1-Trichloroethane	71-55-6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53
Benzene	71-43-2	ND	0.18	0.14	0.7	0.12	0.18	0.16	0.4	0.11	0.16	0.12	0.17	0.17	0.19	4.3	0.62
Carbon Tetrachloride	56-23-5	0.5	0.54	0.5	0.53	0.49	0.42	0.42	0.41	0.46	0.52	0.54	0.41	0.43	0.44	0.4	0.59
1,2-Dichloropropane	78-87-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53
Bromodichloromethane	75-27-4	ND	0.11	ND	ND	0.11	ND	ND	ND	0.13	ND	ND	0.19	ND	0.14	0.21	0.62
Trichloroethene	79-01-6	ND	ND	ND	ND	ND	ND	ND	0.19	ND	ND	ND	ND	ND	ND	ND	0.58
4-Methyl-2-pentanone	108-10-1	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	0.27	0.29	ND	0.13	0.58
Toluene	108-88-3	0.27	0.32	0.37	1.3	0.36	4.2	0.82	0.78	0.35	0.49	0.33	1.1	2.3	1.8	1.2	0.52
1,2-Dibromoethane	106-93-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5
Tetrachloroethene	127-18-4	ND	ND	ND	ND	ND	0.15	ND	0.13	ND	ND	ND	0.12	ND	0.69	0.28	0.55
Chlorobenzene	108-90-7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.57
Ethylbenzene	100-41-4	ND	ND	ND	0.16	ND	0.43	0.11	0.11	ND	ND	ND	ND	0.19	0.25	0.17	0.6
m,p-Xylenes	179601-23-1	ND	ND	ND	0.38	ND	1.2	0.24	0.24	ND	ND	ND	ND	0.43	0.75	0.54	1.1
o-Xylene	95-47-6	ND	ND	ND	0.17	ND	0.43	ND	0.11	ND	ND	ND	ND	0.2	0.27	0.2	0.62
1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59
1,3-Dichlorobenzene	541-73-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.64
1,4-Dichlorobenzene	106-46-7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.66
1,2-Dichlorobenzene	95-50-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.63
Chlorodifluoromethane (CFC 22)	75-45-6	0.48	0.45	0.5	0.41	0.38	ND	ND	ND	0.43	0.44	0.55	ND	ND	ND	ND	0.25
Dichlorofluoromethane (CFC 21)	75-43-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.24

Concentration in Air (ppmV)

Toxic Air Pollutant	CAS #	R1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S11D	S12	S13	DL
Total Gaseous Nonmethane Organics (	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.45

DL- Detection Limit. " Separate MDLs [method detection limits] are calculated for each target VOC based on the results from the spiked canisters and the MBs [method blanks]... and the higher of the two concentrations is chosen as the laboratory MDL." (EPA, 2019)
..\..\References\EPA 2019-TO-15A Methods.pdf

Collection date 6/23/21

Concentration in Air (µg/m^3)

Toxic Air Pollu	CAS #	R1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S11D	S12	S13	DL
Carbon Mono	630-08-0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	610
Hydrogen Sul	778-06-4	ND	ND	ND	ND	ND	ND	ND	ND	6.0	ND	ND	ND	ND	ND	ND	2.1
Carbonyl Sulfi	463-58-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.7
Methyl Mercaj	74-93-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4
Ethyl Mercapt	75-08-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Dimethyl Sulfi	75-18-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Carbon Disulfi	75-15-0	ND	ND	ND	ND	ND	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	6
n-Butane	106-97-8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
n-Pentane	109-66-0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	140
Ethane	74-84-0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	52
Propane	74-98-6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	83
Dichlorodifluor	75-71-8	1.6	1.6	1.6	1.8	1.6	1.4	1.8	1.4	1.7	1.6	1.7	1.6	1.6	1.7	1.7	0.7
Chloromethan	74-87-3	0.15	0.19	0.19	0.2	0.18	0.14	0.18	ND	0.2	0.16	0.17	0.17	0.19	0.21	0.2	0.69
Vinyl Chloride	75-01-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.46
Chloroethane	75-00-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53
Ethanol	64-17-5	5.8	160	7.1	8.1	12	3.7	22	4.7	29	4.4	3.5	7.9	3.3	6.1	3.5	3
Acetone	67-64-1	5.4	13	4.1	3.9	3.9	8.2	11	5.9	6.7	3.7	6.1	20	27	5.4	4.6	9.6
Trichlorofluor	75-69-4	1.3	1.2	1.2	1.2	1.2	1.2	1.3	1.1	1.2	1.2	1.3	1.2	1.2	1.4	1.2	0.65
2-Propanol (Is	67-63-0	ND	11	ND	1.9	ND	0.42	1.7	ND	0.96	ND	ND	4.2	4.8	0.56	0.38	1.8
Acrylonitrile	107-13-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.88
1,1-Dichloroet	75-35-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59
Dichlorometha	75-09-2	0.46	2.6	0.34	0.31	0.42	0.37	0.42	0.39	0.33	0.37	0.39	0.35	0.32	0.35	0.32	1.2
trans-1,2-Dich	156-60-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59
1,1-Dichloroet	75-34-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.62
2-Butanone (M	78-93-3	ND	2.8	ND	ND	ND	0.98	1.1	0.8	1	ND	ND	16	20	1.2	0.55	0.88
Hexane	110-54-3	ND	0.71	ND	0.37	ND	ND	0.34	ND	0.22	ND	ND	ND	ND	ND	ND	0.88
Chloroform	67-66-3	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.57
1,2-Dichloroet	107-06-2	ND	0.18	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.47
1,1,1-Trichlorc	71-55-6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53
Benzene	71-43-2	0.13	0.39	ND	0.57	ND	0.24	0.32	0.72	ND	0.47	0.22	ND	ND	0.18	ND	0.62
Carbon Tetrac	56-23-5	0.45	0.44	0.42	0.43	0.42	0.42	0.45	0.37	0.42	0.43	0.43	0.43	0.41	0.41	0.43	0.59
1,2-Dichloropr	78-87-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53
Bromodichlorc	75-27-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.62
Trichloroethen	79-01-6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.18	ND	ND	ND	0.58
4-Methyl-2-pe	108-10-1	ND	3.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.58
Toluene	108-88-3	0.69	9	0.41	0.66	0.33	1.2	1.3	0.82	0.33	0.45	0.66	0.78	0.76	0.33	0.53	0.52
1,2-Dibromoe	106-93-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5
Tetrachloroeth	127-18-4	ND	0.35	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.18	ND	ND	ND	0.55
Chlorobenzen	108-90-7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.57
Ethylbenzene	100-41-4	ND	1.3	ND	ND	ND	0.12	0.17	ND	ND	ND	0.12	ND	ND	ND	0.11	0.6
m,p-Xylenes	179601-23-1	0.43	4.5	ND	0.24	ND	0.44	0.46	0.37	ND	ND	0.41	0.2	ND	ND	0.29	1.1
o-Xylene	95-47-6	0.13	1.7	ND	ND	ND	0.17	0.19	0.15	ND	ND	0.14	ND	ND	ND	0.1	0.62
1,1,2,2-Tetrac	79-34-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59
1,3-Dichlorobe	541-73-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.64
1,4-Dichlorobe	106-46-7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.66
1,2-Dichlorobe	95-50-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.63
Chlorodifluoro	75-45-6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.25
Dichlorofluoro	75-43-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.24

Concentration in Air (ppmV)

Toxic Air Pollu	CAS #	R1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S11D	S12	S13	DL
Total Gaseou	NA	0.66	0.55	ND	ND	ND	0.89	ND	0.41	ND	ND	ND	ND	ND	ND	ND	0.45

DL- Detection Limit. " Separate MDLs [method detection limits] are calculated for each target VOC based on the results from the spiked canisters and the MBs [method blanks]... and the higher of the two concentrations is chosen as the laboratory MDL." (EPA, 2019)
..\..\References\EPA 2019-TO-15A Methods.pdf

Collection date 7/07/21

Concentration in Air (µg/m^3)

Toxic Air Pollu	CAS #	R1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S11D	S12	S13	DL
Carbon Monox	630-08-0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	610
Hydrogen Sulf	778-06-4	ND	ND	ND	21	ND	ND	ND	24	ND	ND	ND	ND	ND	ND	ND	2.1
Carbonyl Sulfi	463-58-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.7
Methyl Mercap	74-93-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4
Ethyl Mercapt	75-08-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Dimethyl Sulfi	75-18-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Carbon Disulfi	75-15-0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6
n-Butane	106-97-8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
n-Pentane	109-66-0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	140
Ethane	74-84-0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	52
Propane	74-98-6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	83
Dichlorodifluor	75-71-8	1.6	1.8	1.7	1.7	1.6	1.6	1.7	1.6	1.6	1.5	1.7	1.5	1.6	1.6	1.6	0.7
Chloromethan	74-87-3	0.14	0.19	0.16	0.15	0.15	0.14	0.16	0.15	0.15	0.14	0.15	0.14	0.17	0.15	0.16	0.69
Vinyl Chloride	75-01-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.46
Chloroethane	75-00-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53
Ethanol	64-17-5	1.8	17	8.1	6.4	16	6.5	3.9	6.4	54	2.9	8.4	19	16	19	320	3
Acetone	67-64-1	5.4	8.9	5.5	5.9	7.6	6.7	5.8	7	22	3.7	4.8	13	17	9.8	19	9.6
Trichlorofluoro	75-69-4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.3	1.2	1.3	2.6	0.65
2-Propanol (Is	67-63-0	0.78	0.96	0.66	0.82	ND	ND	ND	ND	4	ND	0.56	0.94	3.7	0.8	12	1.8
Acrylonitrile	107-13-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.88
1,1-Dichloroetl	75-35-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59
Dichlorometha	75-09-2	0.3	0.33	0.32	0.3	0.32	0.35	0.3	0.32	0.31	0.31	0.32	0.32	0.31	0.33	0.92	1.2
trans-1,2-Dich	156-60-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59
1,1-Dichloroetl	75-34-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.62
2-Butanone (M	78-93-3	ND	2.3	ND	0.75	1.3	0.95	0.7	1	6.4	ND	0.29	3.8	12	2.7	7.1	0.88
Hexane	110-54-3	ND	ND	ND	0.18	ND	ND	ND	ND	ND	ND	0.28	ND	ND	ND	1	0.88
Chloroform	67-66-3	ND	ND	ND	ND	0.1	ND	0.099	ND	ND	ND	0.1	ND	ND	0.1	0.12	0.57
1,2-Dichloroetl	107-06-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	0.47
1,1,1-Trichlorc	71-55-6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	0.53
Benzene	71-43-2	0.21	0.15	ND	0.12	0.17	ND	0.1	ND	0.13	ND	0.32	ND	ND	0.11	0.15	0.62
Carbon Tetrac	56-23-5	0.45	0.44	0.45	0.45	0.46	0.46	0.44	0.44	0.45	0.45	0.44	0.45	0.42	0.45	0.43	0.59
1,2-Dichloropr	78-87-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53
Bromodichloro	75-27-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.62
Trichloroethen	79-01-6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.58
4-Methyl-2-pe	108-10-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.18	ND	0.32	0.58
Toluene	108-88-3	0.34	0.58	0.39	0.28	0.33	0.45	0.41	0.43	0.49	0.28	1.6	0.37	0.77	0.48	5.6	0.52
1,2-Dibromoet	106-93-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5
Tetrachloroeth	127-18-4	ND	ND	ND	ND	ND	ND	0.17	ND	ND	ND	0.2	ND	ND	ND	0.56	0.55
Chlorobenzen	108-90-7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.57
Ethylbenzene	100-41-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.24	ND	ND	ND	1.1	0.6
m,p-Xylenes	179601-23-1	ND	ND	ND	ND	ND	0.21	0.2	ND	ND	ND	0.81	ND	ND	ND	3.3	1.1
o-Xylene	95-47-6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.31	ND	ND	ND	0.96	0.62
1,1,2,2-Tetrac	79-34-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59
1,3-Dichlorobe	541-73-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.64
1,4-Dichlorobe	106-46-7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.66
1,2-Dichlorobe	95-50-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.63
Chlorodifluoro	75-45-6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.25
Dichlorofluoro	75-43-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.24

Concentration in Air (ppmV)

Toxic Air Pollu	CAS #	R1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S11D	S12	S13	DL
Total Gaseous	NA	0.61	0.54	0.45	0.92	0.86	0.7	0.59	0.77	0.76	0.56	0.37	0.92	0.9	0.62	0.94	0.45

DL- Detection Limit. " Separate MDLs [method detection limits] are calculated for each target VOC based on the results from the spiked canisters and the MBs [method blanks]... and the higher of the two concentrations is chosen as the laboratory MDL." (EPA, 2019)
..\..\References\EPA 2019-TO-15A Methods.pdf

Collection date 7/08/21

Concentration in Air (µg/m^3)

Toxic Air Pollu	CAS #	R1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S11D	S12	S13	DL
Carbon Mono	630-08-0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	610
Hydrogen Sul	778-06-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.1
Carbonyl Sulfi	463-58-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.7
Methyl Mercaj	74-93-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4
Ethyl Mercapt	75-08-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Dimethyl Sulfi	75-18-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Carbon Disulfi	75-15-0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6
n-Butane	106-97-8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
n-Pentane	109-66-0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	140
Ethane	74-84-0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	52
Propane	74-98-6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	83
Dichlorodifluor	75-71-8	2	2.1	2	1.9	2	2	2.1	2	2	2.1	1.9	2	2	1.9	2.1	0.7
Chloromethan	74-87-3	0.19	0.2	0.18	0.15	0.18	0.19	0.22	0.18	0.18	0.2	0.14	0.18	0.18	0.16	0.19	0.69
Vinyl Chloride	75-01-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.46
Chloroethane	75-00-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53
Ethanol	64-17-5	1.8	1.9	2	1.7	18	1.7	1.7	1.7	6.4	8.2	15	1.9	2.5	4.2	1.4	3
Acetone	67-64-1	5	5.9	4.3	3.6	6.5	4.5	3.9	3.7	7.6	6.3	5.3	3.6	7.4	ND	3.2	9.6
Trichlorofluor	75-69-4	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1	1	1.1	1.3	1.1	0.65
2-Propanol (Is	67-63-0	29	1.1	3.3	ND	0.68	0.42	ND	ND	0.57	0.4	0.52	4.6	5.3	0.62	0.85	1.8
Acrylonitrile	107-13-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.88
1,1-Dichloroet	75-35-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59
Dichlorometha	75-09-2	0.32	0.35	0.3	0.29	2.3	0.31	0.29	0.31	0.32	0.3	0.49	0.38	0.3	0.5	0.3	1.2
trans-1,2-Dich	156-60-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59
1,1-Dichloroet	75-34-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.62
2-Butanone (M	78-93-3	0.21	ND	0.22	ND	0.45	ND	0.24	0.38	0.86	0.77	0.95	ND	0.64	0.54	ND	0.88
Hexane	110-54-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.44	ND	0.88
Chloroform	67-66-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.57
1,2-Dichloroet	107-06-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.094	ND	0.47
1,1,1-Trichlorc	71-55-6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53
Benzene	71-43-2	0.13	0.13	0.11	0.13	0.2	0.17	ND	0.22	ND	0.11	0.16	ND	0.81	ND	ND	0.62
Carbon Tetrac	56-23-5	0.42	0.43	0.41	0.41	0.41	0.44	0.44	0.42	0.43	0.44	0.4	0.44	0.43	0.41	0.43	0.59
1,2-Dichloropr	78-87-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53
Bromodichlorc	75-27-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.62
Trichloroethen	79-01-6	ND	ND	ND	ND	ND	ND	ND	ND	0.17	ND	ND	ND	ND	ND	ND	0.58
4-Methyl-2-pe	108-10-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.58
Toluene	108-88-3	0.45	0.42	0.41	0.4	1.7	0.58	0.54	0.58	0.41	0.35	0.51	0.25	0.28	1.3	0.31	0.52
1,2-Dibromoe	106-93-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5
Tetrachloroeth	127-18-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.34	ND	0.55
Chlorobenzen	108-90-7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.57
Ethylbenzene	100-41-4	ND	ND	ND	ND	ND	ND	0.12	ND	ND	ND	ND	ND	ND	0.19	ND	0.6
m,p-Xylenes	179601-23-1	ND	0.21	0.21	ND	0.28	0.3	0.28	0.29	0.25	ND	0.23	ND	ND	0.56	ND	1.1
o-Xylene	95-47-6	ND	ND	ND	ND	ND	ND	0.14	ND	ND	ND	ND	ND	ND	0.18	ND	0.62
1,1,2,2-Tetrac	79-34-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59
1,3-Dichlorobe	541-73-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.64
1,4-Dichlorobe	106-46-7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.66
1,2-Dichlorobe	95-50-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.63
Chlorodifluoro	75-45-6	ND	ND	ND	ND	ND	ND	0.38	ND	ND	0.36	ND	ND	ND	ND	0.4	0.25
Dichlorofluoro	75-43-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.24

Concentration in Air (ppmV)

Toxic Air Pollu	CAS #	R1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S11D	S12	S13	DL
Total Gaseou	NA	0.57	0.49	0.75	0.91	0.69	0.76	0.7	0.71	0.82	0.77	0.6	0.55	0.63	0.5	0.67	0.45

DL- Detection Limit. " Separate MDLs [method detection limits] are calculated for each target VOC based on the results from the spiked canisters and the MBs [method blanks]... and the higher of the two concentrations is chosen as the laboratory MDL." (EPA, 2019)
..\..\References\EPA 2019-TO-15A Methods.pdf

APPENDIX E

FIELD SAMPLING VS. NUMERICAL MODELING

Table E-1. Sampling Detections vs. Modeling Results for Location Ref1

Toxic Air Pollutant	CAS #	22-Jun	23-Jun	7-Jul	8-Jul	ADM
1,1,1-Trichloroethane	71-55-6	ND	ND	ND	ND	0.315
1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	ND	ND	0.227
1,1-Dichloroethane	75-34-3	ND	ND	ND	ND	0.259
1,1-Dichloroethene	75-35-4	ND	ND	ND	ND	1.574
1,2-Dibromoethane	106-93-4	ND	ND	ND	ND	0.266
1,2-Dichlorobenzene	95-50-1	ND	ND	ND	ND	0.244
1,2-Dichloroethane	107-06-2	ND	ND	ND	ND	0.007
1,2-Dichloropropane	78-87-5	ND	ND	ND	ND	0.207
1,3-Dichlorobenzene	541-73-1	ND	ND	ND	ND	0.246
1,4-Dichlorobenzene	106-46-7	ND	ND	ND	ND	0.007
2-Butanone (MEK)	78-93-3	0.39	ND	ND	0.21	2.246
2-Propanol (Isopropyl Alcohol)	67-63-0	2	ND	0.78	29	0.012
4-Methyl-2-pentanone	108-10-1	ND	ND	ND	ND	0.201
Acetone	67-64-1	8.2	5.4	5.4	5	0.023
Acrylonitrile	107-13-1	ND	ND	ND	ND	0.006
Benzene	71-43-2	ND	0.13	0.21	0.13	0.033
Bromodichloromethane	75-27-4	ND	ND	ND	ND	0.232
Carbon Disulfide	75-15-0	ND	ND	ND	ND	0.021
Carbon Monoxide	630-08-0	ND	ND	ND	ND	0.236
Carbon Tetrachloride	56-23-5	0.5	0.45	0.45	0.42	0.012
Carbonyl Sulfide	463-58-1	ND	ND	ND	ND	2.255
Chlorobenzene	108-90-7	ND	ND	ND	ND	0.207
Chlorodifluoromethane (CFC 22)	75-45-6	0.48	ND	ND	ND	1.057
Chloroethane	75-00-3	ND	ND	ND	ND	1.310
Chloroform	67-66-3	0.11	ND	ND	ND	0.246
Chloromethane	74-87-3	0.16	0.15	0.14	0.19	0.364
Dichlorodifluoromethane (CFC 12)	75-71-8	2.8	1.6	1.6	2	0.456
Dichlorofluoromethane (CFC 21)	75-43-4	ND	ND	ND	ND	0.239
Dichloromethane (Methylene Chloride)	75-09-2	0.23	0.46	0.3	0.32	0.066
Dimethyl Sulfide	75-18-3	ND	ND	ND	ND	0.829
Ethane	74-84-0	ND	ND	ND	ND	0.246
Ethanol	64-17-5	11	5.8	1.8	1.8	3.989
Ethyl Mercaptan	75-08-1	ND	ND	ND	ND	0.408
Ethylbenzene	100-41-4	ND	ND	ND	ND	0.028
Hexane	110-54-3	ND	ND	ND	ND	292.451

Hydrogen Sulfide	778-06-4	ND	ND	ND	ND	1.024
m,p-Xylenes	179601-23-1	ND	0.43	ND	ND	355.468
Methyl Mercaptan	74-93-1	ND	ND	ND	ND	0.044
n-Butane	106-97-8	ND	ND	ND	ND	0.017
n-Pentane	109-66-0	ND	ND	ND	ND	0.227
o-Xylene	95-47-6	ND	0.13	ND	ND	0.028
Propane	74-98-6	ND	ND	ND	ND	0.034
Tetrachloroethene	127-18-4	ND	ND	ND	ND	0.227
Toluene	108-88-3	0.27	0.69	0.34	0.45	0.011
trans-1,2-Dichloroethene	156-60-5	ND	ND	ND	ND	2.462
Trichloroethene	79-01-6	ND	ND	ND	ND	0.266
Trichlorofluoromethane	75-69-4	1.6	1.3	1.3	1.1	0.348
Vinyl Chloride	75-01-4	ND	ND	ND	ND	0.387

Table E-2. Sampling Detections vs. Modeling Results for Location S1

Toxic Air Pollutant	CAS #	22-Jun	23-Jun	7-Jul	8-Jul	ADM
Carbon Monoxide	630-08-0	ND	ND	ND	ND	0.225
Hydrogen Sulfide	778-06-4	ND	ND	ND	ND	0.040
Carbonyl Sulfide	463-58-1	ND	ND	ND	ND	2.166
Methyl Mercaptan	74-93-1	ND	ND	ND	ND	0.136
Ethyl Mercaptan	75-08-1	ND	ND	ND	ND	0.040
Dimethyl Sulfide	75-18-3	ND	ND	ND	ND	0.040
Carbon Disulfide	75-15-0	ND	ND	ND	ND	1.636
n-Butane	106-97-8	ND	ND	ND	ND	0.040
n-Pentane	109-66-0	ND	ND	ND	ND	1.684
Ethane	74-84-0	ND	ND	ND	ND	1.845
Propane	74-98-6	ND	ND	ND	ND	2382.255
Dichlorodifluoromethane (CFC 12)	75-71-8	2.9	1.6	1.8	2.1	0.301
Chloromethane	74-87-3	0.13	0.19	0.19	0.2	20.053
Vinyl Chloride	75-01-4	ND	ND	ND	ND	2895.588
Chloroethane	75-00-3	ND	ND	ND	ND	18.368
Ethanol	64-17-5	4.7	160	17	1.9	2.005
Acetone	67-64-1	6.3	13	8.9	5.9	0.100
Trichlorofluoromethane	75-69-4	1.5	1.2	1.3	1.1	1.925
2-Propanol (Isopropyl Alcohol)	67-63-0	0.75	11	0.96	1.1	2.913
Acrylonitrile	107-13-1	ND	ND	ND	ND	0.100
1,1-Dichloroethene	75-35-4	ND	ND	ND	ND	0.030
Dichloromethane (Methylene Chloride)	75-09-2	0.25	2.6	0.33	0.35	2.005
trans-1,2-Dichloroethene	156-60-5	ND	ND	ND	ND	0.043
1,1-Dichloroethane	75-34-3	ND	ND	ND	ND	2.567
2-Butanone (MEK)	78-93-3	0.85	2.8	2.3	ND	2.005
Hexane	110-54-3	ND	0.71	ND	ND	2.968
Chloroform	67-66-3	0.35	0.13	ND	ND	0.058
1,2-Dichloroethane	107-06-2	ND	0.18	ND	ND	0.045
1,1,1-Trichloroethane	71-55-6	ND	ND	ND	ND	10.668
Benzene	71-43-2	0.18	0.39	0.15	0.13	0.514
Carbon Tetrachloride	56-23-5	0.54	0.44	0.44	0.43	0.541
1,2-Dichloropropane	78-87-5	ND	ND	ND	ND	0.087
Bromodichloromethane	75-27-4	0.11	ND	ND	ND	0.028
Trichloroethene	79-01-6	ND	ND	ND	ND	3.008
4-Methyl-2-pentanone	108-10-1	ND	3.4	ND	ND	0.307

Toluene	108-88-3	0.32	9	0.58	0.42	0.162
1,2-Dibromoethane	106-93-4	ND	ND	ND	ND	4.059
Tetrachloroethene	127-18-4	ND	0.35	ND	ND	0.317
Chlorobenzene	108-90-7	ND	ND	ND	ND	1.402
Ethylbenzene	100-41-4	ND	1.3	ND	ND	0.462
m,p-Xylenes	179601-23-1	ND	4.5	ND	0.21	1.925
o-Xylene	95-47-6	ND	1.7	ND	ND	1.358
1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	ND	ND	1.684
1,3-Dichlorobenzene	541-73-1	ND	ND	ND	ND	17.085
1,4-Dichlorobenzene	106-46-7	ND	ND	ND	ND	2.166
1,2-Dichlorobenzene	95-50-1	ND	ND	ND	ND	1.845
Chlorodifluoromethane (CFC 22)	75-45-6	0.45	ND	ND	ND	0.193
Dichlorofluoromethane (CFC 21)	75-43-4	ND	ND	ND	ND	1.989

Table E-3. Sampling Detections vs. Modeling Results for Location S2

Toxic Air Pollutant	CAS #	22-Jun	23-Jun	7-Jul	8-Jul	ADM
Carbon Monoxide	630-08-0	ND	ND	ND	ND	0.024
Hydrogen Sulfide	778-06-4	ND	ND	ND	ND	0.010
Carbonyl Sulfide	463-58-1	ND	ND	ND	ND	0.230
Methyl Mercaptan	74-93-1	ND	ND	ND	ND	0.014
Ethyl Mercaptan	75-08-1	ND	ND	ND	ND	0.011
Dimethyl Sulfide	75-18-3	ND	ND	ND	ND	0.009
Carbon Disulfide	75-15-0	ND	ND	ND	ND	0.175
n-Butane	106-97-8	ND	ND	ND	ND	0.017
n-Pentane	109-66-0	ND	ND	ND	ND	0.178
Ethane	74-84-0	ND	ND	ND	ND	0.196
Propane	74-98-6	ND	ND	ND	ND	252.292
Dichlorodifluoromethane (CFC 12)	75-71-8	2.8	1.6	1.7	2	0.346
Chloromethane	74-87-3	0.14	0.19	0.16	0.18	2.126
Vinyl Chloride	75-01-4	ND	ND	ND	ND	306.635
Chloroethane	75-00-3	ND	ND	ND	ND	1.945
Ethanol	64-17-5	6	7.1	8.1	2	0.319
Acetone	67-64-1	11	4.1	5.5	4.3	0.011
Trichlorofluoromethane	75-69-4	1.5	1.2	1.3	1.1	0.204
2-Propanol (Isopropyl Alcohol)	67-63-0	44	ND	0.66	3.3	3.533
Acrylonitrile	107-13-1	ND	ND	ND	ND	0.011
1,1-Dichloroethene	75-35-4	ND	ND	ND	ND	0.035
Dichloromethane (Methylene Chloride)	75-09-2	0.28	0.34	0.32	0.3	0.212
trans-1,2-Dichloroethene	156-60-5	ND	ND	ND	ND	0.050
1,1-Dichloroethane	75-34-3	ND	ND	ND	ND	0.272
2-Butanone (MEK)	78-93-3	0.48	ND	ND	0.22	0.212
Hexane	110-54-3	ND	ND	ND	ND	0.315
Chloroform	67-66-3	0.31	ND	ND	ND	0.067
1,2-Dichloroethane	107-06-2	ND	ND	ND	ND	0.051
1,1,1-Trichloroethane	71-55-6	ND	ND	ND	ND	1.132
Benzene	71-43-2	0.14	ND	ND	0.11	0.590
Carbon Tetrachloride	56-23-5	0.5	0.42	0.45	0.41	0.621
1,2-Dichloropropane	78-87-5	ND	ND	ND	ND	0.100
Bromodichloromethane	75-27-4	ND	ND	ND	ND	0.032
Trichloroethene	79-01-6	ND	ND	ND	ND	1.263
4-Methyl-2-pentanone	108-10-1	ND	ND	ND	ND	0.353

Toluene	108-88-3	0.37	0.41	0.39	0.41	0.202
1,2-Dibromoethane	106-93-4	ND	ND	ND	ND	2.399
Tetrachloroethene	127-18-4	ND	ND	ND	ND	0.364
Chlorobenzene	108-90-7	ND	ND	ND	ND	1.611
Ethylbenzene	100-41-4	ND	ND	ND	ND	0.531
m,p-Xylenes	179601-23-1	ND	ND	ND	0.21	0.696
o-Xylene	95-47-6	ND	ND	ND	ND	1.561
1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	ND	ND	0.180
1,3-Dichlorobenzene	541-73-1	ND	ND	ND	ND	3.424
1,4-Dichlorobenzene	106-46-7	ND	ND	ND	ND	0.230
1,2-Dichlorobenzene	95-50-1	ND	ND	ND	ND	0.216
Chlorodifluoromethane (CFC 22)	75-45-6	0.5	ND	ND	ND	0.043
Dichlorofluoromethane (CFC 21)	75-43-4	ND	ND	ND	ND	0.212

Table E-4. Sampling Detections vs. Modeling Results for Location S3

Toxic Air Pollutant	CAS #	22-Jun	23-Jun	7-Jul	8-Jul	ADM
Carbon Monoxide	630-08-0	ND	ND	ND	ND	0.039
Hydrogen Sulfide	778-06-4	ND	ND	0	ND	0.010
Carbonyl Sulfide	463-58-1	ND	ND	ND	ND	0.377
Methyl Mercaptan	74-93-1	ND	ND	ND	ND	0.024
Ethyl Mercaptan	75-08-1	ND	ND	ND	ND	0.011
Dimethyl Sulfide	75-18-3	ND	ND	ND	ND	0.009
Carbon Disulfide	75-15-0	ND	ND	ND	ND	0.285
n-Butane	106-97-8	ND	ND	ND	ND	0.017
n-Pentane	109-66-0	ND	ND	ND	ND	0.293
Ethane	74-84-0	ND	ND	ND	ND	0.321
Propane	74-98-6	ND	ND	ND	ND	414.399
Dichlorodifluoromethane (CFC 12)	75-71-8	2.7	1.8	1.7	1.9	0.344
Chloromethane	74-87-3	ND	0.2	0.15	0.15	3.489
Vinyl Chloride	75-01-4	ND	ND	ND	ND	503.681
Chloroethane	75-00-3	ND	ND	ND	ND	3.195
Ethanol	64-17-5	5.4	8.1	6.4	1.7	0.352
Acetone	67-64-1	5.9	3.9	5.9	3.6	0.018
Trichlorofluoromethane	75-69-4	1.5	1.2	1.3	1.1	0.335
2-Propanol (Isopropyl Alcohol)	67-63-0	1.1	1.9	0.82	ND	3.340
Acrylonitrile	107-13-1	ND	ND	ND	ND	0.018
1,1-Dichloroethene	75-35-4	ND	ND	ND	ND	0.034
Dichloromethane (Methylene Chloride)	75-09-2	1.2	0.31	0.3	0.29	0.349
trans-1,2-Dichloroethene	156-60-5	ND	ND	ND	ND	0.049
1,1-Dichloroethane	75-34-3	ND	ND	ND	ND	0.447
2-Butanone (MEK)	78-93-3	0.39	ND	0.75	ND	0.349
Hexane	110-54-3	ND	0.37	0.18	ND	0.517
Chloroform	67-66-3	0.32	ND	ND	ND	0.066
1,2-Dichloroethane	107-06-2	ND	ND	ND	ND	0.051
1,1,1-Trichloroethane	71-55-6	ND	ND	ND	ND	1.857
Benzene	71-43-2	0.7	0.57	0.12	0.13	0.586
Carbon Tetrachloride	56-23-5	0.53	0.43	0.45	0.41	0.617
1,2-Dichloropropane	78-87-5	ND	ND	ND	ND	0.099
Bromodichloromethane	75-27-4	ND	ND	ND	ND	0.032
Trichloroethene	79-01-6	ND	ND	ND	ND	1.254
4-Methyl-2-pentanone	108-10-1	ND	ND	ND	ND	0.351

Toluene	108-88-3	1.3	0.66	0.28	0.4	0.186
1,2-Dibromoethane	106-93-4	ND	ND	ND	ND	2.381
Tetrachloroethene	127-18-4	ND	ND	ND	ND	0.362
Chlorobenzene	108-90-7	ND	ND	ND	ND	1.600
Ethylbenzene	100-41-4	0.16	ND	ND	ND	0.527
m,p-Xylenes	179601-23-1	0.38	0.24	ND	ND	0.691
o-Xylene	95-47-6	0.17	ND	ND	ND	1.550
1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	ND	ND	0.294
1,3-Dichlorobenzene	541-73-1	ND	ND	ND	ND	3.399
1,4-Dichlorobenzene	106-46-7	ND	ND	ND	ND	0.377
1,2-Dichlorobenzene	95-50-1	ND	ND	ND	ND	0.323
Chlorodifluoromethane (CFC 22)	75-45-6	0.41	ND	ND	ND	0.042
Dichlorofluoromethane (CFC 21)	75-43-4	ND	ND	ND	ND	0.347

Table E-5. Sampling Detections vs. Modeling Results for Location S4

Toxic Air Pollutant	CAS #	22-Jun	23-Jun	7-Jul	8-Jul	ADM
Carbon Monoxide	630-08-0	ND	ND	ND	ND	0.216
Hydrogen Sulfide	778-06-4	ND	ND	ND	ND	0.043
Carbonyl Sulfide	463-58-1	ND	ND	ND	ND	2.057
Methyl Mercaptan	74-93-1	ND	ND	ND	ND	0.131
Ethyl Mercaptan	75-08-1	ND	ND	ND	ND	0.044
Dimethyl Sulfide	75-18-3	ND	ND	ND	ND	0.043
Carbon Disulfide	75-15-0	ND	ND	ND	ND	1.588
n-Butane	106-97-8	ND	ND	ND	ND	0.048
n-Pentane	109-66-0	ND	ND	ND	ND	1.595
Ethane	74-84-0	ND	ND	ND	ND	1.765
Propane	74-98-6	ND	ND	ND	ND	2249.884
Dichlorodifluoromethane (CFC 12)	75-71-8	2.7	1.6	1.6	2	0.299
Chloromethane	74-87-3	ND	0.18	0.15	0.18	19.004
Vinyl Chloride	75-01-4	ND	ND	ND	ND	2733.925
Chloroethane	75-00-3	ND	ND	ND	ND	17.350
Ethanol	64-17-5	20	12	16	18	2.071
Acetone	67-64-1	8.7	3.9	7.6	6.5	0.100
Trichlorofluoromethane	75-69-4	1.4	1.2	1.3	1.1	1.839
2-Propanol (Isopropyl Alcohol)	67-63-0	1.1	ND	ND	0.68	2.571
Acrylonitrile	107-13-1	ND	ND	ND	ND	0.100
1,1-Dichloroethene	75-35-4	ND	ND	ND	ND	0.030
Dichloromethane (Methylene Chloride)	75-09-2	0.25	0.42	0.32	2.3	1.896
trans-1,2-Dichloroethene	156-60-5	ND	ND	ND	ND	0.043
1,1-Dichloroethane	75-34-3	ND	ND	ND	ND	2.431
2-Butanone (MEK)	78-93-3	4.7	ND	1.3	0.45	1.897
Hexane	110-54-3	ND	ND	ND	ND	2.818
Chloroform	67-66-3	0.33	ND	0.1	ND	0.078
1,2-Dichloroethane	107-06-2	ND	ND	ND	ND	0.044
1,1,1-Trichloroethane	71-55-6	ND	ND	ND	ND	10.151
Benzene	71-43-2	0.12	ND	0.17	0.2	0.511
Carbon Tetrachloride	56-23-5	0.49	0.42	0.46	0.41	0.537
1,2-Dichloropropane	78-87-5	ND	ND	ND	ND	0.087
Bromodichloromethane	75-27-4	0.11	ND	ND	ND	0.028
Trichloroethene	79-01-6	ND	ND	ND	ND	3.545
4-Methyl-2-pentanone	108-10-1	ND	ND	ND	ND	0.306

Toluene	108-88-3	0.36	0.33	0.33	1.7	0.142
1,2-Dibromoethane	106-93-4	ND	ND	ND	ND	5.172
Tetrachloroethene	127-18-4	ND	ND	ND	ND	0.315
Chlorobenzene	108-90-7	ND	ND	ND	ND	1.394
Ethylbenzene	100-41-4	ND	ND	ND	ND	0.459
m,p-Xylenes	179601-23-1	ND	ND	ND	0.28	2.206
o-Xylene	95-47-6	ND	ND	ND	ND	1.350
1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	ND	ND	1.656
1,3-Dichlorobenzene	541-73-1	ND	ND	ND	ND	18.040
1,4-Dichlorobenzene	106-46-7	ND	ND	ND	ND	2.057
1,2-Dichlorobenzene	95-50-1	ND	ND	ND	ND	1.862
Chlorodifluoromethane (CFC 22)	75-45-6	0.38	ND	ND	ND	0.206
Dichlorofluoromethane (CFC 21)	75-43-4	ND	ND	ND	ND	1.916

Table E-6. Sampling Detections vs. Modeling Results for Location S5

Toxic Air Pollutant	CAS #	22-Jun	23-Jun	7-Jul	8-Jul	ADM
Carbon Monoxide	630-08-0	ND	ND	ND	ND	0.043
Hydrogen Sulfide	778-06-4	ND	ND	ND	ND	0.008
Carbonyl Sulfide	463-58-1	ND	ND	ND	ND	0.416
Methyl Mercaptan	74-93-1	ND	ND	ND	ND	0.026
Ethyl Mercaptan	75-08-1	ND	ND	ND	ND	0.009
Dimethyl Sulfide	75-18-3	ND	ND	ND	ND	0.008
Carbon Disulfide	75-15-0	ND	0	ND	ND	0.315
n-Butane	106-97-8	ND	ND	ND	ND	0.014
n-Pentane	109-66-0	ND	ND	ND	ND	0.324
Ethane	74-84-0	ND	ND	ND	ND	0.355
Propane	74-98-6	ND	ND	ND	ND	457.671
Dichlorodifluoromethane (CFC 12)	75-71-8	1.6	1.4	1.6	2	0.283
Chloromethane	74-87-3	0.19	0.14	0.14	0.19	3.853
Vinyl Chloride	75-01-4	ND	ND	ND	ND	556.280
Chloroethane	75-00-3	ND	ND	ND	ND	3.529
Ethanol	64-17-5	49	3.7	6.5	1.7	0.388
Acetone	67-64-1	14	8.2	6.7	4.5	0.019
Trichlorofluoromethane	75-69-4	1.3	1.2	1.3	1.1	0.370
2-Propanol (Isopropyl Alcohol)	67-63-0	2.8	0.42	ND	0.42	3.298
Acrylonitrile	107-13-1	ND	ND	ND	ND	0.019
1,1-Dichloroethene	75-35-4	ND	ND	ND	ND	0.028
Dichloromethane (Methylene Chloride)	75-09-2	1	0.37	0.35	0.31	0.385
trans-1,2-Dichloroethene	156-60-5	ND	ND	ND	ND	0.041
1,1-Dichloroethane	75-34-3	ND	ND	ND	ND	0.493
2-Butanone (MEK)	78-93-3	1.5	0.98	0.95	ND	0.385
Hexane	110-54-3	0.29	ND	ND	ND	0.570
Chloroform	67-66-3	0.11	ND	ND	ND	0.055
1,2-Dichloroethane	107-06-2	0.12	ND	ND	ND	0.042
1,1,1-Trichloroethane	71-55-6	ND	ND	ND	ND	2.051
Benzene	71-43-2	0.18	0.24	ND	0.17	0.483
Carbon Tetrachloride	56-23-5	0.42	0.42	0.46	0.44	0.508
1,2-Dichloropropane	78-87-5	ND	ND	ND	ND	0.082
Bromodichloromethane	75-27-4	ND	ND	ND	ND	0.026
Trichloroethene	79-01-6	ND	ND	ND	ND	1.034
4-Methyl-2-pentanone	108-10-1	1	ND	ND	ND	0.289

Toluene	108-88-3	4.2	1.2	0.45	0.58	0.198
1,2-Dibromoethane	106-93-4	ND	ND	ND	ND	1.962
Tetrachloroethene	127-18-4	0.15	ND	ND	ND	0.298
Chlorobenzene	108-90-7	ND	ND	ND	ND	1.318
Ethylbenzene	100-41-4	0.43	0.12	ND	ND	0.434
m,p-Xylenes	179601-23-1	1.2	0.44	0.21	0.3	0.569
o-Xylene	95-47-6	0.43	0.17	ND	ND	1.277
1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	ND	ND	0.325
1,3-Dichlorobenzene	541-73-1	ND	ND	ND	ND	3.310
1,4-Dichlorobenzene	106-46-7	ND	ND	ND	ND	0.416
1,2-Dichlorobenzene	95-50-1	ND	ND	ND	ND	0.356
Chlorodifluoromethane (CFC 22)	75-45-6	ND	ND	ND	ND	0.037
Dichlorofluoromethane (CFC 21)	75-43-4	ND	ND	ND	ND	0.383

Table E-7. Sampling Detections vs. Modeling Results for Location S6

Toxic Air Pollutant	CAS #	22-Jun	23-Jun	7-Jul	8-Jul	ADM
Carbon Monoxide	630-08-0	ND	ND	ND	ND	0.056
Hydrogen Sulfide	778-06-4	ND	ND	ND	ND	0.010
Carbonyl Sulfide	463-58-1	ND	ND	ND	ND	0.542
Methyl Mercaptan	74-93-1	ND	ND	ND	ND	0.034
Ethyl Mercaptan	75-08-1	ND	ND	ND	ND	0.010
Dimethyl Sulfide	75-18-3	ND	ND	ND	ND	0.010
Carbon Disulfide	75-15-0	ND	ND	ND	ND	0.410
n-Butane	106-97-8	ND	ND	ND	ND	0.015
n-Pentane	109-66-0	ND	ND	ND	ND	0.422
Ethane	74-84-0	ND	ND	ND	ND	0.462
Propane	74-98-6	ND	ND	ND	ND	596.560
Dichlorodifluoromethane (CFC 12)	75-71-8	1.8	1.8	1.7	2.1	0.291
Chloromethane	74-87-3	0.2	0.18	0.16	0.22	5.022
Vinyl Chloride	75-01-4	ND	ND	ND	ND	725.102
Chloroethane	75-00-3	ND	ND	ND	ND	4.600
Ethanol	64-17-5	9	22	3.9	1.7	0.503
Acetone	67-64-1	12	11	5.8	3.9	0.025
Trichlorofluoromethane	75-69-4	1.2	1.3	1.3	1.1	0.482
2-Propanol (Isopropyl Alcohol)	67-63-0	0.76	1.7	ND	ND	3.348
Acrylonitrile	107-13-1	ND	ND	ND	ND	0.025
1,1-Dichloroethene	75-35-4	ND	ND	ND	ND	0.029
Dichloromethane (Methylene Chloride)	75-09-2	0.37	0.42	0.3	0.29	0.502
trans-1,2-Dichloroethene	156-60-5	ND	ND	ND	ND	0.042
1,1-Dichloroethane	75-34-3	ND	ND	ND	ND	0.643
2-Butanone (MEK)	78-93-3	0.65	1.1	0.7	0.24	0.502
Hexane	110-54-3	0.16	0.34	ND	ND	0.743
Chloroform	67-66-3	ND	ND	0.099	ND	0.056
1,2-Dichloroethane	107-06-2	ND	ND	ND	ND	0.043
1,1,1-Trichloroethane	71-55-6	ND	ND	ND	ND	2.672
Benzene	71-43-2	0.16	0.32	0.1	ND	0.496
Carbon Tetrachloride	56-23-5	0.42	0.45	0.44	0.44	0.522
1,2-Dichloropropane	78-87-5	ND	ND	ND	ND	0.084
Bromodichloromethane	75-27-4	ND	ND	ND	ND	0.027
Trichloroethene	79-01-6	ND	ND	ND	ND	1.062
4-Methyl-2-pentanone	108-10-1	ND	ND	ND	ND	0.297

Toluene	108-88-3	0.82	1.3	0.41	0.54	0.187
1,2-Dibromoethane	106-93-4	ND	ND	ND	ND	2.016
Tetrachloroethene	127-18-4	ND	ND	0.17	ND	0.306
Chlorobenzene	108-90-7	ND	ND	ND	ND	1.354
Ethylbenzene	100-41-4	0.11	0.17	ND	0.12	0.446
m,p-Xylenes	179601-23-1	0.24	0.46	0.2	0.28	0.585
o-Xylene	95-47-6	ND	0.19	ND	0.14	1.312
1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	ND	ND	0.422
1,3-Dichlorobenzene	541-73-1	ND	ND	ND	ND	4.292
1,4-Dichlorobenzene	106-46-7	ND	ND	ND	ND	0.542
1,2-Dichlorobenzene	95-50-1	ND	ND	ND	ND	0.463
Chlorodifluoromethane (CFC 22)	75-45-6	ND	ND	ND	0.38	0.048
Dichlorofluoromethane (CFC 21)	75-43-4	ND	ND	ND	ND	0.498

Table E-8. Sampling Detections vs. Modeling Results for Location S7

Toxic Air Pollutant	CAS #	22-Jun	23-Jun	7-Jul	8-Jul	ADM
Carbon Monoxide	630-08-0	ND	ND	ND	ND	0.104
Hydrogen Sulfide	778-06-4	ND	ND	0	ND	0.019
Carbonyl Sulfide	463-58-1	ND	ND	ND	ND	1.001
Methyl Mercaptan	74-93-1	ND	ND	ND	ND	0.063
Ethyl Mercaptan	75-08-1	ND	ND	ND	ND	0.019
Dimethyl Sulfide	75-18-3	ND	ND	ND	ND	0.019
Carbon Disulfide	75-15-0	ND	ND	ND	ND	0.756
n-Butane	106-97-8	ND	ND	ND	ND	0.019
n-Pentane	109-66-0	ND	ND	ND	ND	0.779
Ethane	74-84-0	ND	ND	ND	ND	0.853
Propane	74-98-6	ND	ND	ND	ND	1101.029
Dichlorodifluoromethane (CFC 12)	75-71-8	1.7	1.4	1.6	2	0.270
Chloromethane	74-87-3	0.18	ND	0.15	0.18	9.268
Vinyl Chloride	75-01-4	ND	ND	ND	ND	1338.281
Chloroethane	75-00-3	ND	ND	ND	ND	8.489
Ethanol	64-17-5	14	4.7	6.4	1.7	0.927
Acetone	67-64-1	12	5.9	7	3.7	0.046
Trichlorofluoromethane	75-69-4	1.3	1.1	1.3	1.1	0.890
2-Propanol (Isopropyl Alcohol)	67-63-0	1.1	ND	ND	ND	2.948
Acrylonitrile	107-13-1	ND	ND	ND	ND	0.046
1,1-Dichloroethene	75-35-4	ND	ND	ND	ND	0.027
Dichloromethane (Methylene Chloride)	75-09-2	0.37	0.39	0.32	0.31	0.927
trans-1,2-Dichloroethene	156-60-5	ND	ND	ND	ND	0.039
1,1-Dichloroethane	75-34-3	ND	ND	ND	ND	1.186
2-Butanone (MEK)	78-93-3	0.57	0.8	1	0.38	0.927
Hexane	110-54-3	0.19	ND	ND	ND	1.372
Chloroform	67-66-3	0.2	ND	ND	ND	0.052
1,2-Dichloroethane	107-06-2	ND	ND	ND	ND	0.040
1,1,1-Trichloroethane	71-55-6	ND	ND	ND	ND	4.930
Benzene	71-43-2	0.4	0.72	ND	0.22	0.461
Carbon Tetrachloride	56-23-5	0.41	0.37	0.44	0.42	0.485
1,2-Dichloropropane	78-87-5	ND	ND	ND	ND	0.078
Bromodichloromethane	75-27-4	ND	ND	ND	ND	0.025
Trichloroethene	79-01-6	0.19	ND	ND	ND	1.390
4-Methyl-2-pentanone	108-10-1	ND	ND	ND	ND	0.276

Toluene	108-88-3	0.78	0.82	0.43	0.58	0.164
1,2-Dibromoethane	106-93-4	ND	ND	ND	ND	1.876
Tetrachloroethene	127-18-4	0.13	ND	ND	ND	0.284
Chlorobenzene	108-90-7	ND	ND	ND	ND	1.257
Ethylbenzene	100-41-4	0.11	ND	ND	ND	0.414
m,p-Xylenes	179601-23-1	0.24	0.37	ND	0.29	0.890
o-Xylene	95-47-6	0.11	0.15	ND	ND	1.218
1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	ND	ND	0.779
1,3-Dichlorobenzene	541-73-1	ND	ND	ND	ND	7.896
1,4-Dichlorobenzene	106-46-7	ND	ND	ND	ND	1.001
1,2-Dichlorobenzene	95-50-1	ND	ND	ND	ND	0.853
Chlorodifluoromethane (CFC 22)	75-45-6	ND	ND	ND	ND	0.089
Dichlorofluoromethane (CFC 21)	75-43-4	ND	ND	ND	ND	0.919

Table E-9. Sampling Detections vs. Modeling Results for Location S8

Toxic Air Pollutant	CAS #	22-Jun	23-Jun	7-Jul	8-Jul	ADM
Carbon Monoxide	630-08-0	ND	ND	ND	ND	0.284
Hydrogen Sulfide	778-06-4	ND	0.0	ND	ND	0.051
Carbonyl Sulfide	463-58-1	ND	ND	ND	ND	2.742
Methyl Mercaptan	74-93-1	ND	ND	ND	ND	0.172
Ethyl Mercaptan	75-08-1	ND	ND	ND	ND	0.051
Dimethyl Sulfide	75-18-3	ND	ND	ND	ND	0.051
Carbon Disulfide	75-15-0	ND	ND	ND	ND	2.072
n-Butane	106-97-8	ND	ND	ND	ND	0.051
n-Pentane	109-66-0	ND	ND	ND	ND	2.133
Ethane	74-84-0	ND	ND	ND	ND	2.336
Propane	74-98-6	ND	ND	ND	ND	3016.045
Dichlorodifluoromethane (CFC 12)	75-71-8	2.5	1.7	1.6	2	0.378
Chloromethane	74-87-3	0.16	0.2	0.15	0.18	25.388
Vinyl Chloride	75-01-4	ND	ND	ND	ND	3665.948
Chloroethane	75-00-3	ND	ND	ND	ND	23.255
Ethanol	64-17-5	10	29	54	6.4	2.539
Acetone	67-64-1	7	6.7	22	7.6	0.127
Trichlorofluoromethane	75-69-4	1.3	1.2	1.3	1.1	2.437
2-Propanol (Isopropyl Alcohol)	67-63-0	0.81	0.96	4	0.57	3.008
Acrylonitrile	107-13-1	ND	ND	ND	ND	0.127
1,1-Dichloroethene	75-35-4	ND	ND	ND	ND	0.038
Dichloromethane (Methylene Chloride)	75-09-2	0.26	0.33	0.31	0.32	2.539
trans-1,2-Dichloroethene	156-60-5	ND	ND	ND	ND	0.054
1,1-Dichloroethane	75-34-3	ND	ND	ND	ND	3.250
2-Butanone (MEK)	78-93-3	2.8	1	6.4	0.86	2.539
Hexane	110-54-3	ND	0.22	ND	ND	3.757
Chloroform	67-66-3	0.39	ND	ND	ND	0.073
1,2-Dichloroethane	107-06-2	ND	ND	ND	ND	0.056
1,1,1-Trichloroethane	71-55-6	ND	ND	ND	ND	13.506
Benzene	71-43-2	0.11	ND	0.13	ND	0.644
Carbon Tetrachloride	56-23-5	0.46	0.42	0.45	0.43	0.678
1,2-Dichloropropane	78-87-5	ND	ND	ND	ND	0.109
Bromodichloromethane	75-27-4	0.13	ND	ND	ND	0.035
Trichloroethene	79-01-6	ND	ND	ND	0.17	3.808
4-Methyl-2-pentanone	108-10-1	ND	ND	ND	ND	0.386

Toluene	108-88-3	0.35	0.33	0.49	0.41	0.167
1,2-Dibromoethane	106-93-4	ND	ND	ND	ND	5.138
Tetrachloroethene	127-18-4	ND	ND	ND	ND	0.398
Chlorobenzene	108-90-7	ND	ND	ND	ND	1.759
Ethylbenzene	100-41-4	ND	ND	ND	ND	0.580
m,p-Xylenes	179601-23-1	ND	ND	ND	0.25	2.437
o-Xylene	95-47-6	ND	ND	ND	ND	1.704
1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	ND	ND	2.133
1,3-Dichlorobenzene	541-73-1	ND	ND	ND	ND	21.630
1,4-Dichlorobenzene	106-46-7	ND	ND	ND	ND	2.742
1,2-Dichlorobenzene	95-50-1	ND	ND	ND	ND	2.336
Chlorodifluoromethane (CFC 22)	75-45-6	0.43	ND	ND	ND	0.244
Dichlorofluoromethane (CFC 21)	75-43-4	ND	ND	ND	ND	2.518

Table E-10. Sampling Detections vs. Modeling Results for Location S9

Toxic Air Pollutant	CAS #	22-Jun	23-Jun	7-Jul	8-Jul	ADM
Carbon Monoxide	630-08-0	ND	ND	ND	ND	0.068
Hydrogen Sulfide	778-06-4	ND	ND	ND	ND	0.012
Carbonyl Sulfide	463-58-1	ND	ND	ND	ND	0.651
Methyl Mercaptan	74-93-1	ND	ND	ND	ND	0.041
Ethyl Mercaptan	75-08-1	ND	ND	ND	ND	0.012
Dimethyl Sulfide	75-18-3	ND	ND	ND	ND	0.012
Carbon Disulfide	75-15-0	ND	ND	ND	ND	0.492
n-Butane	106-97-8	ND	ND	ND	ND	0.017
n-Pentane	109-66-0	ND	ND	ND	ND	0.506
Ethane	74-84-0	ND	ND	ND	ND	0.555
Propane	74-98-6	ND	ND	ND	ND	716.183
Dichlorodifluoromethane (CFC 12)	75-71-8	2.8	1.6	1.5	2.1	0.329
Chloromethane	74-87-3	0.15	0.16	0.14	0.2	6.028
Vinyl Chloride	75-01-4	ND	ND	ND	ND	870.508
Chloroethane	75-00-3	ND	ND	ND	ND	5.522
Ethanol	64-17-5	100	4.4	2.9	8.2	0.603
Acetone	67-64-1	10	3.7	3.7	6.3	0.030
Trichlorofluoromethane	75-69-4	1.5	1.2	1.3	1.1	0.579
2-Propanol (Isopropyl Alcohol)	67-63-0	7	ND	ND	0.4	7.164
Acrylonitrile	107-13-1	ND	ND	ND	ND	0.030
1,1-Dichloroethene	75-35-4	ND	ND	ND	ND	0.033
Dichloromethane (Methylene Chloride)	75-09-2	0.36	0.37	0.31	0.3	0.603
trans-1,2-Dichloroethene	156-60-5	ND	ND	ND	ND	0.047
1,1-Dichloroethane	75-34-3	ND	ND	ND	ND	0.772
2-Butanone (MEK)	78-93-3	0.67	ND	ND	0.77	0.603
Hexane	110-54-3	0.2	ND	ND	ND	0.892
Chloroform	67-66-3	0.11	ND	ND	ND	0.064
1,2-Dichloroethane	107-06-2	ND	ND	ND	ND	0.049
1,1,1-Trichloroethane	71-55-6	ND	ND	ND	ND	3.207
Benzene	71-43-2	0.16	0.47	ND	0.11	0.561
Carbon Tetrachloride	56-23-5	0.52	0.43	0.45	0.44	0.591
1,2-Dichloropropane	78-87-5	ND	ND	ND	ND	0.095
Bromodichloromethane	75-27-4	ND	ND	ND	ND	0.031
Trichloroethene	79-01-6	ND	ND	ND	ND	1.201
4-Methyl-2-pentanone	108-10-1	ND	ND	ND	ND	0.336

Toluene	108-88-3	0.49	0.45	0.28	0.35	0.408
1,2-Dibromoethane	106-93-4	ND	ND	ND	ND	2.280
Tetrachloroethene	127-18-4	ND	ND	ND	ND	0.346
Chlorobenzene	108-90-7	ND	ND	ND	ND	1.532
Ethylbenzene	100-41-4	ND	ND	ND	ND	0.505
m,p-Xylenes	179601-23-1	ND	ND	ND	ND	0.661
o-Xylene	95-47-6	ND	ND	ND	ND	1.484
1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	ND	ND	0.506
1,3-Dichlorobenzene	541-73-1	ND	ND	ND	ND	5.136
1,4-Dichlorobenzene	106-46-7	ND	ND	ND	ND	0.651
1,2-Dichlorobenzene	95-50-1	ND	ND	ND	ND	0.555
Chlorodifluoromethane (CFC 22)	75-45-6	0.44	ND	ND	0.36	0.058
Dichlorofluoromethane (CFC 21)	75-43-4	ND	ND	ND	ND	0.598

Table E-11. Sampling Detections vs. Modeling Results for Location S10

Toxic Air Pollutant	CAS #	22-Jun	23-Jun	7-Jul	8-Jul	ADM
Carbon Monoxide	630-08-0	ND	ND	ND	ND	0.062
Hydrogen Sulfide	778-06-4	ND	ND	ND	ND	0.020
Carbonyl Sulfide	463-58-1	ND	ND	ND	ND	0.550
Methyl Mercaptan	74-93-1	ND	ND	ND	ND	0.038
Ethyl Mercaptan	75-08-1	ND	ND	ND	ND	0.022
Dimethyl Sulfide	75-18-3	ND	ND	ND	ND	0.019
Carbon Disulfide	75-15-0	ND	ND	ND	ND	0.468
n-Butane	106-97-8	ND	ND	ND	ND	0.029
n-Pentane	109-66-0	ND	ND	ND	ND	0.420
Ethane	74-84-0	ND	ND	ND	ND	0.489
Propane	74-98-6	ND	ND	ND	ND	585.855
Dichlorodifluoromethane (CFC 12)	75-71-8	2.9	1.7	1.7	1.9	0.574
Chloromethane	74-87-3	0.15	0.17	0.15	0.14	5.031
Vinyl Chloride	75-01-4	ND	ND	ND	ND	710.922
Chloroethane	75-00-3	ND	ND	ND	ND	4.521
Ethanol	64-17-5	15	3.5	8.4	15	0.809
Acetone	67-64-1	6.7	6.1	4.8	5.3	0.033
Trichlorofluoromethane	75-69-4	1.5	1.3	1.2	1	0.505
2-Propanol (Isopropyl Alcohol)	67-63-0	1.5	ND	0.56	0.52	11.213
Acrylonitrile	107-13-1	ND	ND	ND	ND	0.032
1,1-Dichloroethene	75-35-4	ND	ND	ND	ND	0.057
Dichloromethane (Methylene Chloride)	75-09-2	0.26	0.39	0.32	0.49	0.497
trans-1,2-Dichloroethene	156-60-5	ND	ND	ND	ND	0.083
1,1-Dichloroethane	75-34-3	ND	ND	ND	ND	0.642
2-Butanone (MEK)	78-93-3	0.46	ND	0.29	0.95	0.497
Hexane	110-54-3	ND	ND	0.28	ND	0.752
Chloroform	67-66-3	ND	ND	0.1	ND	0.111
1,2-Dichloroethane	107-06-2	ND	ND	ND	ND	0.085
1,1,1-Trichloroethane	71-55-6	ND	ND	ND	ND	2.740
Benzene	71-43-2	0.12	0.22	0.32	0.16	0.979
Carbon Tetrachloride	56-23-5	0.54	0.43	0.44	0.4	1.030
1,2-Dichloropropane	78-87-5	ND	ND	ND	ND	0.166
Bromodichloromethane	75-27-4	ND	ND	ND	ND	0.054
Trichloroethene	79-01-6	ND	ND	ND	ND	2.141
4-Methyl-2-pentanone	108-10-1	ND	ND	ND	ND	0.586

Toluene	108-88-3	0.33	0.66	1.6	0.51	0.619
1,2-Dibromoethane	106-93-4	ND	ND	ND	ND	3.977
Tetrachloroethene	127-18-4	ND	ND	0.2	ND	0.604
Chlorobenzene	108-90-7	ND	ND	ND	ND	2.672
Ethylbenzene	100-41-4	ND	0.12	0.24	ND	0.881
m,p-Xylenes	179601-23-1	ND	0.41	0.81	0.23	1.237
o-Xylene	95-47-6	ND	0.14	0.31	ND	2.588
1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	ND	ND	0.514
1,3-Dichlorobenzene	541-73-1	ND	ND	ND	ND	7.734
1,4-Dichlorobenzene	106-46-7	ND	ND	ND	ND	0.550
1,2-Dichlorobenzene	95-50-1	ND	ND	ND	ND	0.654
Chlorodifluoromethane (CFC 22)	75-45-6	0.55	ND	ND	ND	0.092
Dichlorofluoromethane (CFC 21)	75-43-4	ND	ND	ND	ND	0.547

Table E-12. Sampling Detections vs. Modeling Results for Location S11

Toxic Air Pollutant	CAS #	22-Jun		23-Jun		7-Jul		8-Jul		ADM
Carbon Monoxide	630-08-0	ND	ND	ND	ND	ND	ND	ND	ND	1.420
Hydrogen Sulfide	778-06-4	ND	ND	ND	ND	ND	ND	ND	ND	0.254
Carbonyl Sulfide	463-58-1	ND	ND	ND	ND	ND	ND	ND	ND	13.691
Methyl Mercaptan	74-93-1	ND	ND	ND	ND	ND	ND	ND	ND	0.857
Ethyl Mercaptan	75-08-1	ND	ND	ND	ND	ND	ND	ND	ND	0.254
Dimethyl Sulfide	75-18-3	ND	ND	ND	ND	ND	ND	ND	ND	0.254
Carbon Disulfide	75-15-0	ND	ND	ND	ND	ND	ND	ND	ND	10.345
n-Butane	106-97-8	ND	ND	ND	ND	ND	ND	ND	ND	0.254
n-Pentane	109-66-0	ND	ND	ND	ND	ND	ND	ND	ND	10.649
Ethane	74-84-0	ND	ND	ND	ND	ND	ND	ND	ND	11.663
Propane	74-98-6	ND	ND	ND	ND	ND	ND	ND	ND	15060.341
Dichlorodifluoromethane (CFC 12)	75-71-8	2.3	2.3	1.6	1.6	1.5	1.6	2	2	0.399
Chloromethane	74-87-3	ND	ND	0.17	0.19	0.14	0.17	0.18	0.18	126.770
Vinyl Chloride	75-01-4	ND	ND	ND	ND	ND	ND	ND	ND	18305.572
Chloroethane	75-00-3	ND	ND	ND	ND	ND	ND	ND	ND	116.121
Ethanol	64-17-5	19	19	7.9	3.3	19	16	1.9	2.5	12.677
Acetone	67-64-1	41	31	20	27	13	17	3.6	7.4	0.634
Trichlorofluoromethane	75-69-4	1.2	1.3	1.2	1.2	1.3	1.2	1	1.1	12.170
2-Propanol (Isopropyl Alcohol)	67-63-0	7.3	8	4.2	4.8	0.94	3.7	4.6	5.3	3.277
Acrylonitrile	107-13-1	ND	ND	ND	ND	ND	ND	ND	ND	0.634
1,1-Dichloroethene	75-35-4	ND	ND	ND	ND	ND	ND	ND	ND	0.040
Dichloromethane (Methylene Chloride)	75-09-2	0.35	1.2	0.35	0.32	0.32	0.31	0.38	0.3	12.677
trans-1,2-Dichloroethene	156-60-5	ND	ND	ND	ND	ND	ND	ND	ND	0.057
1,1-Dichloroethane	75-34-3	ND	ND	ND	ND	ND	ND	ND	ND	16.227
2-Butanone (MEK)	78-93-3	33	27	16	20	3.8	12	ND	0.64	12.677
Hexane	110-54-3	ND	ND	ND	ND	ND	ND	ND	ND	18.762
Chloroform	67-66-3	0.55	0.32	ND	ND	ND	ND	ND	ND	0.254
1,2-Dichloroethane	107-06-2	ND	ND	ND	ND	ND	ND	ND	ND	0.059
1,1,1-Trichloroethane	71-55-6	ND	ND	ND	ND	ND	ND	ND	ND	67.441
Benzene	71-43-2	0.17	0.17	ND	ND	ND	ND	ND	0.81	0.680
Carbon Tetrachloride	56-23-5	0.41	0.43	0.43	0.41	0.45	0.42	0.44	0.43	0.716
1,2-Dichloropropane	78-87-5	ND	ND	ND	ND	ND	ND	ND	ND	0.115
Bromodichloromethane	75-27-4	0.19	ND	ND	ND	ND	ND	ND	ND	0.037
Trichloroethene	79-01-6	ND	ND	0.18	ND	ND	ND	ND	ND	19.016
4-Methyl-2-pentanone	108-10-1	0.27	0.29	ND	ND	ND	0.18	ND	ND	0.407

Toluene	108-88-3	1.1	2.3	0.78	0.76	0.37	0.77	0.25	0.28	0.181
1,2-Dibromoethane	106-93-4	ND	ND	ND	ND	ND	ND	ND	ND	25.658
Tetrachloroethene	127-18-4	0.12	ND	0.18	ND	ND	ND	ND	ND	0.420
Chlorobenzene	108-90-7	ND	ND	ND	ND	ND	ND	ND	ND	1.856
Ethylbenzene	100-41-4	ND	0.19	ND	ND	ND	ND	ND	ND	0.612
m,p-Xylenes	179601-23-1	ND	0.43	0.2	ND	ND	ND	ND	ND	12.170
o-Xylene	95-47-6	ND	0.2	ND	ND	ND	ND	ND	ND	1.798
1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	ND	ND	ND	ND	ND	ND	10.649
1,3-Dichlorobenzene	541-73-1	ND	ND	ND	ND	ND	ND	ND	ND	108.010
1,4-Dichlorobenzene	106-46-7	ND	ND	ND	ND	ND	ND	ND	ND	13.691
1,2-Dichlorobenzene	95-50-1	ND	ND	ND	ND	ND	ND	ND	ND	11.663
Chlorodifluoromethane (CFC 22)	75-45-6	ND	ND	ND	ND	ND	ND	ND	ND	1.217
Dichlorofluoromethane (CFC 21)	75-43-4	ND	ND	ND	ND	ND	ND	ND	ND	12.576

Table E-13. Sampling Detections vs. Modeling Results for Location S12

Toxic Air Pollutant	CAS #	22-Jun	23-Jun	7-Jul	8-Jul	ADM
Carbon Monoxide	630-08-0	ND	ND	ND	ND	0.198
Hydrogen Sulfide	778-06-4	ND	ND	ND	ND	0.044
Carbonyl Sulfide	463-58-1	ND	ND	ND	ND	1.855
Methyl Mercaptan	74-93-1	ND	ND	ND	ND	0.121
Ethyl Mercaptan	75-08-1	ND	ND	ND	ND	0.045
Dimethyl Sulfide	75-18-3	ND	ND	ND	ND	0.043
Carbon Disulfide	75-15-0	ND	ND	ND	ND	1.464
n-Butane	106-97-8	ND	ND	ND	ND	0.052
n-Pentane	109-66-0	ND	ND	ND	ND	1.433
Ethane	74-84-0	ND	ND	ND	ND	1.604
Propane	74-98-6	ND	ND	ND	ND	2016.848
Dichlorodifluoromethane (CFC 12)	75-71-8	2.4	1.7	1.6	1.9	0.848
Chloromethane	74-87-3	0.13	0.21	0.15	0.16	17.097
Vinyl Chloride	75-01-4	ND	ND	ND	ND	2450.033
Chloroethane	75-00-3	ND	ND	ND	ND	15.555
Ethanol	64-17-5	47	6.1	19	4.2	2.022
Acetone	67-64-1	15	5.4	9.8	ND	0.095
Trichlorofluoromethane	75-69-4	1.6	1.4	1.3	1.3	1.667
2-Propanol (Isopropyl Alcohol)	67-63-0	1.9	0.56	0.8	0.62	4.369
Acrylonitrile	107-13-1	ND	ND	ND	ND	0.094
1,1-Dichloroethene	75-35-4	ND	ND	ND	ND	0.085
Dichloromethane (Methylene Chloride)	75-09-2	1	0.35	0.33	0.5	1.702
trans-1,2-Dichloroethene	156-60-5	ND	ND	ND	ND	0.122
1,1-Dichloroethane	75-34-3	ND	ND	ND	ND	2.186
2-Butanone (MEK)	78-93-3	4.2	1.2	2.7	0.54	1.703
Hexane	110-54-3	0.58	ND	ND	0.44	2.540
Chloroform	67-66-3	0.39	ND	0.1	ND	0.164
1,2-Dichloroethane	107-06-2	0.14	ND	ND	0.094	0.126
1,1,1-Trichloroethane	71-55-6	ND	ND	ND	ND	9.172
Benzene	71-43-2	0.19	0.18	0.11	ND	1.446
Carbon Tetrachloride	56-23-5	0.44	0.41	0.45	0.41	1.522
1,2-Dichloropropane	78-87-5	ND	ND	ND	ND	0.245
Bromodichloromethane	75-27-4	0.14	ND	ND	ND	0.079
Trichloroethene	79-01-6	ND	ND	ND	ND	3.839
4-Methyl-2-pentanone	108-10-1	ND	ND	ND	ND	0.866

Toluene	108-88-3	1.8	0.33	0.48	1.3	0.243
1,2-Dibromoethane	106-93-4	ND	ND	ND	ND	5.892
Tetrachloroethene	127-18-4	0.69	ND	ND	0.34	0.893
Chlorobenzene	108-90-7	ND	ND	ND	ND	3.947
Ethylbenzene	100-41-4	0.25	ND	ND	0.19	1.301
m,p-Xylenes	179601-23-1	0.75	ND	ND	0.56	2.341
o-Xylene	95-47-6	0.27	ND	ND	0.18	3.823
1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	ND	ND	1.546
1,3-Dichlorobenzene	541-73-1	ND	ND	ND	ND	17.957
1,4-Dichlorobenzene	106-46-7	ND	ND	ND	ND	1.855
1,2-Dichlorobenzene	95-50-1	ND	ND	ND	ND	1.781
Chlorodifluoromethane (CFC 22)	75-45-6	ND	ND	ND	ND	0.207
Dichlorofluoromethane (CFC 21)	75-43-4	ND	ND	ND	ND	1.753

APPENDIX F

MODELING RESULTS

Table F-1. AERMOD modeled impacts 1-hour averaging period

			AERMOD Modeled Concentration (µg/m^3)													
			Site Number													
Toxic Air Pollutant	CAS #	AERMOD ID	Ref1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
1,1,1,2-Tetrachloroethane	630-20-6	001	0.008108	0.00155	0.003709	0.002674	0.001723	0.003619	0.002187	0.001446	0.007043	0.005412	0.003362	0.006198	0.001781	0.001832
1,1,1-Trichloroethane	71-55-6	002	0.001724	0.00345	0.001037	0.00224	0.000707	0.002468	0.002664	0.003202	0.005857	0.003212	0.000802	0.001213	0.000724	0.000548
1,1,2,2-Tetrachloroethane	79-34-5	003	0.002006	0.000618	0.00093	0.000679	0.000426	0.000896	0.000563	0.000574	0.001743	0.001339	0.000843	0.001534	0.000441	0.000467
1,1,2-Trichloroethane (vinyl trichloride)	79-00-5	004	0.001586	0.000618	0.000741	0.000546	0.000337	0.000709	0.000477	0.000573	0.001378	0.001059	0.000672	0.001213	0.000348	0.000377
1,1-Dichloroethane	75-34-3	005	0.016621	0.033254	0.009981	0.021589	0.006738	0.023787	0.025675	0.030864	0.056432	0.030884	0.003398	0.003524	0.006941	0.003268
1,1-Dichloroethene	75-35-4	006	0.001161	0.002083	0.000626	0.001352	0.000428	0.00149	0.001608	0.001933	0.003536	0.00194	0.000567	0.000887	0.000437	0.000374
1,2,3-Trichloropropane	96-18-4	007	0.007002	0.000911	0.003167	0.002257	0.001488	0.003123	0.001822	0.001248	0.006083	0.004674	0.002871	0.005353	0.001538	0.001539
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	008	0.011236	0.015407	0.005806	0.010001	0.003184	0.011021	0.011897	0.0143	0.026162	0.014371	0.005268	0.008589	0.003245	0.003338
1,2-Dibromoethane	106-93-4	009	0.002249	0.000619	0.001038	0.000756	0.000478	0.001005	0.000624	0.000574	0.001954	0.001501	0.000941	0.00172	0.000494	0.00052
1,2-Dichlorobenzene	95-50-1	010	0.001752	0.000618	0.000816	0.000598	0.000372	0.000783	0.000499	0.000574	0.001522	0.001169	0.000739	0.001339	0.000385	0.000413
1,2-Dichloroethane	107-06-2	011	0.01584	0.025142	0.008357	0.01632	0.005178	0.017984	0.019413	0.023335	0.042686	0.023434	0.007584	0.012109	0.005287	0.004912
1,2-Dichloropropane	78-87-5	012	0.003504	0.00062	0.0016	0.001152	0.000744	0.001564	0.00094	0.000625	0.003044	0.002339	0.001451	0.002679	0.00077	0.000789
1,3-Dichlorobenzene	541-73-1	013	0.012928	0.025862	0.007761	0.01679	0.005228	0.0185	0.019967	0.024003	0.043884	0.024006	0.001899	0.001339	0.005392	0.00254
1,4-Dichlorobenzene	106-46-7	014	0.014159	0.028334	0.008509	0.018394	0.005774	0.020268	0.021877	0.026298	0.048091	0.026347	0.004832	0.00665	0.005929	0.003573
2-Butanone (MEK)	78-93-3	015	18.28329	36.57338	10.97364	23.74501	7.379885	26.16196	28.23682	33.9447	62.05733	33.93627	1.895256	0.761536	7.618813	3.589396
2-Hexanone	591-78-6	016	0.088646	0.177328	0.053208	0.115129	0.035796	0.126848	0.136908	0.164583	0.300892	0.164557	0.010052	0.00371	0.036947	0.017406
4-Methyl-2-pentanone	108-10-1	017	0.153901	0.307888	0.092401	0.19989	0.062287	0.22024	0.237712	0.28576	0.522461	0.285848	0.025506	0.021403	0.064214	0.030244
Acetone	67-64-1	018	22.2231	44.45415	13.33798	28.86158	8.968207	31.7993	34.3212	41.25903	75.42886	41.24691	2.191439	0.923278	9.259611	4.362516
Acetonitrile	75-05-8	019	0.140972	0.281998	0.084613	0.183085	0.056908	0.201721	0.217719	0.26173	0.478493	0.26167	0.014965	0.005879	0.058747	0.027677
Acrylonitrile	107-13-1	020	0.002526	0.002528	0.001258	0.001641	0.000537	0.001808	0.001952	0.002346	0.004293	0.002362	0.001141	0.001931	0.000561	0.000694
Allyl chloride (3-Chloropropene)	107-05-1	021	0.017237	0.034484	0.01035	0.022388	0.00698	0.024667	0.026624	0.032006	0.058518	0.032019	0.003071	0.002801	0.007194	0.003388
Benzene	71-43-2	022	0.06411	0.03087	0.030263	0.022499	0.013621	0.028784	0.023844	0.028654	0.055689	0.042794	0.027439	0.049009	0.014083	0.015605
Bromodichloromethane	75-27-4	023	0.001951	0.001542	0.000951	0.001001	0.000415	0.001103	0.001191	0.001431	0.002619	0.001444	0.000863	0.001491	0.000429	0.000511
Bromoform	75-25-2	024	0.003023	0.003083	0.001509	0.002001	0.000642	0.002205	0.00238	0.002861	0.005235	0.002881	0.001369	0.002311	0.000681	0.000834
Bromomethane (methyl bromide)	74-83-9	025	0.021547	0.043114	0.012945	0.02799	0.008772	0.03084	0.033288	0.040016	0.073174	0.040078	0.006541	0.008589	0.009015	0.005008
Carbon Disulfide	75-15-0	026	0.014775	0.029564	0.008877	0.019193	0.006016	0.021148	0.022826	0.027439	0.050177	0.027483	0.00453	0.005974	0.006182	0.003458
Carbon Tetrachloride	56-23-5	027	0.001824	0.001542	0.000894	0.001001	0.000388	0.001103	0.001191	0.001431	0.002619	0.001443	0.000811	0.001394	0.000401	0.000484
Chlorobenzene	108-90-7	028	0.01539	0.030787	0.009238	0.019988	0.006218	0.022023	0.023769	0.028574	0.05224	0.028573	0.001952	0.001014	0.006416	0.003022
Chloroethane	75-00-3	029	0.019699	0.039409	0.011827	0.025586	0.007969	0.02819	0.030426	0.036577	0.066873	0.036584	0.00306	0.002353	0.008218	0.003871
Chloroform	67-66-3	030	0.01539	0.030787	0.009238	0.019988	0.006219	0.022023	0.02377	0.028574	0.052241	0.028574	0.001991	0.001086	0.006417	0.003023
Chloromethane	74-87-3	031	0.022778	0.04557	0.013678	0.029585	0.009231	0.032597	0.035184	0.042295	0.077331	0.04232	0.004509	0.00455	0.00951	0.004478
Chloroprene	126-99-8	032	0.0042	0.000621	0.001912	0.001372	0.000892	0.001874	0.001116	0.000749	0.003649	0.002804	0.001733	0.003211	0.000923	0.000938
cis-1,2-Dichloroethene	156-59-2	033	0.027998	0.033285	0.014211	0.021605	0.006904	0.023809	0.025703	0.030894	0.056525	0.031072	0.012893	0.021403	0.007123	0.008009
Dichlorodifluoromethane (CFC 12)	75-71-8	034	0.013452	0.001749	0.006056	0.004295	0.002858	0.005998	0.003456	0.002396	0.011685	0.008979	0.005489	0.010283	0.002955	0.002922
Dichloromethane (Methylene Chloride)	75-09-2	035	0.081877	0.163816	0.049176	0.106352	0.033242	0.117181	0.126481	0.152043	0.278009	0.152191	0.019638	0.022814	0.034214	0.016276
Ethylbenzene	100-41-4	036	0.254228	0.046515	0.116196	0.083695	0.054016	0.113488	0.068374	0.045347	0.220836	0.1697	0.105322	0.194346	0.055845	0.057305
Mercury, elemental	7439-97-6	037	0.000084	0.000169	0.000051	0.00011	0.000045	0.000121	0.000131	0.000157	0.000287	0.000159	0.000053	0.000051	0.000036	0.000036
m,p-Xylenes	179601-23-1	038	0.482668	0.06295	0.219331	0.157053	0.102552	0.215372	0.127454	0.086046	0.419271	0.322186	0.198796	0.368977	0.106025	0.107267
o-Xylene	95-47-6	039	0.140013	0.02974	0.0642	0.046394	0.029748	0.062517	0.03804	0.027607	0.121623	0.09346	0.058194	0.107033	0.030756	0.031808
Styrene	100-42-5	040	0.015475	0.004577	0.00716	0.005222	0.003288	0.006914	0.004324	0.004248	0.013442	0.01033	0.006491	0.01183	0.003399	0.003593
Tetrachloroethene	127-18-4	041	0.023953	0.025891	0.012028	0.016806	0.005385	0.01852	0.019994	0.024031	0.043972	0.024185	0.010911	0.018311	0.005648	0.006696
Toluene	108-88-3	042	0.68899	0.263204	0.321793	0.236806	0.146389	0.308059	0.203325	0.244311	0.598493	0.459908	0.291735	0.5267	0.151347	0.163572
trans-1,2-Dichloroethene	156-60-5	043	0.016621	0.033254	0.009981	0.021589	0.006738	0.023787	0.025675	0.030864	0.056432	0.030884	0.003405	0.003536	0.006941	0.003268
Trichloroethene	79-01-6	044	0.043473	0.02838	0.020895	0.018418	0.009237	0.020299	0.021918	0.026342	0.048228	0.029019	0.018948	0.033233	0.009549	0.011031
Trichlorofluoromethane	75-69-4	045	0.008588	0.002967	0.003995	0.002929	0.001825	0.003839	0.00244	0.002754	0.00746	0.005733	0.003622	0.006565	0.001887	0.00202
Vinyl Acetate	108-05-4	046	0.004106	0.000621	0.00187	0.001342	0.000872	0.001833	0.001092	0.000732	0.003567	0.002741	0.001695	0.003139	0.000902	0.000918
Vinyl Chloride	75-01-4	047	0.015268	0.030557	0.00918	0.019837	0.006258	0.021858	0.023594	0.028362	0.051873	0.028446	0.007088	0.010706	0.006409	0.004845
1,2,3-Trimethylbenzene	526-73-8	048	0.019828	0.002579	0.008881	0.006265	0.004213	0.008838	0.005093	0.00353	0.017224	0.013235	0.008049	0.015158	0.004356	0.004252

			AERMOD Modeled Concentration (µg/m^3)													
			Site Number													
Toxic Air Pollutant	CAS #	AERMOD ID	Ref1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
1,2,4-Trimethylbenzene	95-63-6	049	0.050481	0.006565	0.022612	0.015951	0.010726	0.022502	0.012966	0.008987	0.04385	0.033696	0.020492	0.03859	0.011089	0.010826
1,3,5-Trimethylbenzene	108-67-8	050	0.021742	0.002827	0.009739	0.00687	0.00462	0.009691	0.005585	0.003871	0.018886	0.014513	0.008826	0.016621	0.004776	0.004663
1,3-Butadiene	106-99-0	051	0.00126	0.000164	0.000564	0.000398	0.000268	0.000562	0.000324	0.000224	0.001095	0.000841	0.000512	0.000963	0.000277	0.00027
1,3-Dichloropropene (trans-1,3-Dichloropropene)	542-75-6	052	0.001326	0.000172	0.000594	0.000419	0.000282	0.000591	0.000341	0.000236	0.001152	0.000885	0.000538	0.001014	0.000291	0.000284
1,4-Dioxane	123-91-1	053	0.0042	0.000546	0.001881	0.001327	0.000892	0.001872	0.001079	0.000748	0.003649	0.002804	0.001705	0.003211	0.000923	0.000901
2,2,4-Trimethylpentane	540-84-1	054	0.032055	0.004169	0.014358	0.010129	0.006811	0.014288	0.008233	0.005707	0.027844	0.021397	0.013012	0.024504	0.007041	0.006874
2-Methylthiophene	554-14-3	055	0.013173	0.001713	0.0059	0.004162	0.002799	0.005872	0.003383	0.002345	0.011443	0.008793	0.005347	0.01007	0.002894	0.002825
2-Propanol (Isopropyl Alcohol)	67-63-0	056	0.069636	0.009056	0.031192	0.022004	0.014796	0.03104	0.017886	0.012397	0.06049	0.046483	0.028268	0.053234	0.015297	0.014934
3-Methylthiophene	616-44-4	057	0.009143	0.001189	0.004095	0.002889	0.001943	0.004075	0.002348	0.001628	0.007942	0.006103	0.003711	0.006989	0.002008	0.001961
4-Ethyltoluene	622-96-8	058	0.061158	0.007953	0.027395	0.019325	0.012994	0.027261	0.015709	0.010888	0.053125	0.040824	0.024827	0.046753	0.013434	0.013116
Acetaldehyde	75-07-0	059	0.00015	0.000019	0.000067	0.000047	0.000032	0.000067	0.000038	0.000027	0.00013	0.0001	0.000061	0.000115	0.000033	0.000032
Benzyl chloride (alpha-Chlorotoluene)	100-44-7	060	0.001509	0.000196	0.000676	0.000477	0.000321	0.000673	0.000388	0.000269	0.001311	0.001007	0.000612	0.001153	0.000331	0.000324
Carbonyl Sulfide	463-58-1	061	0.006967	0.000906	0.003121	0.002201	0.00148	0.003105	0.001789	0.00124	0.006052	0.00465	0.002828	0.005326	0.00153	0.001494
Chlorodifluoromethane (CFC 22)	75-45-6	062	0.010025	0.001304	0.004491	0.003168	0.00213	0.004469	0.002575	0.001785	0.008709	0.006692	0.00407	0.007664	0.002202	0.00215
Cumene	98-82-8	063	0.022847	0.002971	0.010234	0.00722	0.004854	0.010184	0.005868	0.004068	0.019846	0.015251	0.009275	0.017466	0.005019	0.0049
Cyclohexane	110-82-7	064	0.085852	0.011165	0.038455	0.027128	0.018241	0.038268	0.022051	0.015284	0.074575	0.057307	0.03485	0.065629	0.018859	0.018411
Dichlorofluoromethane (CFC 21)	75-43-4	065	0.010313	0.001341	0.004619	0.003259	0.002191	0.004597	0.002649	0.001836	0.008958	0.006884	0.004186	0.007884	0.002265	0.002212
Dimethyl Disulfide	624-92-0	066	0.001631	0.000212	0.00073	0.000515	0.000346	0.000727	0.000419	0.00029	0.001416	0.001088	0.000662	0.001246	0.000358	0.00035
Dimethyl Mercury	627-44-1	067	3.01E-07	3.91E-08	1.35E-07	9.5E-08	6.39E-08	1.34E-07	7.73E-08	5.35E-08	2.61E-07	2.01E-07	1.22E-07	2.3E-07	6.61E-08	6.45E-08
Dimethyl Sulfide	75-18-3	068	0.11879	0.015448	0.053209	0.037536	0.025239	0.05295	0.030512	0.021148	0.103187	0.079293	0.048221	0.090809	0.026094	0.025475
Ethane	74-84-0	069	0.125054	0.016263	0.056015	0.039516	0.02657	0.055742	0.032121	0.022263	0.108628	0.083475	0.050764	0.095598	0.02747	0.026818
Ethanol	64-17-5	070	0.02015	0.00262	0.009026	0.006367	0.004281	0.008982	0.005176	0.003587	0.017504	0.013451	0.00818	0.015404	0.004426	0.004321
Ethyl Mercaptan	75-08-1	071	0.006501	0.000845	0.002912	0.002054	0.001381	0.002898	0.00167	0.001157	0.005647	0.00434	0.002639	0.00497	0.001428	0.001394
Formaldehyde	50-00-0	072	0.001615	0.00021	0.000723	0.00051	0.000343	0.00072	0.000415	0.000287	0.001402	0.001078	0.000655	0.001234	0.000355	0.000346
Heptane	142-82-5	073	0.147375	0.019166	0.066013	0.046569	0.031313	0.065692	0.037854	0.026237	0.128017	0.098374	0.059825	0.112661	0.032373	0.031605
Hexachlorobutadiene	87-68-3	074	0.012529	0.001629	0.005612	0.003959	0.002662	0.005585	0.003218	0.002231	0.010883	0.008363	0.005086	0.009578	0.002752	0.002687
Hexachloroethane	67-72-1	075	0.011236	0.001461	0.005033	0.00355	0.002387	0.005008	0.002886	0.002	0.00976	0.0075	0.004561	0.008589	0.002468	0.00241
Hexane	110-54-3	076	0.071106	0.009247	0.031851	0.022469	0.015108	0.031695	0.018264	0.012659	0.061767	0.047464	0.028865	0.054357	0.01562	0.015249
Hydrogen Sulfide	7783-06-4	077	2.71454	0.353019	1.21592	0.857764	0.576756	1.209995	0.697242	0.483273	2.357992	1.811982	1.101936	2.075136	0.596289	0.582142
Isobutyl Mercaptan	513-44-0	078	0.030448	0.00396	0.013639	0.009621	0.006469	0.013572	0.007821	0.005421	0.026449	0.020325	0.01236	0.023276	0.006688	0.00653
Isopropyl Mercaptan	75-33-2	079	0.118059	0.015353	0.052882	0.037305	0.025084	0.052625	0.030324	0.021018	0.102553	0.078806	0.047925	0.090251	0.025934	0.025318
Methyl Mercaptan	74-93-1	080	0.000508	0.00001	0.000065	0.000049	0.000015	0.000085	0.000066	0.00003	0.000109	0.000372	0.000077	0.000046	0.000034	0.000052
Methyl tert-butyl ether	1634-04-4	081	0.0042	0.000546	0.001881	0.001327	0.000892	0.001872	0.001079	0.000748	0.003649	0.002804	0.001705	0.003211	0.000923	0.000901
Naphthalene	91-20-3	082	0.00619	0.000805	0.002773	0.001956	0.001315	0.002759	0.00159	0.001102	0.005377	0.004132	0.002513	0.004732	0.00136	0.001327
n-Butane	106-97-8	083	0.324228	0.042165	0.145231	0.102453	0.068889	0.144524	0.08328	0.057723	0.281642	0.216426	0.131617	0.247857	0.071222	0.069532
n-Pentane	109-66-0	084	0.106853	0.013896	0.047863	0.033764	0.022703	0.047629	0.027446	0.019023	0.092818	0.071326	0.043376	0.081684	0.023472	0.022915
p-Cymene	99-87-6	085	0.276334	0.035937	0.123778	0.087318	0.058712	0.123175	0.070978	0.049196	0.240038	0.184456	0.112175	0.211244	0.060701	0.059261
Propane	74-98-6	086	0.314113	0.040849	0.1407	0.099256	0.066739	0.140014	0.080681	0.055922	0.272855	0.209673	0.12751	0.240124	0.069	0.067362
Propene (Propylene)	115-07-1	087	0.064199	0.008349	0.028757	0.020286	0.01364	0.028616	0.01649	0.011429	0.055767	0.042853	0.026061	0.049077	0.014102	0.013768
Propylbenzene	103-65-1	088	0.016945	0.002204	0.00759	0.005354	0.0036	0.007553	0.004352	0.003017	0.014719	0.011311	0.006879	0.012954	0.003722	0.003634
tert-Butyl Mercaptan	75-66-1	089	0.005982	0.000778	0.002679	0.00189	0.001271	0.002666	0.001536	0.001065	0.005196	0.003993	0.002428	0.004573	0.001314	0.001283
Tetrahydrofuran	109-99-9	090	0.085476	0.011116	0.038287	0.027009	0.018161	0.0381	0.021955	0.015217	0.074249	0.057056	0.034698	0.065342	0.018776	0.018331
Thiophene	110-02-1	091	0.14654	0.019057	0.06564	0.046305	0.031135	0.06532	0.037639	0.026089	0.127292	0.097817	0.059486	0.112023	0.03219	0.031426
2,4-D	94-75-7	092	0.006956	0.013915	0.004175	0.009034	0.002806	0.009954	0.010743	0.012915	0.02361	0.01291	0.000658	0.000288	0.002898	0.001365
2-Methyl1-Propanol	78-83-1	093	2.813281	5.627513	1.688433	3.653636	1.134981	4.02552	4.34476	5.223037	9.548565	5.221187	0.266199	0.116482	1.172037	0.552204
Acrolein	107-02-8	094	0.007695	0.015393	0.004618	0.009994	0.003104	0.011011	0.011884	0.014286	0.026118	0.014281	0.000728	0.000319	0.003206	0.00151
Aldrin	309-00-2	095	7.69E-06	1.54E-05	4.62E-06	9.99E-06	3.1E-06	1.1E-05	1.19E-05	1.43E-05	2.61E-05	1.43E-05	7.28E-07	3.19E-07	3.21E-06	1.51E-06
alpha-Hexachlorocyclohexane	319-84-6	096	7.69E-06	1.54E-05	4.62E-06	9.99E-06	3.1E-06	1.1E-05	1.19E-05	1.43E-05	2.61E-05	1.43E-05	7.28E-07	3.19E-07	3.21E-06	1.51E-06
Ammonia	7664-41-7	097	1.230109	2.460634	0.738269	1.597555	0.496271	1.760161	1.89975	2.283777	4.175117	2.282968	0.116396	0.050932	0.512474	0.241451
Aroclor 1242	53469-21-9	098	0.0004	0.0008	0.00024	0.00052	0.000161	0.000573	0.000618	0.000743	0.001358	0.000743	0.000038	0.000017	0.000167	0.000079
Aroclor 1248	12672-29-6	099	7.69E-06	1.54E-05	4.62E-06	9.99E-06	3.1E-06	1.1E-05	1.19E-05	1.43E-05	2.61E-05	1.43E-05	7.28E-07	3.19E-07	3.21E-06	1.51E-06
Aroclor 1254	11097-69-1	100	0.000142	0.000283	8.5E-05	0.000184	5.71E-05	0.000203	0.000219	0.000263	0.000481	0.000263	1.34E-05	5.86E-06	5.9E-05	2.78E-05

			AERMOD Modeled Concentration (µg/m^3)													
			Site Number													
Toxic Air Pollutant	CAS #	AERMOD ID	Ref1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
beta-Hexachlorocyclohexane	319-85-7	101	0.000215	0.000431	0.000129	0.00028	8.69E-05	0.000308	0.000333	0.0004	0.000731	0.0004	2.04E-05	8.92E-06	8.98E-05	4.23E-05
Chlordane	57-74-9	102	7.69E-06	1.54E-05	4.62E-06	9.99E-06	3.1E-06	1.1E-05	1.19E-05	1.43E-05	2.61E-05	1.43E-05	7.28E-07	3.19E-07	3.21E-06	1.51E-06
DDD (dichlorodiphenyldichloroethane) [4,4'-DDD]	72-54-8	103	7.69E-06	1.54E-05	4.62E-06	9.99E-06	3.1E-06	1.1E-05	1.19E-05	1.43E-05	2.61E-05	1.43E-05	7.28E-07	3.19E-07	3.21E-06	1.51E-06
DDE (dichlorodiphenyldichloroethylene) [4,4'-DDE]	72-55-9	104	7.69E-06	1.54E-05	4.62E-06	9.99E-06	3.1E-06	1.1E-05	1.19E-05	1.43E-05	2.61E-05	1.43E-05	7.28E-07	3.19E-07	3.21E-06	1.51E-06
DDT(dichlorodiphenyltrichloroethane) [4,4'-DDT]	50-29-3	105	7.69E-06	1.54E-05	4.62E-06	9.99E-06	3.1E-06	1.1E-05	1.19E-05	1.43E-05	2.61E-05	1.43E-05	7.28E-07	3.19E-07	3.21E-06	1.51E-06
Delta BHC	319-86-8	106	2.35E-05	4.69E-05	1.41E-05	3.05E-05	9.46E-06	3.36E-05	3.62E-05	4.35E-05	7.96E-05	4.35E-05	2.22E-06	9.71E-07	9.77E-06	4.6E-06
Dieldrin	60-57-1	107	7.69E-06	1.54E-05	4.62E-06	9.99E-06	3.1E-06	1.1E-05	1.19E-05	1.43E-05	2.61E-05	1.43E-05	7.28E-07	3.19E-07	3.21E-06	1.51E-06
gamma-Hexachlorocyclohexane (lindane)	58-89-9	108	0.000228	0.000457	0.000137	0.000297	9.21E-05	0.000327	0.000353	0.000424	0.000775	0.000424	2.16E-05	9.46E-06	9.51E-05	4.48E-05
Heptachlor	76-44-8	109	7.69E-06	1.54E-05	4.62E-06	9.99E-06	3.1E-06	1.1E-05	1.19E-05	1.43E-05	2.61E-05	1.43E-05	7.28E-07	3.19E-07	3.21E-06	1.51E-06
Heptachlor Epoxide	1024-57-3	110	1.75E-05	3.5E-05	1.05E-05	2.27E-05	7.05E-06	2.5E-05	2.7E-05	3.25E-05	5.93E-05	3.24E-05	1.65E-06	7.24E-07	7.28E-06	3.43E-06
Methyl Iodide	74-88-4	111	0.000308	0.000616	0.000185	0.0004	0.000124	0.00044	0.000475	0.000571	0.001045	0.000571	0.000029	0.000013	0.000128	0.00006
Methyl Methacrylate	80-62-6	112	0.008064	0.016131	0.00484	0.010473	0.003253	0.011539	0.012454	0.014972	0.027371	0.014967	0.000763	0.000334	0.00336	0.001583
Propionitrile	107-12-0	113	0.005836	0.011674	0.003502	0.007579	0.002354	0.008351	0.009013	0.010835	0.019808	0.010831	0.000552	0.000242	0.002431	0.001145
Toxaphene	8001-35-2	114	0.000769	0.001539	0.000462	0.000999	0.00031	0.001101	0.001188	0.001429	0.002612	0.001428	0.000073	0.000032	0.000321	0.000151
trans-Chlordane	5103-74-2	115	8.56E-05	0.000171	5.14E-05	0.000111	3.45E-05	0.000122	0.000132	0.000159	0.00029	0.000159	8.1E-06	3.54E-06	3.56E-05	1.68E-05
Carbon Monoxide	630-08-0	116	5.507489	2.023403	2.778614	3.73798	5.979081	2.95595	2.911743	3.373094	10.11493	11.11923	9.955846	6.733418	3.353768	4.78454
Sulfur dioxide	7446-09-5	117	76.92601	27.09377	38.81887	52.22175	83.51459	41.29621	40.67549	47.1241	141.3115	155.3422	97.83449	94.02616	46.85412	66.84284
Hydrogen chloride	7647-01-0	118	2.753141	0.969672	1.389307	1.868989	2.988943	1.477969	1.455754	1.686547	5.057464	5.559615	3.501445	3.365147	1.676884	2.39227

Table F-2. AERMOD modeled impacts 24-hour averaging period

			AERMOD Modeled Concentration (µg/m^3)													
			Site Number													
Toxic Air Pollutant	CAS #	AERMOD ID	Ref1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
1,1,1,2-Tetrachloroethane	630-20-6	001	0.000455	0.000088	0.000269	0.000188	0.000134	0.000266	0.000217	0.000169	0.000938	0.0005	0.00024	0.000631	0.000212	0.000181
1,1,1-Trichloroethane	71-55-6	002	0.00016	0.000183	0.000089	0.000137	0.000057	0.000145	0.000179	0.000162	0.000282	0.000136	0.000055	0.000123	0.000056	0.000052
1,1,2,2-Tetrachloroethane	79-34-5	003	0.000113	0.000034	0.000068	0.000049	0.000033	0.000068	0.000057	0.000042	0.000232	0.000124	0.000059	0.000156	0.000052	0.000046
1,1,2-Trichloroethane (vinyl trichloride)	79-00-5	004	0.000089	0.000034	0.000054	0.000043	0.000026	0.000057	0.000047	0.000033	0.000184	0.000098	0.000047	0.000123	0.000041	0.000037
1,1-Dichloroethane	75-34-3	005	0.001488	0.001758	0.00081	0.001285	0.000539	0.001368	0.001724	0.001558	0.002606	0.001305	0.000258	0.000359	0.000493	0.00027
1,1-Dichloroethene	75-35-4	006	0.000097	0.000111	0.000055	0.000083	0.000034	0.000088	0.000108	0.000098	0.000172	0.000082	0.000038	0.00009	0.000034	0.000036
1,2,3-Trichloropropane	96-18-4	007	0.000393	0.00004	0.000229	0.000158	0.000115	0.000227	0.000178	0.000146	0.00081	0.000431	0.000207	0.000545	0.000183	0.000153
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	008	0.000732	0.000821	0.000428	0.000625	0.000256	0.000669	0.0008	0.000725	0.0013	0.000694	0.000348	0.000875	0.000293	0.00032
1,2-Dibromoethane	106-93-4	009	0.000126	0.000034	0.000075	0.000053	0.000037	0.000075	0.000063	0.000047	0.00026	0.000139	0.000067	0.000175	0.000059	0.000051
1,2-Dichlorobenzene	95-50-1	010	0.000098	0.000034	0.000059	0.000045	0.000029	0.000062	0.000051	0.000036	0.000203	0.000108	0.000052	0.000136	0.000046	0.000041
1,2-Dichloroethane	107-06-2	011	0.001183	0.001338	0.000666	0.001012	0.000416	0.001066	0.001305	0.001182	0.002095	0.000994	0.000505	0.001233	0.000423	0.000468
1,2-Dichloropropane	78-87-5	012	0.000197	0.000035	0.000116	0.000081	0.000058	0.000115	0.000093	0.000073	0.000405	0.000216	0.000104	0.000273	0.000091	0.000078
1,3-Dichlorobenzene	541-73-1	013	0.001149	0.001366	0.000622	0.000993	0.000418	0.001059	0.00134	0.001211	0.002008	0.001014	0.000155	0.000136	0.000376	0.000183
1,4-Dichlorobenzene	106-46-7	014	0.001291	0.001502	0.000711	0.001111	0.000463	0.001178	0.001469	0.001329	0.002269	0.001115	0.00034	0.000677	0.00044	0.000332
2-Butanone (MEK)	78-93-3	015	1.615604	1.930442	0.870458	1.398507	0.590041	1.49229	1.894885	1.712419	2.820553	1.43292	0.170177	0.043566	0.523801	0.231183
2-Hexanone	591-78-6	016	0.007843	0.009361	0.00423	0.006788	0.002862	0.007241	0.009188	0.008303	0.013697	0.006949	0.000878	0.000366	0.002548	0.001151
4-Methyl-2-pentanone	108-10-1	017	0.013711	0.016268	0.007431	0.01185	0.004983	0.012624	0.015956	0.014423	0.023981	0.012076	0.002023	0.002179	0.004506	0.002279
Acetone	67-64-1	018	1.962431	2.346209	1.056806	1.69895	0.716991	1.813128	2.303143	2.08132	3.425537	1.741525	0.199914	0.052709	0.635538	0.277092
Acetonitrile	75-05-8	019	0.012461	0.014885	0.006715	0.010786	0.00455	0.011509	0.014611	0.013204	0.021757	0.011049	0.001334	0.000386	0.004042	0.001795
Acrylonitrile	107-13-1	020	0.000142	0.000135	0.000092	0.00011	0.000042	0.000128	0.000131	0.000119	0.000292	0.000156	0.000075	0.000197	0.000066	0.000067
Allyl chloride (3-Chloropropene)	107-05-1	021	0.001538	0.001822	0.000835	0.001329	0.000559	0.001415	0.001787	0.001616	0.002691	0.001353	0.00024	0.000285	0.000507	0.000263
Benzene	71-43-2	022	0.003601	0.001676	0.002205	0.001881	0.001057	0.002452	0.001972	0.001479	0.007417	0.003954	0.001903	0.00499	0.001673	0.00153
Bromodichloromethane	75-27-4	023	0.00011	0.000083	0.00007	0.000074	0.000032	0.000089	0.00008	0.000073	0.000226	0.00012	0.000058	0.000152	0.000051	0.00005
Bromoform	75-25-2	024	0.00017	0.000165	0.000111	0.000133	0.000052	0.000154	0.00016	0.000145	0.00035	0.000187	0.00009	0.000235	0.000079	0.000081
Bromomethane (methyl bromide)	74-83-9	025	0.001954	0.002283	0.001073	0.001683	0.000703	0.001787	0.002236	0.002022	0.003432	0.001695	0.000467	0.000875	0.000661	0.000463
Carbon Disulfide	75-15-0	026	0.001341	0.001566	0.000736	0.001155	0.000482	0.001225	0.001533	0.001387	0.002354	0.001163	0.000323	0.000608	0.000454	0.00032
Carbon Tetrachloride	56-23-5	027	0.000102	0.000083	0.000065	0.000071	0.00003	0.000086	0.00008	0.000073	0.000211	0.000113	0.000054	0.000142	0.000048	0.000047
Chlorobenzene	108-90-7	028	0.001364	0.001626	0.000737	0.00118	0.000497	0.001258	0.001595	0.001442	0.002383	0.001207	0.000165	0.000103	0.000445	0.000207
Chloroethane	75-00-3	029	0.001753	0.002082	0.000949	0.001515	0.000638	0.001615	0.002042	0.001846	0.003064	0.001545	0.000246	0.00024	0.000575	0.000285
Chloroform	67-66-3	030	0.001365	0.001626	0.000737	0.00118	0.000497	0.001259	0.001595	0.001442	0.002384	0.001207	0.000168	0.000111	0.000445	0.000208
Chloromethane	74-87-3	031	0.002038	0.002409	0.001108	0.00176	0.000739	0.001873	0.002362	0.002135	0.003568	0.001788	0.000345	0.000463	0.000674	0.000363
Chloroprene	126-99-8	032	0.000236	0.000036	0.000139	0.000096	0.000069	0.000137	0.00011	0.000087	0.000486	0.000259	0.000124	0.000327	0.00011	0.000093
cis-1,2-Dichloroethene	156-59-2	033	0.0016	0.001777	0.001045	0.001363	0.000556	0.001544	0.001729	0.001567	0.003239	0.00173	0.000845	0.002179	0.000731	0.00077
Dichlorodifluoromethane (CFC 12)	75-71-8	034	0.000756	0.000076	0.000439	0.000301	0.000222	0.000434	0.000335	0.000279	0.001556	0.000829	0.000398	0.001047	0.000351	0.000291
Dichloromethane (Methylene Chloride)	75-09-2	035	0.007366	0.008667	0.00402	0.006354	0.002662	0.006756	0.008492	0.007679	0.01291	0.006434	0.001451	0.002323	0.002458	0.001483
Ethylbenzene	100-41-4	036	0.014281	0.00264	0.00843	0.005877	0.004193	0.008342	0.006791	0.005284	0.029412	0.015668	0.007524	0.019788	0.006636	0.005675
Mercury, elemental	7439-97-6	037	7.51E-06	9.13E-06	4.89E-06	7.4E-06	2.92E-06	7.03E-06	8.8E-06	7.97E-06	1.34E-05	7.86E-06	3.28E-06	2.81E-06	2.73E-06	2.95E-06
m,p-Xylenes	179601-23-1	038	0.027113	0.003674	0.015901	0.011018	0.007961	0.015732	0.01255	0.010031	0.05584	0.029744	0.014277	0.03757	0.012599	0.010644
o-Xylene	95-47-6	039	0.007865	0.001672	0.00466	0.003259	0.002309	0.004611	0.003796	0.00291	0.016198	0.00863	0.004145	0.010898	0.003655	0.003147
Styrene	100-42-5	040	0.000869	0.000253	0.00052	0.000376	0.000255	0.000523	0.000437	0.000322	0.00179	0.000954	0.000459	0.001205	0.000404	0.000354
Tetrachloroethene	127-18-4	041	0.001346	0.001384	0.000883	0.001092	0.000434	0.001259	0.001346	0.00122	0.002771	0.001479	0.000716	0.001864	0.000625	0.000646
Toluene	108-88-3	042	0.038704	0.014392	0.023414	0.018353	0.011364	0.024713	0.020262	0.014327	0.079709	0.042484	0.020434	0.053629	0.017984	0.016088
trans-1,2-Dichloroethene	156-60-5	043	0.001488	0.001758	0.00081	0.001285	0.000539	0.001368	0.001724	0.001558	0.002606	0.001305	0.000259	0.00036	0.000493	0.00027
Trichloroethene	79-01-6	044	0.002442	0.001529	0.001526	0.001477	0.000717	0.001841	0.001478	0.001342	0.005029	0.002682	0.001293	0.003384	0.001135	0.001076
Trichlorofluoromethane	75-69-4	045	0.000482	0.000163	0.000291	0.00022	0.000142	0.000301	0.000248	0.000179	0.000994	0.00053	0.000255	0.000669	0.000224	0.000199
Vinyl Acetate	108-05-4	046	0.000231	0.000036	0.000136	0.000094	0.000068	0.000134	0.000108	0.000085	0.000475	0.000253	0.000121	0.00032	0.000107	0.000091
Vinyl Chloride	75-01-4	047	0.001414	0.001623	0.000787	0.001213	0.000502	0.001282	0.001586	0.001435	0.002493	0.001205	0.000482	0.00109	0.000493	0.000457
1,2,3-Trimethylbenzene	526-73-8	048	0.001114	0.000112	0.000643	0.000438	0.000327	0.000636	0.000481	0.000412	0.002294	0.001221	0.000586	0.001543	0.000518	0.000424

			AERMOD Modeled Concentration (µg/m^3)													
			Site Number													
Toxic Air Pollutant	CAS #	AERMOD ID	Ref1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
1,2,4-Trimethylbenzene	95-63-6	049	0.002836	0.000286	0.001636	0.001116	0.000833	0.001618	0.001224	0.001049	0.00584	0.00311	0.001491	0.003929	0.001318	0.00108
1,3,5-Trimethylbenzene	108-67-8	050	0.001221	0.000123	0.000705	0.000481	0.000359	0.000697	0.000527	0.000452	0.002515	0.001339	0.000642	0.001692	0.000568	0.000465
1,3-Butadiene	106-99-0	051	7.08E-05	7.15E-06	4.08E-05	2.79E-05	2.08E-05	4.04E-05	3.06E-05	2.62E-05	0.000146	7.76E-05	3.72E-05	9.81E-05	3.29E-05	2.69E-05
1,3-Dichloropropene (trans-1,3-Dichloropropene)	542-75-6	052	7.45E-05	7.52E-06	4.3E-05	2.93E-05	2.19E-05	4.25E-05	3.22E-05	2.76E-05	0.000153	8.17E-05	3.92E-05	0.000103	3.46E-05	2.84E-05
1,4-Dioxane	123-91-1	053	0.000236	0.000024	0.000136	0.000093	0.000069	0.000135	0.000102	0.000087	0.000486	0.000259	0.000124	0.000327	0.00011	0.00009
2,2,4-Trimethylpentane	540-84-1	054	0.001801	0.000182	0.001039	0.000709	0.000529	0.001028	0.000777	0.000666	0.003708	0.001975	0.000947	0.002495	0.000837	0.000686
2-Methylthiophene	554-14-3	055	0.00074	0.000075	0.000427	0.000291	0.000217	0.000422	0.00032	0.000274	0.001524	0.000812	0.000389	0.001025	0.000344	0.000282
2-Propanol (Isopropyl Alcohol)	67-63-0	056	0.003912	0.000395	0.002257	0.00154	0.001149	0.002232	0.001689	0.001447	0.008056	0.00429	0.002057	0.00542	0.001818	0.001489
3-Methylthiophene	616-44-4	057	0.000514	0.000052	0.000296	0.000202	0.000151	0.000293	0.000222	0.00019	0.001058	0.000563	0.00027	0.000712	0.000239	0.000196
4-Ethyltoluene	622-96-8	058	0.003435	0.000347	0.001982	0.001352	0.001009	0.00196	0.001483	0.001271	0.007075	0.003768	0.001807	0.00476	0.001596	0.001308
Acetaldehyde	75-07-0	059	8.41E-06	8.49E-07	4.85E-06	3.31E-06	2.47E-06	4.8E-06	3.63E-06	3.11E-06	1.73E-05	9.23E-06	4.42E-06	1.17E-05	3.91E-06	3.2E-06
Benzyl chloride (alpha-Chlorotoluene)	100-44-7	060	8.48E-05	8.56E-06	4.89E-05	3.34E-05	2.49E-05	4.84E-05	3.66E-05	3.13E-05	0.000175	9.29E-05	4.46E-05	0.000117	3.94E-05	3.23E-05
Carbonyl Sulfide	463-58-1	061	0.000391	0.00004	0.000226	0.000154	0.000115	0.000223	0.000169	0.000145	0.000806	0.000429	0.000206	0.000542	0.000182	0.000149
Chlorodifluoromethane (CFC 22)	75-45-6	062	0.000563	0.000057	0.000325	0.000222	0.000165	0.000321	0.000243	0.000208	0.00116	0.000618	0.000296	0.00078	0.000262	0.000214
Cumene	98-82-8	063	0.001283	0.00013	0.00074	0.000505	0.000377	0.000732	0.000554	0.000475	0.002643	0.001408	0.000675	0.001778	0.000596	0.000489
Cyclohexane	110-82-7	064	0.004823	0.000487	0.002782	0.001898	0.001416	0.002752	0.002082	0.001784	0.009932	0.005289	0.002536	0.006682	0.002241	0.001836
Dichlorofluoromethane (CFC 21)	75-43-4	065	0.000579	0.000058	0.000334	0.000228	0.00017	0.000331	0.00025	0.000214	0.001193	0.000635	0.000305	0.000803	0.000269	0.000221
Dimethyl Disulfide	624-92-0	066	9.16E-05	9.25E-06	5.28E-05	3.61E-05	2.69E-05	5.23E-05	3.95E-05	3.39E-05	0.000189	0.0001	4.82E-05	0.000127	4.26E-05	3.49E-05
Dimethyl Mercury	627-44-1	067	1.69E-08	1.71E-09	9.75E-09	6.65E-09	4.96E-09	9.64E-09	7.3E-09	6.25E-09	3.48E-08	1.85E-08	8.88E-09	2.34E-08	7.85E-09	6.43E-09
Dimethyl Sulfide	75-18-3	068	0.006673	0.000674	0.00385	0.002627	0.001959	0.003808	0.002881	0.002468	0.013743	0.007318	0.003509	0.009246	0.003101	0.00254
Ethane	74-84-0	069	0.007025	0.000709	0.004053	0.002765	0.002063	0.004009	0.003033	0.002598	0.014467	0.007704	0.003694	0.009734	0.003264	0.002674
Ethanol	64-17-5	070	0.001132	0.000114	0.000653	0.000446	0.000332	0.000646	0.000489	0.000419	0.002331	0.001241	0.000595	0.001568	0.000526	0.000431
Ethyl Mercaptan	75-08-1	071	0.000365	0.000037	0.000211	0.000144	0.000107	0.000208	0.000158	0.000135	0.000752	0.0004	0.000192	0.000506	0.00017	0.000139
Formaldehyde	50-00-0	072	9.07E-05	9.16E-06	5.23E-05	3.57E-05	2.66E-05	5.18E-05	3.92E-05	3.35E-05	0.000187	9.95E-05	4.77E-05	0.000126	4.21E-05	3.45E-05
Heptane	142-82-5	073	0.008279	0.000836	0.004776	0.003259	0.002431	0.004724	0.003575	0.003062	0.01705	0.009079	0.004353	0.011471	0.003847	0.003152
Hexachlorobutadiene	87-68-3	074	0.000704	0.000071	0.000406	0.000277	0.000207	0.000402	0.000304	0.00026	0.001449	0.000772	0.00037	0.000975	0.000327	0.000268
Hexachloroethane	67-72-1	075	0.000631	0.000064	0.000364	0.000248	0.000185	0.00036	0.000273	0.000233	0.0013	0.000692	0.000332	0.000875	0.000293	0.00024
Hexane	110-54-3	076	0.003994	0.000403	0.002305	0.001572	0.001173	0.002279	0.001725	0.001477	0.008226	0.004381	0.0021	0.005535	0.001856	0.001521
Hydrogen Sulfide	7783-06-4	077	0.152485	0.015392	0.087976	0.060024	0.044773	0.087014	0.065841	0.056395	0.314045	0.167229	0.080185	0.211293	0.070855	0.058054
Isobutyl Mercaptan	513-44-0	078	0.00171	0.000173	0.000987	0.000673	0.000502	0.000976	0.000739	0.000633	0.003523	0.001876	0.000899	0.00237	0.000795	0.000651
Isopropyl Mercaptan	75-33-2	079	0.006632	0.000669	0.003826	0.002611	0.001947	0.003784	0.002864	0.002453	0.013658	0.007273	0.003487	0.009189	0.003082	0.002525
Methyl Mercaptan	74-93-1	080	0.004119	0.000416	0.002376	0.001621	0.001209	0.00235	0.001778	0.001523	0.008483	0.004517	0.002166	0.005707	0.001914	0.001568
Methyl tert-butyl ether	1634-04-4	081	0.000236	0.000024	0.000136	0.000093	0.000069	0.000135	0.000102	0.000087	0.000486	0.000259	0.000124	0.000327	0.00011	0.00009
Naphthalene	91-20-3	082	0.000348	0.000035	0.000201	0.000137	0.000102	0.000198	0.00015	0.000129	0.000716	0.000381	0.000183	0.000482	0.000162	0.000132
n-Butane	106-97-8	083	0.018213	0.001838	0.010508	0.007169	0.005348	0.010393	0.007864	0.006736	0.03751	0.019974	0.009577	0.025237	0.008463	0.006934
n-Pentane	109-66-0	084	0.006002	0.000606	0.003463	0.002363	0.001762	0.003425	0.002592	0.00222	0.012362	0.006583	0.003156	0.008317	0.002789	0.002285
p-Cymene	99-87-6	085	0.015523	0.001567	0.008956	0.00611	0.004558	0.008858	0.006702	0.005741	0.031969	0.017024	0.008163	0.021509	0.007213	0.00591
Propane	74-98-6	086	0.017645	0.001781	0.01018	0.006946	0.005181	0.010069	0.007619	0.006526	0.03634	0.019351	0.009279	0.02445	0.008199	0.006718
Propene (Propylene)	115-07-1	087	0.003606	0.000364	0.002081	0.00142	0.001059	0.002058	0.001557	0.001334	0.007427	0.003955	0.001896	0.004997	0.001676	0.001373
Propylbenzene	103-65-1	088	0.000952	0.000096	0.000549	0.000375	0.000279	0.000543	0.000411	0.000352	0.00196	0.001044	0.000501	0.001319	0.000442	0.000362
tert-Butyl Mercaptan	75-66-1	089	0.000336	0.000034	0.000194	0.000132	0.000099	0.000192	0.000145	0.000124	0.000692	0.000369	0.000177	0.000466	0.000156	0.000128
Tetrahydrofuran	109-99-9	090	0.004801	0.000485	0.00277	0.00189	0.00141	0.00274	0.002073	0.001776	0.009889	0.005266	0.002525	0.006653	0.002231	0.001828
Thiophene	110-02-1	091	0.008232	0.000831	0.004749	0.00324	0.002417	0.004697	0.003554	0.003044	0.016953	0.009028	0.004329	0.011406	0.003825	0.003134
2,4-D	94-75-7	092	0.000614	0.000734	0.00033	0.000531	0.000224	0.000567	0.000721	0.000651	0.001071	0.000545	0.00006	0.000016	0.000198	0.000085
2-Methyl1-Propanol	78-83-1	093	0.248207	0.296976	0.133577	0.21492	0.090733	0.229405	0.29155	0.263462	0.433174	0.220435	0.024138	0.006631	0.080263	0.034419
Acrolein	107-02-8	094	0.000679	0.000812	0.000365	0.000588	0.000248	0.000627	0.000797	0.000721	0.001185	0.000603	0.000066	0.000018	0.00022	0.000094
Aldrin	309-00-2	095	6.79E-07	8.12E-07	3.65E-07	5.88E-07	2.48E-07	6.27E-07	7.97E-07	7.21E-07	1.18E-06	6.03E-07	6.6E-08	1.81E-08	2.2E-07	9.41E-08
alpha-Hexachlorocyclohexane	319-84-6	096	6.79E-07	8.12E-07	3.65E-07	5.88E-07	2.48E-07	6.27E-07	7.97E-07	7.21E-07	1.18E-06	6.03E-07	6.6E-08	1.81E-08	2.2E-07	9.41E-08
Ammonia	7664-41-7	097	0.108529	0.129853	0.058407	0.093974	0.039673	0.100308	0.12748	0.115199	0.189406	0.096386	0.010554	0.002899	0.035095	0.01505
Aroclor 1242	53469-21-9	098	3.53E-05	4.22E-05	1.9E-05	3.06E-05	1.29E-05	3.26E-05	4.15E-05	3.75E-05	6.16E-05	3.14E-05	3.43E-06	9.43E-07	1.14E-05	4.9E-06
Aroclor 1248	12672-29-6	099	6.79E-07	8.12E-07	3.65E-07	5.88E-07	2.48E-07	6.27E-07	7.97E-07	7.21E-07	1.18E-06	6.03E-07	6.6E-08	1.81E-08	2.2E-07	9.41E-08
Aroclor 1254	11097-69-1	100	1.25E-05	1.49E-05	6.72E-06	1.08E-05	4.57E-06	1.15E-05	1.47E-05	1.33E-05	2.18E-05	1.11E-05	1.21E-06	3.34E-07	4.04E-06	1.73E-06

			AERMOD Modeled Concentration (µg/m^3)													
			Site Number													
Toxic Air Pollutant	CAS #	AERMOD ID	Ref1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
beta-Hexachlorocyclohexane	319-85-7	101	1.9E-05	2.27E-05	1.02E-05	1.65E-05	6.95E-06	1.76E-05	2.23E-05	2.02E-05	3.32E-05	1.69E-05	1.85E-06	5.08E-07	6.15E-06	2.64E-06
Chlordane	57-74-9	102	6.79E-07	8.12E-07	3.65E-07	5.88E-07	2.48E-07	6.27E-07	7.97E-07	7.21E-07	1.18E-06	6.03E-07	6.6E-08	1.81E-08	2.2E-07	9.41E-08
DDD (dichlorodiphenyldichloroethane) [4,4'-DDD]	72-54-8	103	6.79E-07	8.12E-07	3.65E-07	5.88E-07	2.48E-07	6.27E-07	7.97E-07	7.21E-07	1.18E-06	6.03E-07	6.6E-08	1.81E-08	2.2E-07	9.41E-08
DDE (dichlorodiphenyldichloroethylene) [4,4'-DDE]	72-55-9	104	6.79E-07	8.12E-07	3.65E-07	5.88E-07	2.48E-07	6.27E-07	7.97E-07	7.21E-07	1.18E-06	6.03E-07	6.6E-08	1.81E-08	2.2E-07	9.41E-08
DDT(dichlorodiphenyltrichloroethane) [4,4'-DDT]	50-29-3	105	6.79E-07	8.12E-07	3.65E-07	5.88E-07	2.48E-07	6.27E-07	7.97E-07	7.21E-07	1.18E-06	6.03E-07	6.6E-08	1.81E-08	2.2E-07	9.41E-08
Delta BHC	319-86-8	106	2.07E-06	2.48E-06	1.11E-06	1.79E-06	7.56E-07	1.91E-06	2.43E-06	2.2E-06	3.61E-06	1.84E-06	2.01E-07	5.53E-08	6.69E-07	2.87E-07
Dieldrin	60-57-1	107	6.79E-07	8.12E-07	3.65E-07	5.88E-07	2.48E-07	6.27E-07	7.97E-07	7.21E-07	1.18E-06	6.03E-07	6.6E-08	1.81E-08	2.2E-07	9.41E-08
gamma-Hexachlorocyclohexane (lindane)	58-89-9	108	2.01E-05	2.41E-05	1.08E-05	1.74E-05	7.37E-06	1.86E-05	2.37E-05	2.14E-05	3.52E-05	1.79E-05	1.96E-06	5.38E-07	6.52E-06	2.79E-06
Heptachlor	76-44-8	109	6.79E-07	8.12E-07	3.65E-07	5.88E-07	2.48E-07	6.27E-07	7.97E-07	7.21E-07	1.18E-06	6.03E-07	6.6E-08	1.81E-08	2.2E-07	9.41E-08
Heptachlor Epoxide	1024-57-3	110	1.54E-06	1.85E-06	8.3E-07	1.34E-06	5.64E-07	1.43E-06	1.81E-06	1.64E-06	2.69E-06	1.37E-06	1.5E-07	4.12E-08	4.99E-07	2.14E-07
Methyl Iodide	74-88-4	111	2.72E-05	3.25E-05	1.46E-05	2.35E-05	9.93E-06	2.51E-05	3.19E-05	2.88E-05	4.74E-05	2.41E-05	2.64E-06	7.26E-07	8.78E-06	3.77E-06
Methyl Methacrylate	80-62-6	112	0.000711	0.000851	0.000383	0.000616	0.00026	0.000658	0.000836	0.000755	0.001242	0.000632	0.000069	0.000019	0.00023	0.000099
Propionitrile	107-12-0	113	0.000515	0.000616	0.000277	0.000446	0.000188	0.000476	0.000605	0.000547	0.000899	0.000457	0.00005	0.000014	0.000166	0.000071
Toxaphene	8001-35-2	114	6.79E-05	8.12E-05	3.65E-05	5.88E-05	2.48E-05	6.27E-05	7.97E-05	7.21E-05	0.000118	6.03E-05	6.6E-06	1.81E-06	2.2E-05	9.41E-06
trans-Chlordane	5103-74-2	115	7.55E-06	9.03E-06	4.06E-06	6.54E-06	2.76E-06	6.98E-06	8.87E-06	8.01E-06	1.32E-05	6.7E-06	7.34E-07	2.02E-07	2.44E-06	1.05E-06
Carbon Monoxide	630-08-0	116	0.379441	0.108507	0.180581	0.207837	0.33238	0.198685	0.164088	0.231116	0.566453	1.043772	0.486968	0.374474	0.221509	0.375354
Sulfur dioxide	7446-09-5	117	5.300991	1.515908	2.294022	2.903605	4.642619	2.424968	2.292221	2.662595	7.913678	14.5821	6.090033	5.229198	2.485664	4.940242
Hydrogen chloride	7647-01-0	118	0.18972	0.054254	0.082102	0.103918	0.166157	0.086788	0.082037	0.095293	0.283226	0.521886	0.217959	0.18715	0.088961	0.176809

Table F-2. AERMOD modeled impacts annual averaging period

			AERMOD Modeled Concentration (µg/m^3)													
			Site Number													
Toxic Air Pollutant	CAS #	AERMOD ID	Ref1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
1,1,1,2-Tetrachloroethane	630-20-6	001	5.7E-05	2.45E-06	7.69E-06	6.38E-06	1.82E-06	1.08E-05	9.22E-06	5.56E-06	1.31E-05	4.15E-05	8.57E-06	5.09E-06	4.01E-06	5.83E-06
1,1,1-Trichloroethane	71-55-6	002	1.29E-05	3.18E-06	2.63E-06	3.23E-06	7.68E-07	4.84E-06	5.63E-06	5.59E-06	4.69E-06	8.88E-06	1.8E-06	1.01E-06	1.28E-06	1.34E-06
1,1,2,2-Tetrachloroethane	79-34-5	003	1.42E-05	8.09E-07	1.99E-06	1.73E-06	4.82E-07	2.87E-06	2.57E-06	1.71E-06	3.4E-06	1.03E-05	2.13E-06	1.26E-06	1.03E-06	1.46E-06
1,1,2-Trichloroethane (vinyl trichloride)	79-00-5	004	1.13E-05	7.5E-07	1.62E-06	1.45E-06	3.98E-07	2.38E-06	2.19E-06	1.54E-06	2.78E-06	8.19E-06	1.69E-06	9.97E-07	8.34E-07	1.16E-06
1,1-Dichloroethane	75-34-3	005	4.98E-05	2.92E-05	1.6E-05	2.4E-05	5.26E-06	3.43E-05	4.46E-05	4.94E-05	2.93E-05	3.15E-05	6.11E-06	3.06E-06	7.38E-06	5.4E-06
1,1-Dichloroethene	75-35-4	006	9.17E-06	1.95E-06	1.77E-06	2.09E-06	5.04E-07	3.16E-06	3.58E-06	3.46E-06	3.13E-06	6.39E-06	1.3E-06	7.38E-07	8.67E-07	9.54E-07
1,2,3-Trichloropropane	96-18-4	007	4.89E-05	1.51E-06	6.38E-06	5.06E-06	1.48E-06	8.67E-06	7.1E-06	3.78E-06	1.08E-05	3.56E-05	7.37E-06	4.39E-06	3.35E-06	4.99E-06
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	008	8.62E-05	1.48E-05	1.54E-05	1.72E-05	4.26E-06	2.64E-05	2.89E-05	2.67E-05	2.71E-05	6.07E-05	1.24E-05	7.12E-06	7.65E-06	8.93E-06
1,2-Dibromoethane	106-93-4	009	1.59E-05	8.43E-07	2.2E-06	1.89E-06	5.3E-07	3.15E-06	2.79E-06	1.81E-06	3.76E-06	1.15E-05	2.38E-06	1.41E-06	1.14E-06	1.63E-06
1,2-Dichlorobenzene	95-50-1	010	1.25E-05	7.73E-07	1.76E-06	1.56E-06	4.31E-07	2.57E-06	2.34E-06	1.61E-06	3.02E-06	9.03E-06	1.86E-06	1.1E-06	9.11E-07	1.28E-06
1,2-Dichloroethane	107-06-2	011	0.000123	2.38E-05	2.3E-05	2.64E-05	6.45E-06	4.03E-05	4.49E-05	4.25E-05	4.05E-05	8.64E-05	1.76E-05	1.01E-05	1.13E-05	1.28E-05
1,2-Dichloropropane	78-87-5	012	2.46E-05	1.02E-06	3.3E-06	2.73E-06	7.81E-07	4.61E-06	3.92E-06	2.33E-06	5.63E-06	1.79E-05	3.7E-06	2.2E-06	1.73E-06	2.51E-06
1,3-Dichlorobenzene	541-73-1	013	2.61E-05	2.24E-05	1.08E-05	1.75E-05	3.73E-06	2.45E-05	3.3E-05	3.77E-05	2E-05	1.52E-05	2.83E-06	1.23E-06	4.89E-06	2.9E-06
1,4-Dichlorobenzene	106-46-7	014	7.56E-05	2.55E-05	1.78E-05	2.37E-05	5.44E-06	3.47E-05	4.23E-05	4.41E-05	3.2E-05	5.1E-05	1.02E-05	5.6E-06	8.51E-06	7.97E-06
2-Butanone (MEK)	78-93-3	015	0.02335	0.031472	0.013589	0.023417	0.004883	0.032415	0.044958	0.052504	0.025433	0.011634	0.001956	0.000526	0.006013	0.00273
2-Hexanone	591-78-6	016	0.000128	0.000153	6.78E-05	0.000115	2.41E-05	0.00016	0.00022	0.000255	0.000126	6.72E-05	1.17E-05	3.88E-06	3.01E-05	1.47E-05
4-Methyl-2-pentanone	108-10-1	017	0.00036	0.000268	0.000135	0.000213	0.000046	0.0003	0.0004	0.000452	0.000249	0.000217	0.000041	0.000019	0.000062	0.00004
Acetone	67-64-1	018	0.026464	0.038215	0.016274	0.028279	0.005879	0.039079	0.054395	0.063703	0.030501	0.012739	0.002088	0.000467	0.00718	0.003123
Acetonitrile	75-05-8	019	0.000186	0.000243	0.000106	0.000181	3.78E-05	0.000251	0.000347	0.000405	0.000197	9.41E-05	1.6E-05	4.6E-06	4.68E-05	2.17E-05
Acrylonitrile	107-13-1	020	1.89E-05	2.52E-06	3.13E-06	3.28E-06	8.35E-07	5.13E-06	5.36E-06	4.66E-06	5.46E-06	1.34E-05	2.75E-06	1.6E-06	1.57E-06	1.95E-06
Allyl chloride (3-Chloropropene)	107-05-1	021	4.4E-05	3.01E-05	1.56E-05	2.42E-05	5.24E-06	3.42E-05	4.53E-05	5.08E-05	2.87E-05	2.7E-05	5.16E-06	2.48E-06	7.14E-06	4.81E-06
Benzene	71-43-2	022	0.000461	0.000035	0.000067	0.000062	0.000017	0.000101	0.000096	0.000071	0.000116	0.000332	0.000068	0.00004	0.000035	0.000047
Bromodichloromethane	75-27-4	023	1.44E-05	1.59E-06	2.27E-06	2.27E-06	5.91E-07	3.61E-06	3.64E-06	3.01E-06	3.94E-06	1.03E-05	2.11E-06	1.23E-06	1.15E-06	1.48E-06
Bromoform	75-25-2	024	2.26E-05	3.07E-06	3.76E-06	3.96E-06	1.01E-06	6.19E-06	6.48E-06	5.65E-06	6.58E-06	1.61E-05	3.29E-06	1.91E-06	1.89E-06	2.33E-06
Bromomethane (methyl bromide)	74-83-9	025	0.000101	3.86E-05	2.54E-05	3.47E-05	7.88E-06	5.05E-05	6.26E-05	6.63E-05	4.58E-05	6.75E-05	1.34E-05	7.27E-06	1.2E-05	1.07E-05
Carbon Disulfide	75-15-0	026	7.01E-05	2.65E-05	1.75E-05	2.38E-05	5.42E-06	3.48E-05	4.3E-05	4.55E-05	3.16E-05	4.68E-05	9.33E-06	5.05E-06	8.29E-06	7.42E-06
Carbon Tetrachloride	56-23-5	027	1.35E-05	1.58E-06	2.16E-06	2.19E-06	5.66E-07	3.46E-06	3.53E-06	2.96E-06	3.75E-06	9.62E-06	1.97E-06	1.15E-06	1.09E-06	1.39E-06
Chlorobenzene	108-90-7	028	2.58E-05	2.66E-05	1.22E-05	2.03E-05	4.29E-06	2.83E-05	3.86E-05	4.46E-05	2.27E-05	1.43E-05	2.57E-06	9.94E-07	5.47E-06	2.92E-06
Chloroethane	75-00-3	029	4.25E-05	3.43E-05	1.68E-05	2.69E-05	5.76E-06	3.78E-05	5.07E-05	5.76E-05	3.11E-05	2.52E-05	4.74E-06	2.14E-06	7.64E-06	4.71E-06
Chloroform	67-66-3	030	2.64E-05	2.66E-05	1.23E-05	2.04E-05	4.3E-06	2.84E-05	3.87E-05	4.46E-05	2.29E-05	1.47E-05	2.67E-06	1.05E-06	5.51E-06	2.99E-06
Chloromethane	74-87-3	031	6.58E-05	3.99E-05	2.16E-05	3.27E-05	7.14E-06	4.65E-05	6.08E-05	6.76E-05	3.96E-05	4.13E-05	7.99E-06	3.97E-06	9.95E-06	7.14E-06
Chloroprene	126-99-8	032	2.95E-05	1.12E-06	3.92E-06	3.19E-06	9.21E-07	5.42E-06	4.56E-06	2.62E-06	6.67E-06	2.14E-05	4.43E-06	2.63E-06	2.05E-06	3.01E-06
cis-1,2-Dichloroethene	156-59-2	033	0.000212	3.25E-05	3.66E-05	3.96E-05	9.94E-06	6.15E-05	6.58E-05	5.91E-05	6.41E-05	0.00015	3.07E-05	1.77E-05	1.83E-05	2.19E-05
Dichlorodifluoromethane (CFC 12)	75-71-8	034	9.36E-05	2.41E-06	1.21E-05	9.36E-06	2.77E-06	1.62E-05	1.29E-05	6.46E-06	2.04E-05	6.83E-05	1.41E-05	8.43E-06	6.35E-06	9.54E-06
Dichloromethane (Methylene Chloride)	75-09-2	035	0.000295	0.000145	0.000085	0.000123	0.000027	0.000177	0.000226	0.000247	0.000155	0.000191	0.000038	0.00002	0.00004	0.000032
Ethylbenzene	100-41-4	036	0.001788	0.000075	0.00024	0.000199	0.000057	0.000336	0.000287	0.000171	0.00041	0.0013	0.000269	0.000159	0.000125	0.000183
Mercury, elemental	7439-97-6	037	4.89E-07	1.78E-07	1.21E-07	1.63E-07	6.19E-08	2.24E-07	2.91E-07	3.19E-07	2.82E-07	8.22E-07	1.16E-07	6.96E-08	1.03E-07	1.58E-07
m,p-Xylenes	179601-23-1	038	0.00338	0.000121	0.000447	0.000361	0.000105	0.000615	0.000513	0.000289	0.000761	0.002461	0.000509	0.000303	0.000234	0.000345
o-Xylene	95-47-6	039	0.000987	0.000045	0.000134	0.000112	0.000032	0.000188	0.000163	0.0001	0.000228	0.000717	0.000148	0.000088	0.00007	0.000101
Styrene	100-42-5	040	0.00011	6.07E-06	1.53E-05	1.32E-05	3.69E-06	2.19E-05	1.96E-05	1.29E-05	2.61E-05	7.95E-05	1.64E-05	9.72E-06	7.91E-06	1.12E-05
Tetrachloroethene	127-18-4	041	0.00018	2.55E-05	3.04E-05	3.23E-05	8.17E-06	5.03E-05	5.32E-05	4.69E-05	5.31E-05	0.000128	2.61E-05	1.51E-05	1.52E-05	1.86E-05
Toluene	108-88-3	042	0.004918	0.000321	0.0007	0.000625	0.000172	0.001029	0.000943	0.000661	0.001203	0.003556	0.000733	0.000433	0.000362	0.000504
trans-1,2-Dichloroethene	156-60-5	043	5E-05	2.92E-05	1.6E-05	2.41E-05	5.27E-06	3.43E-05	4.46E-05	4.94E-05	2.93E-05	3.16E-05	6.13E-06	3.07E-06	7.39E-06	5.41E-06
Trichloroethene	79-01-6	044	0.000317	0.00003	0.000048	0.000047	0.000012	0.000075	0.000074	0.000059	0.000084	0.000227	0.000047	0.000027	0.000025	0.000033
Trichlorofluoromethane	75-69-4	045	6.11E-05	3.74E-06	8.62E-06	7.59E-06	2.1E-06	1.26E-05	1.14E-05	7.79E-06	1.48E-05	4.42E-05	9.13E-06	5.4E-06	4.46E-06	6.26E-06
Vinyl Acetate	108-05-4	046	2.88E-05	1.1E-06	3.83E-06	3.13E-06	9.02E-07	5.31E-06	4.47E-06	2.58E-06	6.53E-06	2.1E-05	4.33E-06	2.58E-06	2.01E-06	2.94E-06
Vinyl Chloride	75-01-4	047	0.000114	2.82E-05	2.33E-05	2.86E-05	6.79E-06	4.28E-05	4.98E-05	4.95E-05	4.14E-05	7.84E-05	1.59E-05	8.93E-06	1.13E-05	1.19E-05
1,2,3-Trimethylbenzene	526-73-8	048	0.000137	2.77E-06	1.74E-05	1.32E-05	3.97E-06	2.3E-05	1.8E-05	8.22E-06	2.95E-05	0.0001	2.08E-05	1.24E-05	9.21E-06	1.4E-05

			AERMOD Modeled Concentration (µg/m^3)													
			Site Number													
Toxic Air Pollutant	CAS #	AERMOD ID	Ref1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
1,2,4-Trimethylbenzene	95-63-6	049	0.00035	7.05E-06	4.44E-05	3.37E-05	1.01E-05	5.87E-05	4.58E-05	2.09E-05	7.52E-05	0.000256	5.3E-05	3.16E-05	2.35E-05	3.57E-05
1,3,5-Trimethylbenzene	108-67-8	050	0.000151	3.04E-06	1.91E-05	1.45E-05	4.35E-06	2.53E-05	1.97E-05	9.02E-06	3.24E-05	0.00011	2.28E-05	1.36E-05	1.01E-05	1.54E-05
1,3-Butadiene	106-99-0	051	8.74E-06	1.76E-07	1.11E-06	8.4E-07	2.52E-07	1.46E-06	1.14E-06	5.23E-07	1.88E-06	6.39E-06	1.32E-06	7.89E-07	5.86E-07	8.9E-07
1,3-Dichloropropene (trans-1,3-Dichloropropene)	542-75-6	052	9.2E-06	1.85E-07	1.17E-06	8.85E-07	2.65E-07	1.54E-06	1.2E-06	5.5E-07	1.98E-06	6.72E-06	1.39E-06	8.31E-07	6.16E-07	9.37E-07
1,4-Dioxane	123-91-1	053	2.91E-05	5.87E-07	3.7E-06	2.8E-06	8.4E-07	4.88E-06	3.81E-06	1.74E-06	6.25E-06	2.13E-05	4.41E-06	2.63E-06	1.95E-06	2.97E-06
2,2,4-Trimethylpentane	540-84-1	054	0.000222	4.48E-06	2.82E-05	2.14E-05	6.41E-06	3.73E-05	2.91E-05	1.33E-05	4.77E-05	0.000162	3.36E-05	2.01E-05	1.49E-05	2.26E-05
2-Methylthiophene	554-14-3	055	9.13E-05	1.84E-06	1.16E-05	8.79E-06	2.64E-06	1.53E-05	1.19E-05	5.46E-06	1.96E-05	6.68E-05	1.38E-05	8.25E-06	6.12E-06	9.31E-06
2-Propanol (Isopropyl Alcohol)	67-63-0	056	0.000483	9.73E-06	6.13E-05	4.64E-05	1.39E-05	8.09E-05	6.31E-05	2.89E-05	0.000104	0.000353	7.31E-05	4.36E-05	3.24E-05	4.92E-05
3-Methylthiophene	616-44-4	057	6.34E-05	1.28E-06	8.05E-06	6.1E-06	1.83E-06	1.06E-05	8.29E-06	3.79E-06	1.36E-05	4.63E-05	9.59E-06	5.73E-06	4.25E-06	6.46E-06
4-Ethyltoluene	622-96-8	058	0.000424	8.54E-06	5.38E-05	4.08E-05	1.22E-05	7.11E-05	5.54E-05	2.54E-05	9.11E-05	0.00031	6.42E-05	3.83E-05	2.84E-05	4.32E-05
Acetaldehyde	75-07-0	059	1.04E-06	2.09E-08	1.32E-07	9.99E-08	3E-08	1.74E-07	1.36E-07	6.21E-08	2.23E-07	7.59E-07	1.57E-07	9.38E-08	6.96E-08	1.06E-07
Benzyl chloride (alpha-Chlorotoluene)	100-44-7	060	1.05E-05	2.11E-07	1.33E-06	1.01E-06	3.02E-07	1.75E-06	1.37E-06	6.26E-07	2.25E-06	7.65E-06	1.58E-06	9.45E-07	7.01E-07	1.07E-06
Carbonyl Sulfide	463-58-1	061	4.83E-05	9.73E-07	6.13E-06	4.65E-06	1.39E-06	8.1E-06	6.31E-06	2.89E-06	1.04E-05	3.53E-05	7.31E-06	4.36E-06	3.24E-06	4.92E-06
Chlorodifluoromethane (CFC 22)	75-45-6	062	6.95E-05	1.4E-06	8.82E-06	6.69E-06	2.01E-06	1.17E-05	9.09E-06	4.16E-06	1.49E-05	5.08E-05	1.05E-05	6.28E-06	4.66E-06	7.08E-06
Cumene	98-82-8	063	0.000158	3.19E-06	2.01E-05	1.52E-05	4.57E-06	2.66E-05	2.07E-05	9.47E-06	3.4E-05	0.000116	2.4E-05	1.43E-05	1.06E-05	1.61E-05
Cyclohexane	110-82-7	064	0.000595	0.000012	0.000076	0.000057	0.000017	0.0001	0.000078	0.000036	0.000128	0.000435	0.00009	0.000054	0.00004	0.000061
Dichlorofluoromethane (CFC 21)	75-43-4	065	7.15E-05	1.44E-06	9.08E-06	6.88E-06	2.06E-06	1.2E-05	9.35E-06	4.28E-06	1.54E-05	5.23E-05	1.08E-05	6.46E-06	4.79E-06	7.28E-06
Dimethyl Disulfide	624-92-0	066	1.13E-05	2.28E-07	1.43E-06	1.09E-06	3.26E-07	1.9E-06	1.48E-06	6.76E-07	2.43E-06	8.26E-06	1.71E-06	1.02E-06	7.58E-07	1.15E-06
Dimethyl Mercury	627-44-1	067	2.09E-09	4.2E-11	2.65E-10	2.01E-10	6.02E-11	3.5E-10	2.73E-10	1.25E-10	4.48E-10	1.52E-09	3.16E-10	1.88E-10	1.4E-10	2.12E-10
Dimethyl Sulfide	75-18-3	068	0.000824	0.000017	0.000105	0.000079	0.000024	0.000138	0.000108	0.000049	0.000177	0.000602	0.000125	0.000074	0.000055	0.000084
Ethane	74-84-0	069	0.000867	0.000017	0.00011	0.000083	0.000025	0.000145	0.000113	0.000052	0.000186	0.000634	0.000131	0.000078	0.000058	0.000088
Ethanol	64-17-5	070	0.00014	2.81E-06	1.77E-05	1.34E-05	4.03E-06	2.34E-05	1.83E-05	8.36E-06	3E-05	0.000102	2.11E-05	1.26E-05	9.36E-06	1.42E-05
Ethyl Mercaptan	75-08-1	071	4.51E-05	9.08E-07	5.72E-06	4.34E-06	1.3E-06	7.56E-06	5.89E-06	2.7E-06	9.68E-06	3.29E-05	6.82E-06	4.07E-06	3.02E-06	4.59E-06
Formaldehyde	50-00-0	072	1.12E-05	2.25E-07	1.42E-06	1.08E-06	3.23E-07	1.88E-06	1.46E-06	6.7E-07	2.4E-06	8.18E-06	1.69E-06	1.01E-06	7.5E-07	1.14E-06
Heptane	142-82-5	073	0.001022	0.000021	0.00013	0.000098	0.000029	0.000171	0.000134	0.000061	0.000219	0.000747	0.000155	0.000092	0.000068	0.000104
Hexachlorobutadiene	87-68-3	074	8.69E-05	1.75E-06	1.1E-05	8.36E-06	2.51E-06	1.46E-05	1.14E-05	5.2E-06	1.87E-05	6.35E-05	1.31E-05	7.85E-06	5.82E-06	8.85E-06
Hexachloroethane	67-72-1	075	7.79E-05	1.57E-06	9.89E-06	7.49E-06	2.25E-06	1.31E-05	1.02E-05	4.66E-06	1.67E-05	5.69E-05	1.18E-05	7.04E-06	5.22E-06	7.94E-06
Hexane	110-54-3	076	0.000493	9.93E-06	6.26E-05	4.74E-05	1.42E-05	8.27E-05	6.45E-05	2.95E-05	0.000106	0.00036	7.46E-05	4.45E-05	3.3E-05	5.02E-05
Hydrogen Sulfide	7783-06-4	077	0.018822	0.000379	0.002389	0.001811	0.000543	0.003155	0.002461	0.001126	0.004042	0.013757	0.002849	0.0017	0.001261	0.001918
Isobutyl Mercaptan	513-44-0	078	0.000211	4.25E-06	2.68E-05	2.03E-05	6.09E-06	3.54E-05	2.76E-05	1.26E-05	4.53E-05	0.000154	3.2E-05	1.91E-05	1.41E-05	2.15E-05
Isopropyl Mercaptan	75-33-2	079	0.000819	0.000016	0.000104	0.000079	0.000024	0.000137	0.000107	0.000049	0.000176	0.000598	0.000124	0.000074	0.000055	0.000083
Methyl Mercaptan	74-93-1	080	0.000508	0.00001	0.000065	0.000049	0.000015	0.000085	0.000066	0.00003	0.000109	0.000372	0.000077	0.000046	0.000034	0.000052
Methyl tert-butyl ether	1634-04-4	081	2.91E-05	5.87E-07	3.7E-06	2.8E-06	8.4E-07	4.88E-06	3.81E-06	1.74E-06	6.25E-06	2.13E-05	4.41E-06	2.63E-06	1.95E-06	2.97E-06
Naphthalene	91-20-3	082	4.29E-05	8.64E-07	5.45E-06	4.13E-06	1.24E-06	7.19E-06	5.61E-06	2.57E-06	9.22E-06	3.14E-05	6.5E-06	3.88E-06	2.88E-06	4.37E-06
n-Butane	106-97-8	083	0.002248	0.000045	0.000285	0.000216	0.000065	0.000377	0.000294	0.000134	0.000483	0.001643	0.00034	0.000203	0.000151	0.000229
n-Pentane	109-66-0	084	0.000741	0.000015	0.000094	0.000071	0.000021	0.000124	0.000097	0.000044	0.000159	0.000542	0.000112	0.000067	0.00005	0.000075
p-Cymene	99-87-6	085	0.001916	0.000039	0.000243	0.000184	0.000055	0.000321	0.00025	0.000115	0.000411	0.0014	0.00029	0.000173	0.000128	0.000195
Propane	74-98-6	086	0.002178	0.000044	0.000276	0.00021	0.000063	0.000365	0.000285	0.00013	0.000468	0.001592	0.00033	0.000197	0.000146	0.000222
Propene (Propylene)	115-07-1	087	0.000445	8.97E-06	5.65E-05	4.28E-05	1.28E-05	7.46E-05	5.82E-05	2.66E-05	9.56E-05	0.000325	6.74E-05	4.02E-05	2.98E-05	4.53E-05
Propylbenzene	103-65-1	088	0.000117	2.37E-06	1.49E-05	1.13E-05	3.39E-06	1.97E-05	1.54E-05	7.03E-06	2.52E-05	8.59E-05	1.78E-05	1.06E-05	7.87E-06	1.2E-05
tert-Butyl Mercaptan	75-66-1	089	4.15E-05	8.35E-07	5.26E-06	3.99E-06	1.2E-06	6.95E-06	5.42E-06	2.48E-06	8.91E-06	3.03E-05	6.28E-06	3.75E-06	2.78E-06	4.23E-06
Tetrahydrofuran	109-99-9	090	0.000593	0.000012	0.000075	0.000057	0.000017	0.000099	0.000077	0.000035	0.000127	0.000433	0.00009	0.000054	0.00004	0.00006
Thiophene	110-02-1	091	0.001016	0.00002	0.000129	0.000098	0.000029	0.00017	0.000133	0.000061	0.000218	0.000743	0.000154	0.000092	0.000068	0.000104
2,4-D	94-75-7	092	7.48E-06	1.19E-05	4.99E-06	8.77E-06	1.82E-06	1.21E-05	1.69E-05	1.99E-05	9.38E-06	3.4E-06	5.33E-07	7.38E-08	2.19E-06	8.96E-07
2-Methyl1-Propanol	78-83-1	093	0.003027	0.004831	0.002019	0.003549	0.000735	0.004893	0.006844	0.008045	0.003792	0.001376	0.000215	0.00003	0.000887	0.000362
Acrolein	107-02-8	094	8.28E-06	1.32E-05	5.52E-06	9.71E-06	2.01E-06	1.34E-05	1.87E-05	2.2E-05	1.04E-05	3.76E-06	5.89E-07	8.16E-08	2.43E-06	9.91E-07
Aldrin	309-00-2	095	8.28E-09	1.32E-08	5.52E-09	9.71E-09	2.01E-09	1.34E-08	1.87E-08	2.2E-08	1.04E-08	3.76E-09	5.89E-10	8.16E-11	2.43E-09	9.91E-10
alpha-Hexachlorocyclohexane	319-84-6	096	8.28E-09	1.32E-08	5.52E-09	9.71E-09	2.01E-09	1.34E-08	1.87E-08	2.2E-08	1.04E-08	3.76E-09	5.89E-10	8.16E-11	2.43E-09	9.91E-10
Ammonia	7664-41-7	097	0.001324	0.002113	0.000883	0.001552	0.000321	0.002139	0.002992	0.003518	0.001658	0.000602	0.000094	0.000013	0.000388	0.000158
Aroclor 1242	53469-21-9	098	4.31E-07	6.87E-07	2.87E-07	5.05E-07	1.05E-07	6.96E-07	9.73E-07	1.14E-06	5.39E-07	1.96E-07	3.06E-08	4.25E-09	1.26E-07	5.15E-08
Aroclor 1248	12672-29-6	099	8.28E-09	1.32E-08	5.52E-09	9.71E-09	2.01E-09	1.34E-08	1.87E-08	2.2E-08	1.04E-08	3.76E-09	5.89E-10	8.16E-11	2.43E-09	9.91E-10
Aroclor 1254	11097-69-1	100	1.52E-07	2.43E-07	1.02E-07	1.79E-07	3.7E-08	2.46E-07	3.44E-07	4.05E-07	1.91E-07	6.93E-08	1.08E-08	1.5E-09	4.47E-08	1.82E-08

			AERMOD Modeled Concentration (µg/m^3)													
			Site Number													
Toxic Air Pollutant	CAS #	AERMOD ID	Ref1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
beta-Hexachlorocyclohexane	319-85-7	101	2.32E-07	3.7E-07	1.55E-07	2.72E-07	5.63E-08	3.75E-07	5.24E-07	6.16E-07	2.9E-07	1.05E-07	1.65E-08	2.29E-09	6.8E-08	2.78E-08
Chlordane	57-74-9	102	8.28E-09	1.32E-08	5.52E-09	9.71E-09	2.01E-09	1.34E-08	1.87E-08	2.2E-08	1.04E-08	3.76E-09	5.89E-10	8.16E-11	2.43E-09	9.91E-10
DDD (dichlorodiphenyldichloroethane) [4,4'-DDD]	72-54-8	103	8.28E-09	1.32E-08	5.52E-09	9.71E-09	2.01E-09	1.34E-08	1.87E-08	2.2E-08	1.04E-08	3.76E-09	5.89E-10	8.16E-11	2.43E-09	9.91E-10
DDE (dichlorodiphenyldichloroethylene) [4,4'-DDE]	72-55-9	104	8.28E-09	1.32E-08	5.52E-09	9.71E-09	2.01E-09	1.34E-08	1.87E-08	2.2E-08	1.04E-08	3.76E-09	5.89E-10	8.16E-11	2.43E-09	9.91E-10
DDT(dichlorodiphenyltrichloroethane) [4,4'-DDT]	50-29-3	105	8.28E-09	1.32E-08	5.52E-09	9.71E-09	2.01E-09	1.34E-08	1.87E-08	2.2E-08	1.04E-08	3.76E-09	5.89E-10	8.16E-11	2.43E-09	9.91E-10
Delta BHC	319-86-8	106	2.52E-08	4.03E-08	1.68E-08	2.96E-08	6.13E-09	4.08E-08	5.71E-08	6.71E-08	3.16E-08	1.15E-08	1.8E-09	2.49E-10	7.4E-09	3.02E-09
Dieldrin	60-57-1	107	8.28E-09	1.32E-08	5.52E-09	9.71E-09	2.01E-09	1.34E-08	1.87E-08	2.2E-08	1.04E-08	3.76E-09	5.89E-10	8.16E-11	2.43E-09	9.91E-10
gamma-Hexachlorocyclohexane (lindane)	58-89-9	108	2.46E-07	3.92E-07	1.64E-07	2.88E-07	5.97E-08	3.97E-07	5.56E-07	6.53E-07	3.08E-07	1.12E-07	1.75E-08	2.42E-09	7.2E-08	2.94E-08
Heptachlor	76-44-8	109	8.28E-09	1.32E-08	5.52E-09	9.71E-09	2.01E-09	1.34E-08	1.87E-08	2.2E-08	1.04E-08	3.76E-09	5.89E-10	8.16E-11	2.43E-09	9.91E-10
Heptachlor Epoxide	1024-57-3	110	1.88E-08	3E-08	1.25E-08	2.21E-08	4.57E-09	3.04E-08	4.25E-08	5E-08	2.36E-08	8.55E-09	1.34E-09	1.86E-10	5.51E-09	2.25E-09
Methyl Iodide	74-88-4	111	3.31E-07	5.29E-07	2.21E-07	3.88E-07	8.04E-08	5.35E-07	7.49E-07	8.8E-07	4.15E-07	1.51E-07	2.36E-08	3.27E-09	9.71E-08	3.96E-08
Methyl Methacrylate	80-62-6	112	8.68E-06	1.38E-05	5.79E-06	1.02E-05	2.11E-06	1.4E-05	1.96E-05	2.31E-05	1.09E-05	3.95E-06	6.17E-07	8.56E-08	2.54E-06	1.04E-06
Propionitrile	107-12-0	113	6.28E-06	1E-05	4.19E-06	7.36E-06	1.52E-06	1.02E-05	1.42E-05	1.67E-05	7.87E-06	2.86E-06	4.47E-07	6.19E-08	1.84E-06	7.52E-07
Toxaphene	8001-35-2	114	8.28E-07	1.32E-06	5.52E-07	9.71E-07	2.01E-07	1.34E-06	1.87E-06	2.2E-06	1.04E-06	3.76E-07	5.89E-08	8.16E-09	2.43E-07	9.91E-08
trans-Chlordane	5103-74-2	115	9.21E-08	1.47E-07	6.14E-08	1.08E-07	2.24E-08	1.49E-07	2.08E-07	2.45E-07	1.15E-07	4.19E-08	6.55E-09	9.08E-10	2.7E-08	1.1E-08
Carbon Monoxide	630-08-0	116	0.048328	0.004553	0.008101	0.007764	0.005332	0.010132	0.011596	0.010768	0.021666	0.105168	0.015312	0.008913	0.010441	0.020685
Sulfur dioxide	7446-09-5	117	0.664485	0.060556	0.104036	0.099012	0.073191	0.131093	0.150991	0.143355	0.299919	1.419249	0.194263	0.122451	0.138874	0.270002
Hydrogen chloride	7647-01-0	118	0.023782	0.002167	0.003723	0.003544	0.002619	0.004692	0.005404	0.005131	0.010734	0.050794	0.006953	0.004382	0.00497	0.009663

APPENDIX G
TOXICITY GUIDELINES

G-1. 1,1-DICHLOROETHANE

1,1-dichloroethane exceeded the ASIL. It was not detected in the field sampling, but was estimated in the air modeling. 1,1-dichloroethane is classified by EPA as a possible human carcinogen, but does not have any regulatory or guidance toxicity values based on cancer endpoints. California OEHHA has an inhalation unit risk used in this assessment based on an oral study with a significant dose-response trend in hemangiosarcomas and mammary tumors in female rats and liver tumors and endometrial stromal polyps in mice; only endometrial stromal polyps were significantly increased over the controls (EPA 2000e).

G-2. 1,1,2,2-TETRACHLOROETHANE

1,1,2,2-tetrachloroethane exceeded the ASIL. It was not detected in the field sampling, but was estimated in the air modeling. 1,1,2,2-tetrachloroethane is classified by EPA as a possible human carcinogen, but does not have any regulatory or guidance inhalation toxicity values based on cancer endpoints. California OEHHA has an inhalation unit risk used in this assessment based on an increased incidence of hepatocellular tumors in mice, but not in rats (EPA 2000f)

G-3. 1,2-DIBROMOMETHANE

1,2-dibromomethane exceeded the ASIL. It was not detected in the field sampling, but was estimated in the air modeling. 1,2-dibromoethane is classified by EPA as a likely to be carcinogenic to humans. EPA developed an inhalation unit risk of $6x10^{-4}$ per $\mu g/m^3$ (95% upper bound) based on nasal cavity tumors, hemangiocarcomas, and mesotheliomas (EPA 2004).

G-4. 1,2-DICHLOROETHANE

1,2-dichloroethane exceeded the ASIL, but not the ATSDR MRL or the California REL. 1,2-dichloroethane was sampled for during onsite sampling. It was only detected at S1 on June 23 and S5 on June 22. All other samples were non-detect.

Chronic effects due to inhalation exposure to 1,2-dichloroethane, also known as ethylene dichloride, include effects on the liver and kidneys in animals (EPA 2000c). Reproductive effects, including decreased fertility and increased embryo mortality, have been reported in inhalation studies in rats (EPA 2000c). U.S. EPA has classified 1,2-dichloroethane as a Group B2, probable human carcinogen based on an increase in several tumor types following oral exposure (EPA 2000c).

ATSDR established a chronic inhalation MRL for 1,2-dichloroethane of 0.8 mg/m^3 (800 $\mu g/m^3$) based on liver histopathology in rats exposed for to 1,2-dichloroethane 7 hours/day, 5 days/week for 2 years (Cheever et al. 1990 as cited in ATSDR 2001b). The MRL was derived by dividing the NOAEL of 50 ppm (72 mg/m^3) by an uncertainty factor of 90 (3 for interspecies extrapolation; 10 for human variability; and 3 for database deficiencies) (ATSDR 2001b). The California OEHHA has established a chronic REL of 0.4 mg/m^3 for 1,2-dichloroethane based on

elevated liver enzyme levels in serum in animals. Rats were exposed to 5, 10, 50 or 150-250 ppm 1,2-dichloroethane for 7 hours/day, 5 days/week for 1 year (Spreafico et al. 1980 as cited in OEHHA 1999). The NOAEL and LOAEL were 10 ppm and 50 ppm, respectively. To derive the REL, a human equivalent concentration of 3.2 ppm was calculated from the NOAEL and then divided by an uncertainty factor of 30 (3 for interspecies extrapolation; 10 for human variability) (OEHHA 1999).

G-5. 1,4-DICHLOROBENZENE

ATSDR established a chronic inhalation MRL of 0.01 ppm (60 µg/m^3) based on an increased incidence of nasal lesions in an inhalation study in rats. In this study rats and mice were exposed to 1,4-dichlorobenzene in target concentrations of 0, 20, 75, or 300 ppm (0, 123, 463, 1,852 mg/m^3)for six hours/day, five days/week for 104 weeks (Aiso et al. 2005b, Japan Bioassay Research Center 1995 as cited in ATSDR 2006). The NOAEL and LOAEL for these nasal lesions were 19.8 and 74.8 ppm (122 and 462 mg/m^3), respectively. A benchmark dose concentration 10% lower limit ($BMDL_{10}$) of 9.51 ppm was derived from these data and then duration-adjusted for intermittent exposure to obtain a $BMDL_{10ADJ}$ of 1.70 ppm (10.5 mg/m^3). This value was then converted to a human equivalent concentration (0.27ppm, 1.67 mg/m^3) and divided by an uncertainty factor of 30 (3 for interspecies extrapolation; 10 for human variability) to obtain a chronic MRL of 0.01 ppm (60 µg/m^3).

The California OEHHA has established a chronic inhalation REL of 800 µg/m^3 for 1,4-dichlorobenzene based on increased liver and kidney weights in male rats. In a two-generation reproductive study, rats were exposed to 0, 50, 150 or 450 ppm (0, 301, 902, or 2,705 mg/m^3) of 1,4-dichlorobenzene vapor, six hours/day, seven days/week for ten weeks, and then mated for three weeks (Chlorobenzene Producers Association 1986 as cited in OEHHA 2019). The second-generation weanlings were exposed to 1,4-dichlorobenzene for 11 weeks and then mated. The NOAEL and LOAEL for increased liver and kidney weights in parental males were 50 ppm (301 mg/m^3) and 150 ppm (902 mg/m^3), respectively. The NOAEL was then duration-adjusted for intermittent exposure (13 ppm, 75 mg/m^3) and divided by an uncertainty factor of 100 (3 for a subchronic study; 3 for interspecies extrapolation; 10 for human variability) to obtain a chronic REL of 800 µg/m^3. This same study and derivation are used for the EPA RfC (EPA 1994).

EPA has classified 1,4-dichlorobenzene as a Group B2, probable human carcinogen based on increased incidence of liver tumors after oral exposure in animals (IARC 2018). Although EPA has classified 1,4-diclorobenzene as a probable human carcinogen, no inhalation unit risk was derived. California OEHHA calculated an inhalation unit cancer risk estimate for 1,4-dichlorobenzene of 1.1 x 10^{-5} (µg/m^3)$^{-1}$ based on the data identified by EPA (OEHAA 2011).

G-6. 2-BUTANONE (MEK)

An acute-duration inhalation MRL of 1 ppm (3050 µg/m^3) was derived for 2-butanone based on reported neurological symptoms in human volunteers. Tomicic et al. (2011 as cited in ATSDR

2020a) exposed volunteers (n= 25) to 100 ppm (305 mg/m^3) (99.15 ppm measured concentration) 2-butanone for six hours. The volunteers reported headache, fatigue, feeling of intoxication, and eye/ nose/ throat irritation. The MRL is based on the LOAEL (not adjusted for continuous exposure) of 99.15 ppm and an uncertainty factor of 100 (10 for a LOAEL; 10 for human variability).

G-7. ACROLEIN

Acrolein exceeded the acute, inhalation MRL of 10 µg/m^3. This value is based on nasal and throat irritation in humans with an uncertainty factors of 10 for intraspecies variability and 10 for using a LOAEL (ATSDR, 2007b).

G-8. ACRYLONITRILE

Headaches, fatigue, nausea, and weakness have been reported in workers chronically exposed to acrylonitrile in air (EPA 2000a). In rats chronically exposed by inhalation, respiratory effects (degenerative and inflammatory changes in the respiratory system) and effects on brain cells have been observed (EPA 2000a).

No chronic inhalation MRL has been established for acrylonitrile. The California OEHHA has established a chronic REL of 5 µg/m^3 for acrylonitrile based on respiratory system effects in animals. Rats were exposed to 0, 20, or 80 ppm acrylonitrile for 6 hours/day, 5 days/week for 2 years (Quast et al. 1980 as cited in OEHHA 1999). Degeneration and inflammation of nasal respiratory epithelium and hyperplasia of mucous secreting cells were observed at the LOAEL of 20 ppm (43 mg/m3). To derive the REL, a human equivalent concentration of 0.067 ppm was calculated from the LOAEL and divided by an uncertainty factor of 30 (3 for interspecies extrapolation; 10 for human variability) (OEHHA 1999). The RfC for acrylonitrile is 2 µg/m^3 based on the same study as the OEHHA REL using the LOAEL of 20 ppm (43 mg/m^3) and uncertainty factor of 1000 (3 for a LOAEL; 3 for interspecies extrapolation; 10 for human variability; 10 for database limitations) (EPA 1987).

EPA has classified acrylonitrile as a Group B1, probable human carcinogen based on limited evidence in humans and evidence in rats (EPA 2000a). EPA has calculated an inhalation unit cancer risk estimate for acrylonitrile of 6.8 x 10^{-5} (µg/m^3)$^{-1}$ based on respiratory cancers in humans exposed to acrylonitrile in air (EPA 1987).

G-9. ALDRIN

Aldrin is an organochlorine pesticide; the air modeling estimated an air concentration that exceeded the chronic ASIL. EPA lists aldrin as a probable human carcinogen based on an oral study that reported liver tumors in mice. The inhalation unit risk was extrapolated from the oral study (EPA 1997).

G-10. ALLYL CHLORIDE

No chronic inhalation MRL or REL has been established for allyl chloride. EPA established a chronic inhalation RfC of 1µg/m^3 based on functional and histological peripheral neurotoxicity in animals. Rabbits were exposed to allyl chloride at 17 or 206 mg/m^3 six hours/day, six days/week for three or five months, respectively. Reported effects in the high dose group included muscle weakness of the extremities, lurching motion, unsteady gait, paralysis, and degeneration of peripheral nerve fibers (Lu et al. 1982 as cited in EPA 1991a). The NOAEL and LOAEL for neurotoxicity were 17 mg/m^3 and 206 mg/m^3, respectively. The NOAEL was then duration-adjusted for intermittent exposure (3.6 mg/m^3) and divided by an uncertainty factor of 3,000 (10 for a subchronic study; 3 for interspecies extrapolation; 10 for human variability; 10 for database limitations) to obtain a RfC of 1 µg/m^3.

EPA has classified allyl chloride as a Group C, possible human carcinogen based on a low (but biologically important) incidence of forestomach tumors in female mice orally exposed to allyl chloride and positive results in a variety of genetic toxicity tests (EPA 1991a). Although EPA has classified allyl chloride as a possible human carcinogen, no inhalation unit risk was derived. California OEHHA calculated an inhalation unit cancer risk estimate for allyl chloride of 6 x 10^{-6} (µg/m^3)$^{-1}$ based on the data identified by EPA (OEHAA 2011).

G-11. AMMONIA

Ammonia was estimated in the air modeling to exceed the chronic ATSDR MRL. ATSDR determined both acute and chronic MRL for ammonia. The acute MRL of 1220 µg/m^3 based on eye, nose, and throat irritation in a study with human volunteers and uncertainty factors of 3 for the LOAEL and 10 for intraspecies variability. The estimated air concentration did not exceed this short-term value. The ATSDR chronic MRL is 70 µg/m^3 based on respiratory symptoms (cough, bronchitis, wheeze, dyspnea, etc.), eye and throat irritation, and pulmonary function in workers exposed for about 12 years (ATSDR 2004).

G-12. BENZENE

Benzene was detected during field sampling at least once at every sampling site, including the reference site. The air modeling estimated that benzene might exceed the chronic ASIL. EPA has a noncancer Reference Concentration for benzene of 0.003 mg/m^3 based on decreased lymphocyte counts in an occupational study. EPA also classified benzene as a known/likely human carcinogen and developed an inhalation unit risk of 2.2x10^{-6} mg/m^3 based on leukemia (EPA 2003).

G-13. BETA-HEXACHLOROCYCLOHEXANE

Beta-hexachlorocyclohexane was estimated in the air modeling at levels that exceed the ASIL. EPA has classified beta-hexachlorocyclohexane as a possible human carcinogen. This is based on

extrapolation from an oral study in which mice developed liver tumors with lifetime daily exposures.

G-14. BROMODICHLOROMETHANE

Air modeling estimated bromodichloromethane at concentrations greater than the chronic ASIL. Bromodichloromethane was also detected during field sampling with all detections on the first sampling day (7/7/2021; sites S1, S4, S8, S11, S12, S13).

EPA classified bromodichloromethane as a probable human carcinogen based on oral studies of increased incidence of kidney tumors and tumors of the large intestine in male and female rats, kidney tumors in male mice, and liver tumors in female mice; however, EPA did not determine an inhalation unit risk (1998a). OEHHA used oral studies in mice that developed kidney tumors (tubular cell adenoma and tubular cell adenocarcinoma) and extrapolated to determine an inhalation unit risk (OEHHA, 2022).

G-15. BROMOMETHANE

Bromomethane (methyl bromide) was estimated to exceed the ATSDR chronic MRL. EPA determined that bromomethane was not classifiable as to human carcinogenicity, but developed a Reference Concentration of $5x10^{-3}$ µg/m^3 based on lesions on the nasal cavity olfactory epithelium in rats (EPA 1992c).

There was insufficient data for ATSDR (2020b) to calculate an acute MRL; however, ATSDR did determine an intermediate MRL based on neurobehavioral effects in mice and a chronic MRL based on nasal lesions using the same study as EPA (Reuzel et al. 1991 as cited by ATSDR 2020b).

G-16. CHLOROFORM

Chronic inhalation exposure to chloroform has resulted in effects on the liver (hepatitis and jaundice), and central nervous system effects (depression and irritability) in humans (EPA 2000b). In animal studies, inhalation exposure has resulted in kidney effects.

ATSDR established a chronic inhalation MRL for chloroform of 0.1 mg/m^3 (100 µg/m^3) based on liver effects (hepatomegaly) in humans exposed to 2 to 205 ppm chloroform for 1-2 years (Bomski et al. 1967 as cited in ATSDR 1997). The MRL was derived by dividing the LOAEL of 2 ppm (10 mg/m^3) by an uncertainty factor of 100 (10 for a LOAEL; 10 for human variability) (ATSDR 1997).

The California OEHHA has established a chronic REL of 0.3 mg/m^3 (300 µg/m3) for chloroform based on liver and kidney effects in animals. Rats were exposed to 0, 25, 50, or 85 ppm chloroform for 7 hours/day, 5 days/week for 6 months (Torkelson et al. 1976 as cited in OEHHA 1999). Hepatic changes (mild to severe centrilobular granular degeneration, foamy vacuolization, focal necrosis, and fibrosis) and adverse effects in the kidney (cloudy swelling and nephritis)

were observed at the LOAEL of 25 ppm. To derive the REL, a human equivalent concentration of 15.9 ppm was calculated from the LOAEL and divided by an uncertainty factor of 300 (10 for a LOAEL; 3 for interspecies extrapolation; 10 for human variability) (OEHHA 1999). No RfC for chloroform has been established.

EPA has classified chloroform as a Group B2, probable human carcinogen based on increase in kidney and liver tumors after oral exposure in animals (EPA 2000b). Although EPA has classified chloroform as a probable human carcinogen, no inhalation unit risk has been derived as it is likely to be carcinogenic only under high exposure conditions that lead to cell death and regrowth in susceptible tissues (EPA 2000b).

G-17. CHLOROPRENE

Chloroprene was estimated in the air modeling to exceed the chronic ASIL. Chloroprene has an EPA chronic Reference Concentration based on "Increase in incidence of olfactory atrophy, alveolar hyperplasia, and splenic hematopoietic proliferation in male F344/N rats, female F344/N rats, and female B6C3F1 mice, respectively" (EPA 2010). EPA has also determined that chloroprene is likely to be carcinogenic to humans; the inhalation unit risk is 3x10-4 based on "alveolar/bronchiolar adenoma or carcinoma; hemangioma/hemangiosarcoma (all organs); mammary gland adenocarcinoma, carcinoma, or adenoacanthoma; forestomach squamous cell papilloma or carcinoma; hepatocellular adenoma or carcinoma; Harderian gland adenoma or carcinoma; skin sarcoma; and Zymbal's gland carcinoma" (EPA 2010).

G-18. DIELDRIN

Dieldrin is an organochlorine pesticide; the air modeling estimated an air concentration that exceeded the chronic ASIL. EPA lists dieldrin as a probable human carcinogen based on an oral study that reported liver tumors in mice. The inhalation unit risk was extrapolated from the oral study (EPA 1998b).

G-19. ETHYLBENZENE

Ethylbenzene was detected during field sampling at sites S1, S3, S7, and S11, one time each; sites S5, S10, and S12, two times each; and sites S6, and S13, three times each**.** Ethylbenzene was estimated to exceed the chronic ASIL. EPA determined that ethylbenzene was not classifiable as to human carcinogenicity. The chronic Reference Concentration is 1 mg/m^3 based on developmental effects in both rabbits (decreased number of live rabbit kits) and rats (increased supernumerary and rudimentary ribs and increased liver, spleen, and kidney weights in offspring) (EPA 1991b).

G-20. GAMMA-HEXACHLOROCYCLOHEXANE

Gamma-hexachlorocyclohexane (HCH; lindane) is a pesticide that was estimated in the air modeling at levels that exceed the ASIL. EPA has not determined a cancer classification for lindane. The International Agency for Research on Cancer (IARC) concluded that lindane is carcinogenic to humans based on sufficient evidence of non-Hodgkin lymphoma (IARC, 2015). Several case reports suggest an association between exposure to HCH isomers, including b- and g-HCH, and leukemia, aplastic anemia, liver cancer, soft-tissue sarcomas, and lung cancer (IARC 2015); however, these exposures are not well documented and there may have been coexposures to other chemicals (OEHHA 2011). OEHHA (2011) derived an inhalation unit risk for gamma-HCH based on oral studies in mice where liver tumors developed.

G-21. SULFUR DIOXIDE

Acute inhalation exposure to sulfur dioxide primarily results in respiratory effects in humans. Multiple controlled clinical studies have demonstrated increases in specific airway resistance and/or decreases in forced expiratory volume or forced expiratory flow, in human subjects exposed to sulfur dioxide (ATSDR 1998). These studies have established that people with asthma are particularly sensitive to the effects of sulfur dioxide. An acute MRL of 30 µg/m^3 for sulfur dioxide was based on respiratory effects in asthmatic humans (ATSDR 1998). In a study by Sheppard et al. (1981) exercising mild asthmatics were exposed to ≥0.1 ppm (270 µg/m^3) sulfur dioxide for 10 minutes. The two most sensitive subjects developed slight bronchoconstriction after inhaling 0.1 ppm sulfur dioxide. The acute MRL was derived by dividing the LOAEL of 0.1 ppm (270 µg/m^3) by an uncertainty factor of 9 (3 for a minimal LOAEL, 3 for human variability). The modeled concentrations of sulfur dioxide at all other locations, including the surrounding neighborhoods, was below the toxicity value. Sulfur dioxide mainly occurs as a byproduct of fossil fuel (oil, gas, etc.) combustion (ATSDR 1998).

G-22. TETRACHLOROETHENE

Tetrachloroethene (perchloroethene) was detected infrequently during field sampling and air modeling estimated that there was potential to exceed the chronic ASIL. EPA developed a Reference Concentration of 0.004 mg/m^3 which was the midpoint of two studies that reported neurotoxicity in occupationally-exposed adults: 0.056 mg/m^3 based on changes in reaction time and cognitive effects (Echeverria et al. 1995 as cited in EPA 2012) and 0.015 mg/m^3 based on changes in color vision (Cavalleri et al., 1994 as cited in EPA 2012).

EPA classified tetrachloroethene as likely to be carcinogenic in humans. The inhalation unit risk is based on hepatocellular adenomas or carcinomas from a study in mice (EPA 2012).

G-23. TOXAPHENE

Chronic inhalation exposure to toxaphene in humans results in reversible respiratory toxicity (EPA 2000d). No MRL, REL, or RfC have been established for toxaphene. It was primarily used as a pesticide, has not been widely used for decades, and current levels in air are expected to be low (less than 1 ppb) as all registrations and use of toxaphene was cancelled in 1990 (EPA 2000d).

U.S. EPA has classified toxaphene as a Group B2, probable human carcinogen based on an increased incidence of thyroid and liver tumors in animals exposed orally to toxaphene (EPA 2000d). EPA has calculated an inhalation unit cancer risk estimate for toxaphene of 3.2×10^{-4} $(\mu g/m^3)^{-1}$ based on increased thyroid tumors in rats orally exposed toxaphene (EPA 2000d).

G-24. TRICHLOROETHENE

Trichloroethene was detected infrequently during field sampling (three times) and air modeling estimated that there was potential to exceed the chronic ASIL. EPA developed a Reference Concentration of 0.002 mg/m^3 which based on developmental and immune outcomes. The Reference Concentrations was determined as the midpoint between two candidate RfCs—0.0019 mg/m^3 for decreased thymus weight in mice (Keil et al. 2009 as cited in EPA 2011) and 0.0021 mg/m^3 for fetal heart malformations in rats (Johnson et al. 2003 as cited in EPA 2011).

EPA classified trichloroethene as carcinogenic in humans. The inhalation unit risk is based on renal cell carcinoma, non-Hodgkin's lymphoma, and liver tumors (EPA 2011).

G-25. VINYL CHLORIDE

Vinyl chloride was detected infrequently during field sampling (three times) and air modeling estimated that there was potential to exceed the chronic ASIL. EPA developed a Reference Concentration of 0.1 mg/m3 which based on liver cell polymorphisms. EPA classified vinyl chloride as known/likely human carcinogen. The inhalation unit risk is based on liver angiosarcomas, angiomas, hepatomas, and neoplastic nodules in female rats (EPA 2000g).

APPENDIX H

LANDFILL GAS MANAGEMENT, MONITORING, AND CONTROL

H-1. INTRODUCTION

Landfill gas (LFG) is the natural byproduct of the decomposition of organic material in landfill wastes (EPA 2021c). LFG is composed of hundreds of different gases but, in general, typically contains 45-60% methane, 40-60% carbon dioxide, and small amounts of nitrogen, oxygen, ammonia, sulfides, hydrogen, carbon monoxide, and nonmethane organic compounds (NMOCs), such as trichloroethylene, benzene, and vinyl chloride (ATSDR 2001). The amount of these gases depends on the:

- type of wastes present in the landfill;
- the age of the landfill;
- oxygen content;
- moisture levels; and
- temperature.

LFG is produced by three processes:

- bacterial decomposition;
- volatilization; and
- chemical reactions.

Most LFG is produced by bacterial decomposition which occurs when organic wastes (e.g. food, garden waste, wood and paper products) are broken down by bacteria. Volatilization occurs when certain wastes, particularly organic compounds, change from a liquid or solid into a vapor. When certain chemicals are present in waste (e.g. chlorine bleach and ammonia), LFG, including NMOCs, can be created by the reactions that can occur between the chemicals (ATSDR 2001).

Under the landfill surface, LFGs migrate through the limited pore spaces within the refuse and soils covering the landfill. LFGs that are lighter than air (e.g. methane) have a natural tendency to move upwards, through the landfill surface, into the air. When upward movement is inhibited due to densely compacted waste or landfill cover material (e.g. by daily soil cover or caps), LFG tends to migrate horizontally to other areas within the landfill or to areas outside the landfill. Gases that are denser than air (e.g. carbon dioxide) will collect in subsurface areas. Horizontal migration of LFGs in a landfill can also impact groundwater hydraulically upgradient of the landfill.

Federal regulations promulgated under Resource Conservation and Recovery Act (RCRA), Subtitle D, require groundwater monitoring at MSW landfills. Chapter 173-304 WAC regulates the minimum functional standards for solid waste handling in Washington State

including the control, monitoring, and management of LFGs. Guidelines for the design of monitoring programs have been developed at the federal and state level (Ecology 2018).

This appendix provides an overview of the LFG management, monitoring, and controls systems implemented at the CHRLF and how they are protective of human health. Section H-2 describes the LFG management system designed to collect, convey, and prevent migration of LFG produced at the CHRLF. This section also describes how LFG is monitored at the CHRLF. Section H-3 discusses the results of the LFG monitoring at the CHRLF. Section H-4 reviews the control and management of LFG at the CHRLF. Section H-5 discusses the overall conclusions regarding the efficacy of the control and management of LFGs at the CHRLF to prevent LFG migration based on the LFG monitoring results evaluated.

H-2. LFG MANAGEMENT SYSTEM

The LFG management system consists of LFG extraction wells in waste that prevent gas from leaving the site, conveyance, and treatment facilities, and including monitoring probes, and extraction wells within soils outside the waste footprint. HDPE piping, flares, and a gas-to-energy conversion facility are also part of the system. The entire system is under vacuum and designed to prevent gas from escaping the site via groundwater or air. A network of LFG monitoring probes was installed at strategic locations and elevation intervals to monitor the potential presence of LFG in the subsurface vadose zone outside of the footprint of the landfill (details provided in Attachment G of KCSWD (2019)).

There are two categories of LFG monitoring probes, classified as migration and interior probes. Migration probes are intended to verify that methane concentrations do not exceed the lower explosive limit (LEL) of 50,000 ppm for methane at the site boundary. There are 36 migration probes installed well before 2005. Either single or multiple probes were installed at different depths. Twenty-five (25) interior probes are used to evaluate the performance of the LFG collection system with regard to (1) chemical composition of the gas, with an emphasis on methane, oxygen, carbon dioxide, and balance gas, as well as static pressure. The interior probes provide an early warning if LFG escapes the waste. While the results at the probes may indicate a need to adjust the LFG collection system, the data from the individual wells typically provides the information needed for any adjustment. This information is critical, as it is used to adjust the LFG collection and conveyance system designed to minimize the chance that LFG could migrate and be transported outside the area of the refuse footprint.

Information on specific locations, elevations, installation dates, and probe descriptions, for both types of LFG probes, is provided in Attachment G of KCSWD (2020), the *Cedar Hills Regional*

Landfill 2019 Annual Report[1]. Both migration and interior monitoring probes are measured quarterly for compliance with WAC 173-351, and monthly for operational indicators.

LFGs can affect groundwater carbon dioxide and dissolved oxygen concentrations and can convey contaminants to groundwater as well. Only monitoring of the vadose zone for the presence of LFG has value for groundwater protection, and only to the extent that it informs the potential presence and ongoing migration of LFG. In addition, compliance monitoring probes are not installed as extraction wells for LFG, although they may be periodically evacuated when LFG is detected to assess how much volume is present.

Soil vapor is monitored manually partly to protect groundwater, using the network of migration and interior probes (KCSWD 2020). LFG in soils can also impact groundwater quality. LFGs (e.g., methane, nitrogen, and carbon dioxide) displace oxygen that would naturally be present in soil vapor; carbon dioxide can also dissolve in groundwater. Changes in groundwater carbon dioxide and dissolved oxygen concentrations affect the solubility of numerous chemical compounds, including metals that would naturally be present as solid particles or adsorbed to particles. Soil vapor is managed to protect groundwater and human health and the environment using a network of LFG extraction wells installed in waste and soils (KCSWD 2020).

H-3. RESULTS OF LFG MONITORING

The following discussion is based on the monitoring results obtained in 2019 and reported in Attachment G of the 2019 Annual Report for CHRLF (KCSWD 2020a). This data supports and is consistent with LFG data collected from 2011 to 2020, the data collected since the last Site Development Plan. For LFG migration probes monitored in 2019, methane was detected in only one of the 36 migration probes, which is Probe No. ATC-3D. This single detection of methane was reported to be 0.2 percent, well below the 5 percent (50,000 ppm) lower explosive limit. This detection was from a single day in June, and no subsequent results from this individual probe detected methane.

For the interior LFG probes, methane was found in 13 of 25 probes. Seven interior probes showed methane, but each were below the 5 percent lower explosive limit. However, methane was found in six probes that exceeded the regulatory limit. Based on these measurements, adjustments were made in more than 300 LFG wells inside the landfill footprint, but upgradient of the interior probes (KCSWD 2020a, Attachment G). These modifications were made twice a month to ensure the containment of LFG within the landfill footprint. These actions were successful in preventing migration of LFG outside the landfill refuse footprint, as demonstrated by methane readings in the LFG 36 migration probes cited above. Moreover, no methane was

[1] CHRLF 2019 Annual Report can be found at: https://your.kingcounty.gov/dnrp/library/solid-waste/facilities/CHRLF-annual-report-2019.pdf

detected in any of the CHRLF facilities or offsite facilities at concentrations greater than 100 ppm. All LFG data are provided in Attachment G of KCSWD (2020a).

H-4. CONTROL AND MANAGEMENT OF LFG

Regarding control and management of LFG at the facility, Section 6.5.4 discusses the modifications and preventive measures that are implemented in areas where methane exceeds regulatory limits. The current LFG pipeline conveyance to BEW is buried and under negative pressure (i.e. if a line break occurred, the line would not release to ambient air). The system is also supported by blowers at both the NFS and the BEW inlet. If that line is not operating, then the NFS is flaring. There is also a backup pipeline to BEW that is not being currently used since it is partially above ground.

In the past, adjustments have been made in numerous LFG wells inside the landfill footprint, but upgradient of the interior probes, to ensure the containment of LFG within the landfill footprint. These actions have been successful in preventing migration of LFG outside the landfill refuse footprint in lined areas. In unlined areas such as Main Hill, LFG migration has occurred, which is why the East Perched Zone is in the MTCA Voluntary Cleanup Program process.

H-5. LFG CONCLUSIONS

This section provides overall conclusions regarding the efficacy of control and management of LFGs at the CHRLF to prevent LFG migration based on the LFG monitoring results evaluated above.

- Groundwater quality in downgradient regional wells has potentially been influenced by the presence of LFG in unsaturated soils along the flow path beneath refuse areas.
- Regarding control and management of LFG at the facility, methane exceedances occurred in excess of regulatory limits (50,000 ppm or 5 percent) in numerous interior LFG monitoring probes. However, specific modifications and preventive measures can be and have been made in areas where methane exceeds these limits. It is therefore concluded that when these BMPs or mitigation measures are employed, especially in lined areas, methane will be adequately contained, not migrate or be transported beyond the CHRLF boundary, and thus will not present any possible exposures or health effects to neighboring communities or other populations.
- These actions have been successful in preventing migration of LFG outside the landfill refuse footprint in lined areas but in unlined areas such as Main Hill, LFG migration has occurred, which is why the East Perched Zone is in the MTCA Voluntary Cleanup Program process.

APPENDIX I
ST. CROIX REPORTS

St. Croix Sensory, Inc.

Odor Evaluation Report

Report Number: 2117401

Project Name: CHRLF

Samples Collected: 6/22/21
Samples Received: 6/23/21
Samples Evaluated: 6/23/21

Report Prepared For: **Intertox**
600 Stewart St, Suite 1101
Seattle, WA 98101

Report Prepared By: **St. Croix Sensory, Inc.**
1150 Stillwater Boulevard North
Stillwater, MN 55082 U.S.A
1-800-879-9231
stcroix@fivesenses.com

Data Release Authorization:
Michelle Harty
Laboratory Manager

Reviewed and Approved:
Charles M. McGinley, P.E.
Technical Director

St. Croix Sensory is ISO/IEC 17025:2017 Accredited

Perry Johnson Laboratory Accreditation, Inc. Accreditation No.: 81047
Certificate No.: L20-534 Initial Accreditation Date: 19 May 2014

Odor Evaluation Report

St. Croix Sensory, Inc.

Client: **Intertox** Report Number: **2117401**

Project Name: **CHRLF** Samples Evaluated: **6/23/21**

#	Field No.	Sample Description	DT	RT	I	HT	DR	Comments
1	S13	Near extraction wells on top of 8. Manure scent, pungent.	120	65	4.0	-1.3	-2.07	
2	S12	Sweet, manure, earthy	130	80	3.2	-1.0	-2.03	
3	S11	Medicinal, astringent, alcohol, manure backtones, ammonia	560	290	4.8	-2.8	-2.59	
4	S8	Sweet, earthy, manure	200	120	3.8	-1.5	-2.25	
5	S4	Sweet, earthy, manure	200	100	3.0	-2.5	-1.78	
6	S1	Slightly sweet, earthy	250	140	3.7	-2.0	-1.99	
7	S3	Non detect, faint detect of manure, earthy	210	140	3.4	-1.5	-1.76	
8	S2	Slightly sweet, manure, earthy	270	140	3.5	-1.2	-1.93	
9	S9	Floral, grassy, slight exhaust	190	110	2.8	-0.9	-1.71	
10	S10	Herbaceous, grassy, floral	140	85	3.3	-1.2	-1.74	
11	Ref 1	Non detect	70	40	0.2	+0.1	-0.14	
12	S7	Non detect	60	30	0.7	+0.1	-0.43	

Odor Detection Threshold Testing (Evaluations) conducted in compliance with and under all conditions specified or required by ASTM E679 and EN13725 unless noted in report "Comments" column. The Client Chain of Custody (COC) attached to the Odor Evaluation Report provides information that may include sampling location(s), methods, and/or environmental conditions during sampling. Client, designated agents, and/or reviewers provide interpretation of results based on sampling conditions.

DT - Detection Threshold as determined by ASTM E679 and EN13725. The Practical Detection Limit (PDL) of DT is 12, based on the nominal lowest dilution presentation ratio of 8. Result is dimensionless dilution ratio at which half the assessors detect the diluted air as different from the blank air. Odor Units (OU) or Odor Units per cubic meters (OU/m3) are commonly used as pseudo-units.

RT - Recognition Threshold as determined by ASTM E679 and EN13725. Result is dimensionless dilution ratio at which half the assessors recognize a character in the diluted odorous air. Odor Units (OU) or Odor Units per cubic meter (OU/m3) are commonly used pseudo-units.

I - Perceived odor intensity as determined by ASTM E544. Intensity is expressed as average reported scale value on 10pt n-butanol in water static scale.

HT – Hedonic Tone value. Average rating of assessors' opinion of odor pleasantness on scale of -10 (most unpleasant) to +10 (most pleasant).

DR – the slope of the dose-response relationship of odor intensity with dilution (persistency of odor).

Odor Evaluation Report

St. Croix Sensory, Inc.

Client: **Intertox**
Project Name: **CHRLF**

Report Number: **2117401**
Samples Evaluated: **6/23/21**

#	Field No.	Sample Description	DT	RT	I	HT	DR	Comments
13	S6	Non detect	60	30	1.0	-0.4	-0.69	
14	S5	Non detect	50	25	1.1	-0.3	-0.78	
15	S11-Dup	Duplicate	410	200	2.9	-1.7	-2.01	

Odor Detection Threshold Testing (Evaluations) conducted in compliance with and under all conditions specified or required by ASTM E679 and EN13725 unless noted in report "Comments" column. The Client Chain of Custody (COC) attached to the Odor Evaluation Report provides information that may include sampling location(s), methods, and/or environmental conditions during sampling. Client, designated agents, and/or reviewers provide interpretation of results based on sampling conditions.

DT - Detection Threshold as determined by ASTM E679 and EN13725. The Practical Detection Limit (PDL) of DT is 12, based on the nominal lowest dilution presentation ratio of 8. Result is dimensionless dilution ratio at which half the assessors detect the diluted air as different from the blank air. Odor Units (OU) or Odor Units per cubic meters (OU/m3) are commonly used as pseudo-units.

RT - Recognition Threshold as determined by ASTM E679 and EN13725. Result is dimensionless dilution ratio at which half the assessors recognize a character in the diluted odorous air. Odor Units (OU) or Odor Units per cubic meter (OU/m3) are commonly used pseudo-units.

I - Perceived odor intensity as determined by ASTM E544. Intensity is expressed as average reported scale value on 10pt n-butanol in water static scale.

HT – Hedonic Tone value. Average rating of assessors' opinion of odor pleasantness on scale of -10 (most unpleasant) to +10 (most pleasant).

DR – the slope of the dose-response relationship of odor intensity with dilution (persistency of odor).

St. Croix Sensory, Inc.

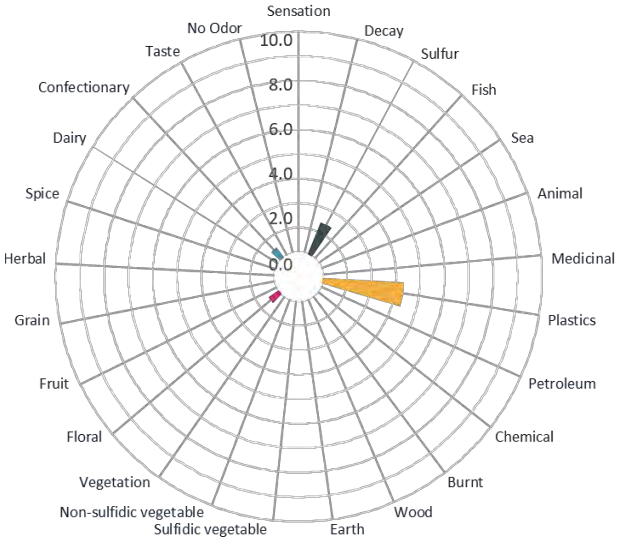
Report Number: 2117401
Client: Intertox
Project Name: CHRLF
Samples Evaluated: 6/23/2021

Field No: S13
Description: Near extraction wells on top of 8. Manure scent, pungent.

DT: 120
RT: 65
I: 4.0
HT: -1.3
DR: -2.07

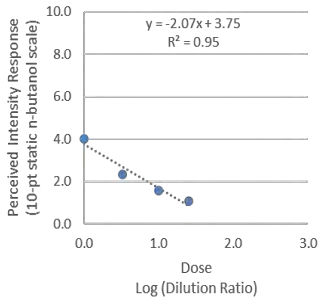
Comments:

Odor Descriptors



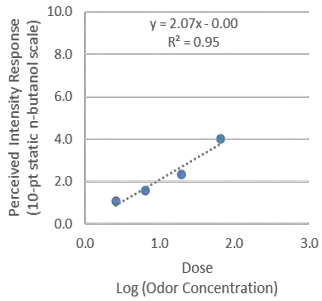
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
2.4	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
4.4	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
0.8	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
1.0	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

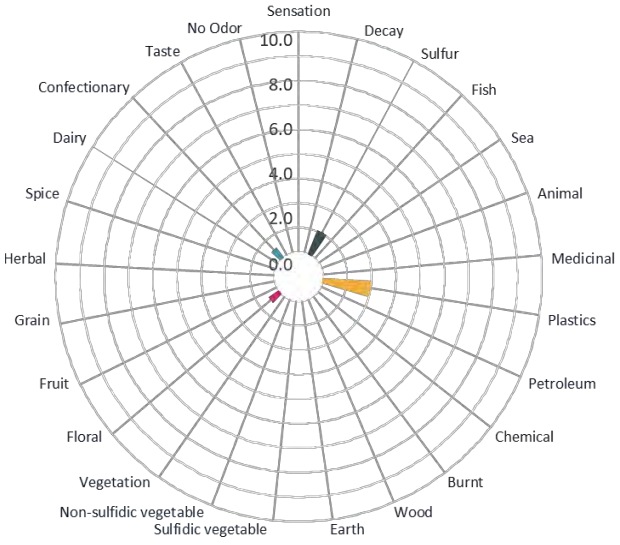
Report Number: 2117401
Client: Intertox
Project Name: CHRLF
Samples Evaluated: 6/23/2021

Field No: S12
Description: Sweet, manure, earthy

DT: 130
RT: 80
I: 3.2
HT: -1.0
DR: -2.03

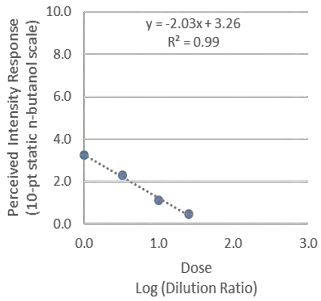
Comments:

Odor Descriptors



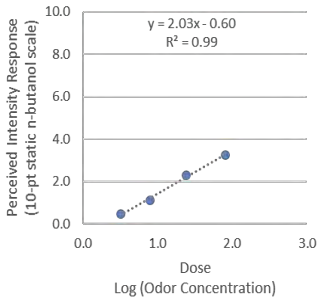
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
2.1	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
3.0	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
0.9	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
0.5	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

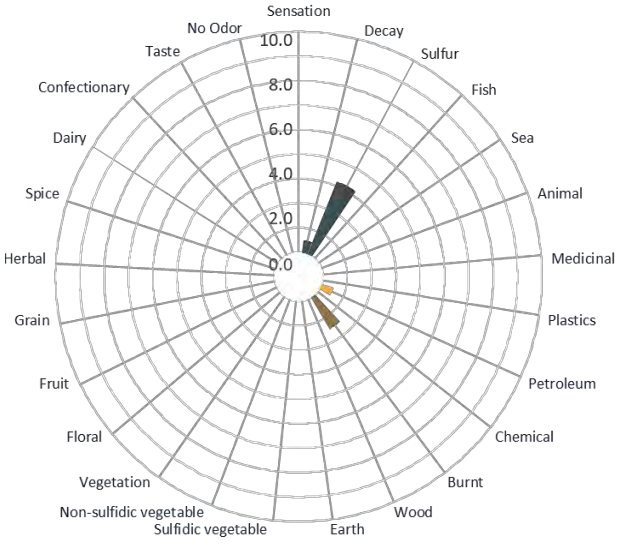
Report Number: 2117401
Client: Intertox
Project Name: CHRLF
Samples Evaluated: 6/23/2021

Field No: S11
Description: Medicinal, astringent, alcohol, manure backtones, ammonia

DT: 560
RT: 290
I: 4.8
HT: -2.8
DR: -2.59

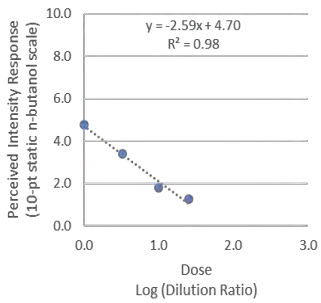
Comments:

Odor Descriptors



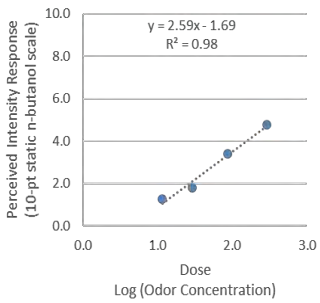
Strength	Descriptor	% of assessors (n=4)
	Sensation	
0.8	Decay	
4.2	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
	Plastics	
1.0	Petroleum	
	Chemical	
2.5	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

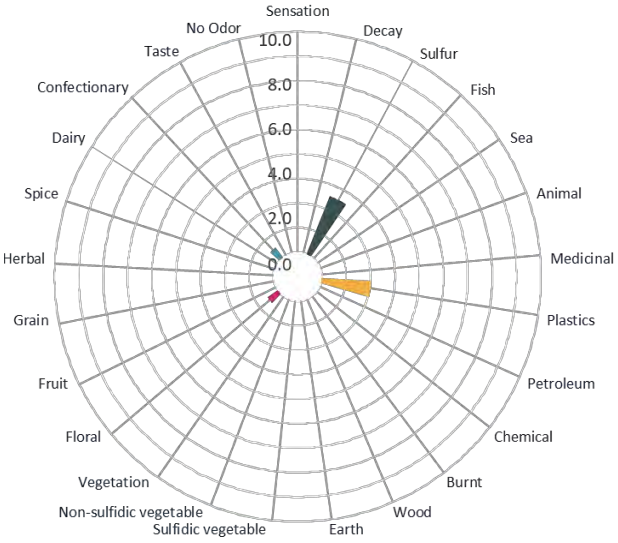
Report Number: 2117401
Client: Intertox
Project Name: CHRLF
Samples Evaluated: 6/23/2021

Field No: S8
Description: Sweet, earthy, manure

DT: 200
RT: 120
I: 3.8
HT: -1.5
DR: -2.25

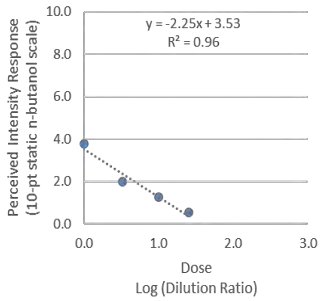
Comments:

Odor Descriptors



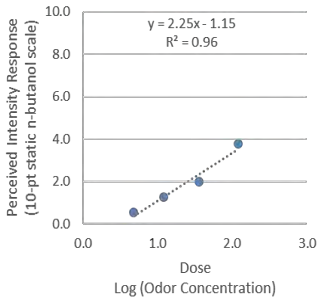
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
3.6	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
3.1	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
0.4	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
0.5	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

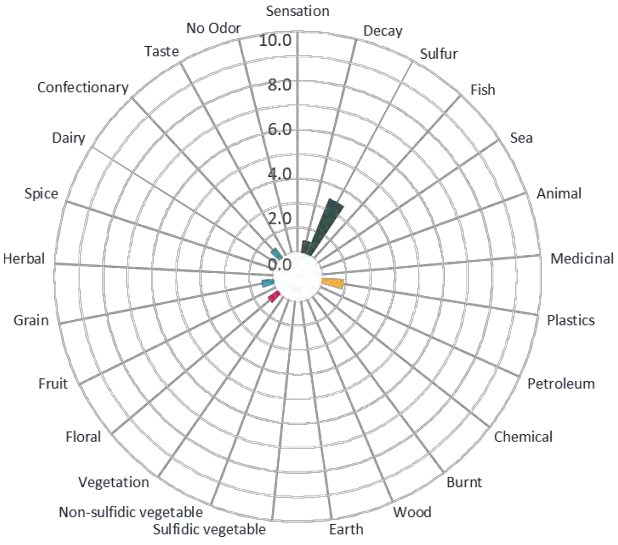
Report Number: 2117401
Client: Intertox
Project Name: CHRLF
Samples Evaluated: 6/23/2021

Field No: S4
Description: Sweet, earthy, manure

DT: 200
RT: 100
I: 3.0
HT: -2.5
DR: -1.78

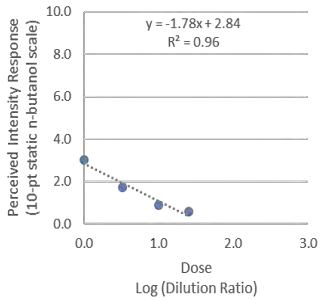
Comments:

Odor Descriptors



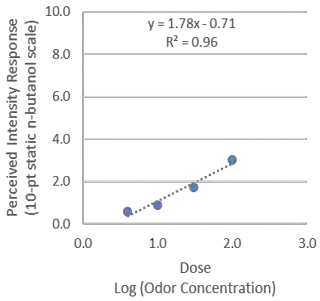
Strength	Descriptor	% of assessors (n=4)
	Sensation	
1.0	Decay	
3.5	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
1.9	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
0.8	Floral	
	Fruit	
0.2	Grain	
	Herbal	
	Spice	
	Dairy	
0.3	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

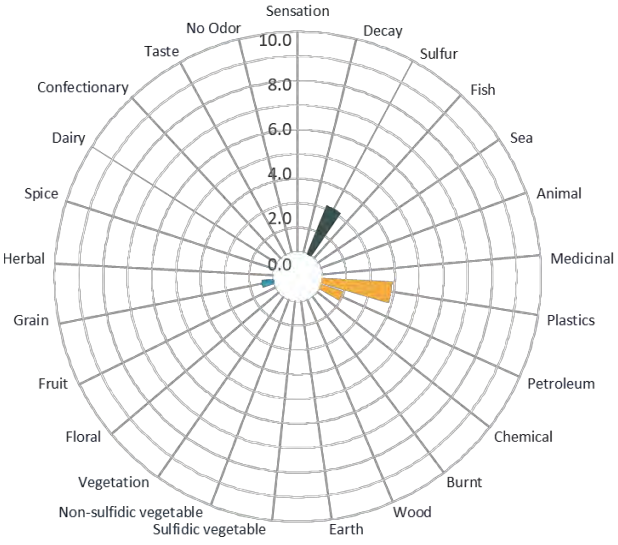
Report Number: 2117401
Client: Intertox
Project Name: CHRLF
Samples Evaluated: 6/23/2021

Field No: S1
Description: Slightly sweet, earthy

DT: 250
RT: 140
I: 3.7
HT: -2.0
DR: -1.99

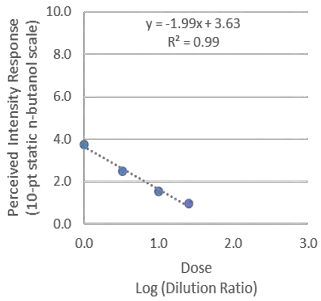
Comments:

Odor Descriptors



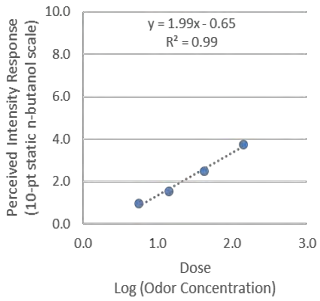
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
3.2	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
3.9	Plastics	
2.0	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
0.3	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

Report Number: 2117401
Client: Intertox
Project Name: CHRLF
Samples Evaluated: 6/23/2021

Field No: S3
Description: Non detect, faint detect of manure, earthy

DT: 210
RT: 140
I: 3.4
HT: -1.5
DR: -1.76

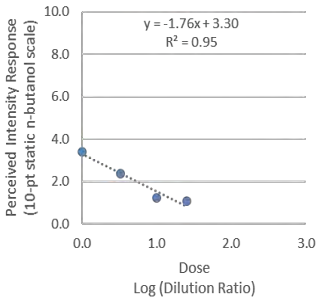
Comments:

Odor Descriptors

Strength	Descriptor	% of assessors (n=4)
	Sensation	
0.2	Decay	
2.3	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
2.7	Plastics	
0.5	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
0.4	Confectionary	
	Taste	
	No Odor	

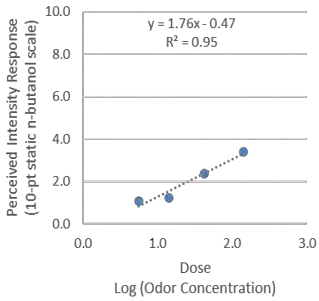
0% 20% 40% 60% 80% 100%

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

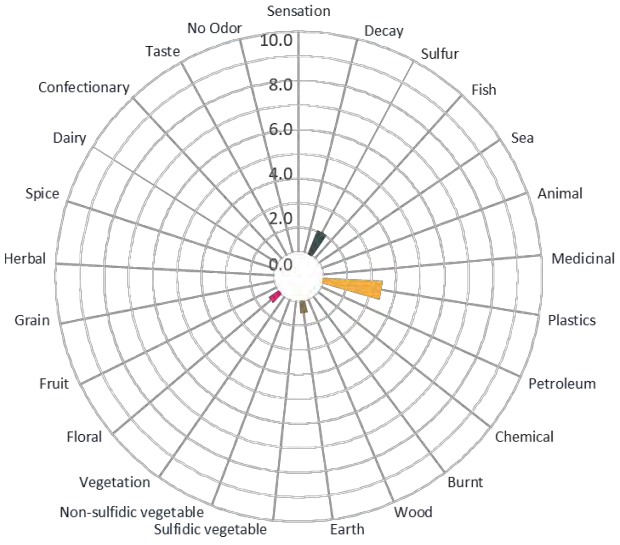
Report Number: 2117401
Client: Intertox
Project Name: CHRLF
Samples Evaluated: 6/23/2021

Field No: S2
Description: Slightly sweet, manure, earthy

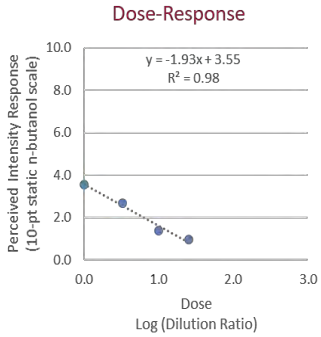
DT: 270
RT: 140
I: 3.5
HT: -1.2
DR: -1.93

Comments:

Odor Descriptors



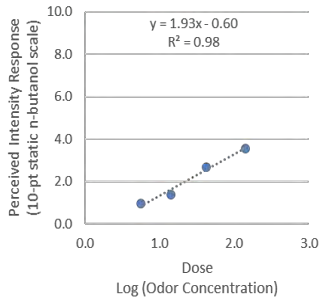
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
2.1	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
3.5	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
0.2	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
0.6	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	



Dose-Response

Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

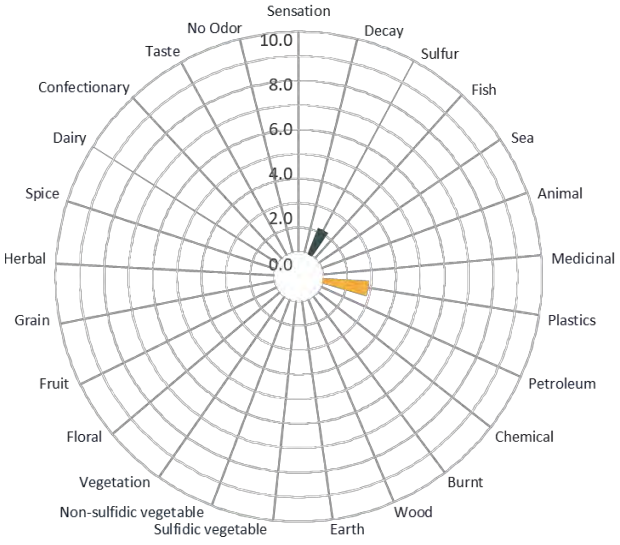
Report Number: 2117401
Client: Intertox
Project Name: CHRLF
Samples Evaluated: 6/23/2021

Field No: S9
Description: Floral, grassy, slight exhaust

DT: 190
RT: 110
I: 2.8
HT: -0.9
DR: -1.71

Comments:

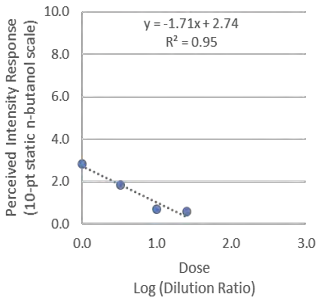
Odor Descriptors



Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
2.2	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
2.9	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

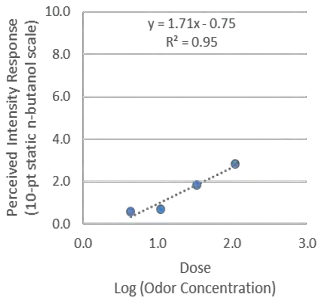
0% 20% 40% 60% 80% 100%

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

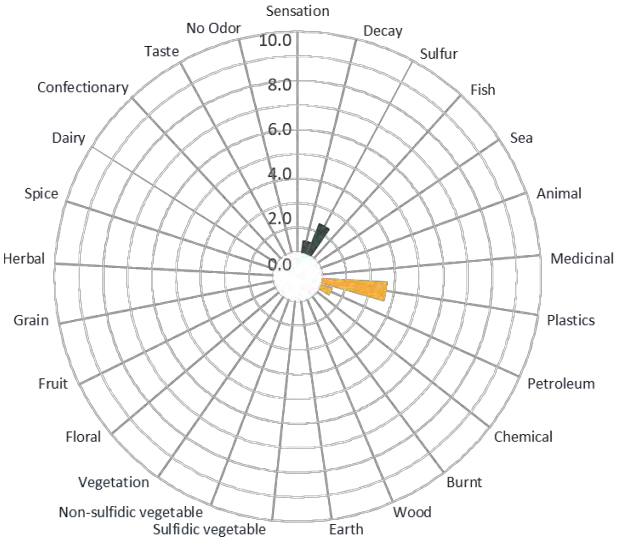
Report Number: 2117401
Client: Intertox
Project Name: CHRLF
Samples Evaluated: 6/23/2021

Field No: S10
Description: Herbaceous, grassy, floral

DT: 140
RT: 85
I: 3.3
HT: -1.2
DR: -1.74

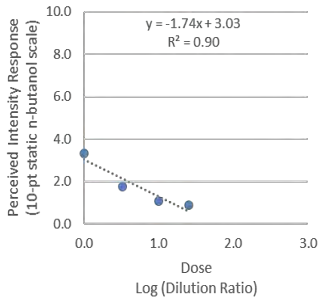
Comments:

Odor Descriptors



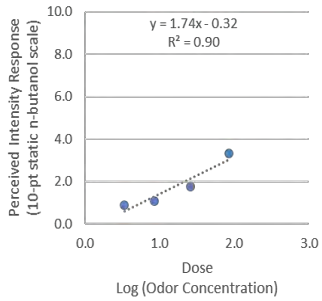
Strength	Descriptor	% of assessors (n=4)
	Sensation	
0.7	Decay	
2.4	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
3.7	Plastics	
0.6	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

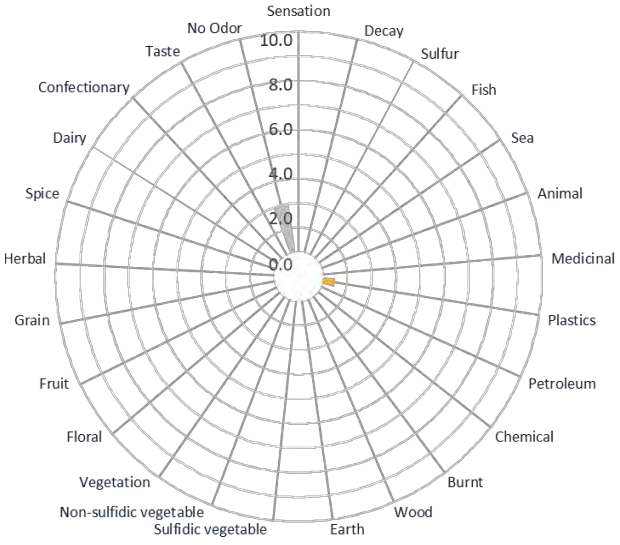
Report Number: 2117401
Client: Intertox
Project Name: CHRLF
Samples Evaluated: 6/23/2021

Field No: **Ref 1**
Description: **Non detect**

DT: **70**
RT: **40**
I: **0.2**
HT: **+0.1**
DR: **-0.14**

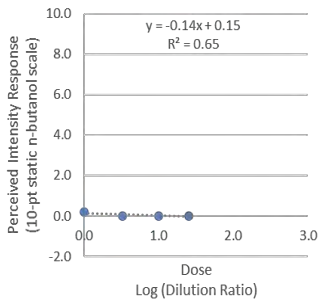
Comments:

Odor Descriptors



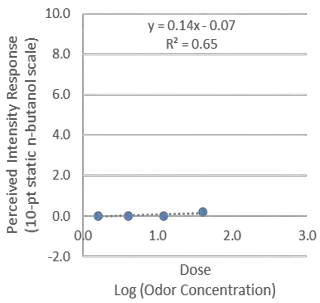
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
0.3	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
3.0	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

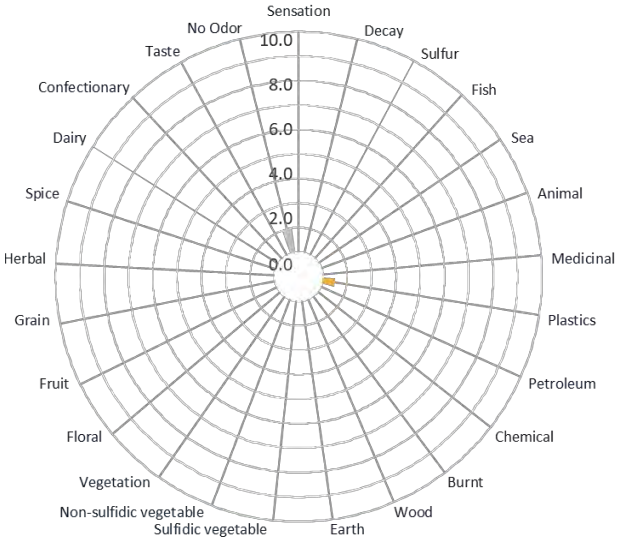
Report Number: 2117401
Client: Intertox
Project Name: CHRLF
Samples Evaluated: 6/23/2021

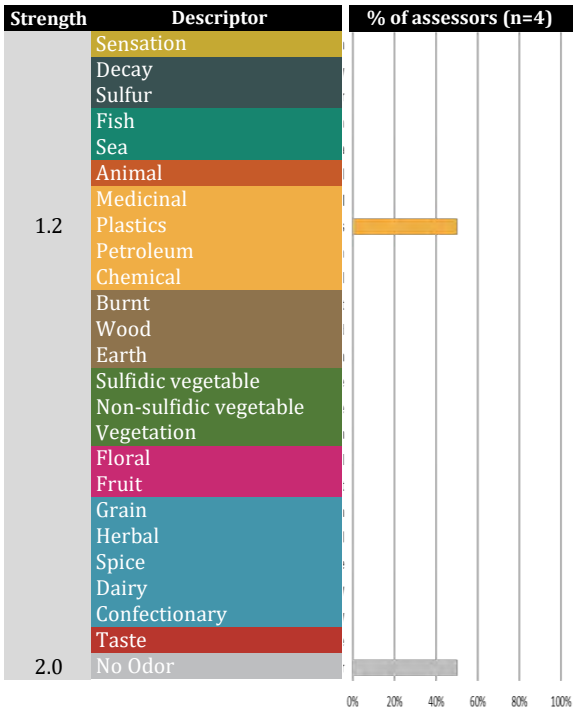
Field No: S7
Description: Non detect

DT: 60
RT: 30
I: 0.7
HT: +0.1
DR: -0.43

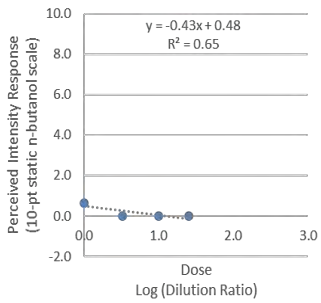
Comments:

Odor Descriptors



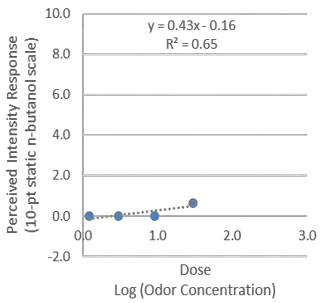


Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

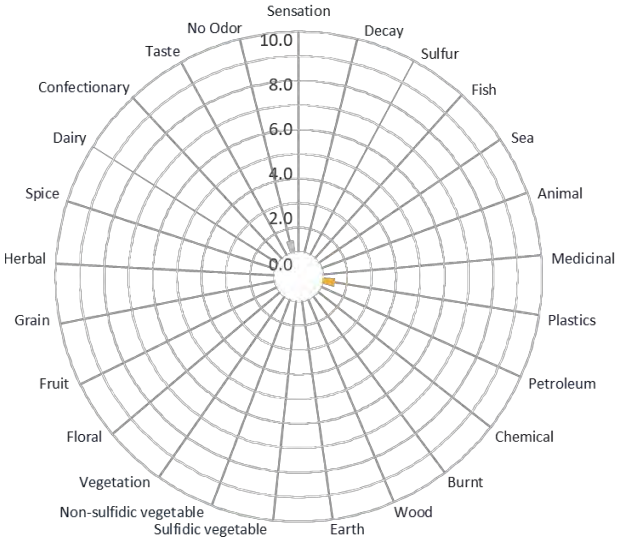
Report Number: 2117401
Client: Intertox
Project Name: CHRLF
Samples Evaluated: 6/23/2021

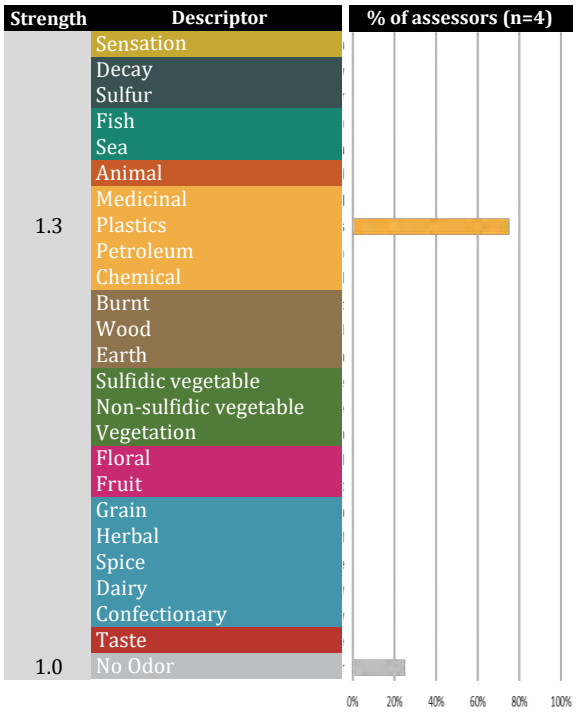
Field No: S6
Description: Non detect

DT: 60
RT: 30
I: 1.0
HT: -0.4
DR: -0.69

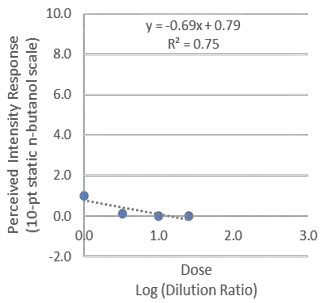
Comments:

Odor Descriptors



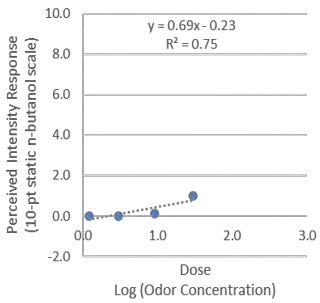


Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

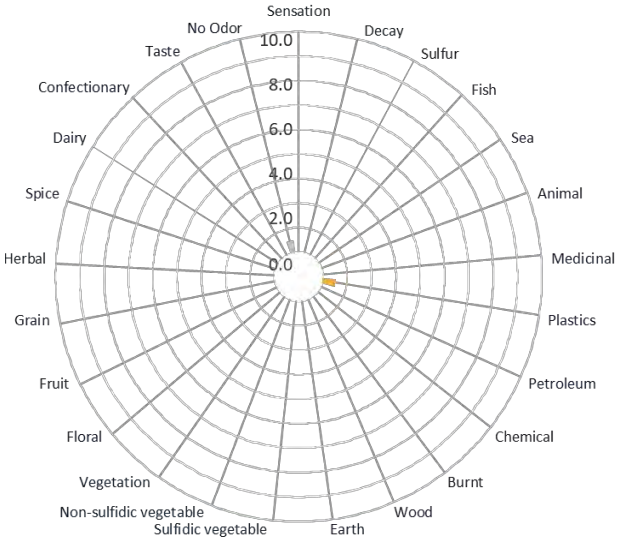
Report Number: 2117401
Client: Intertox
Project Name: CHRLF
Samples Evaluated: 6/23/2021

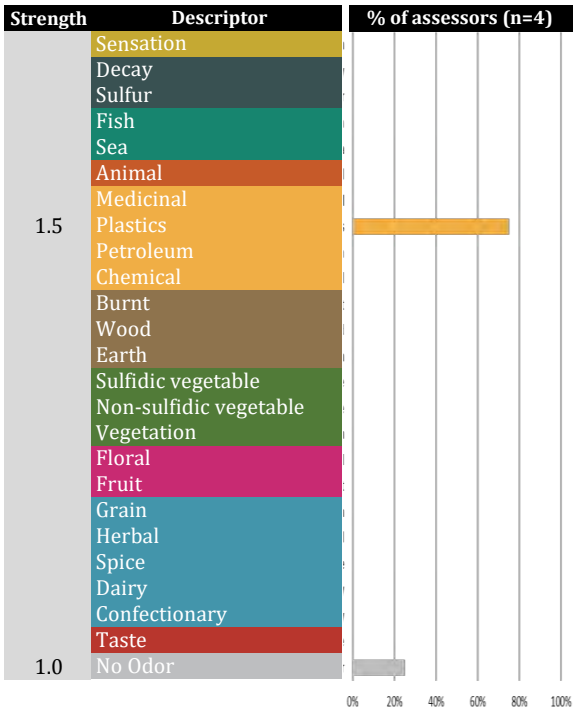
Field No: S5
Description: Non detect

DT: 50
RT: 25
I: 1.1
HT: -0.3
DR: -0.78

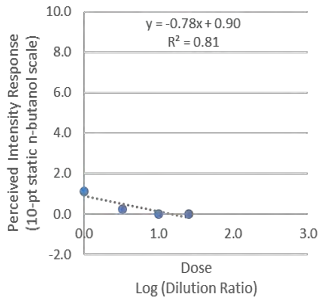
Comments:

Odor Descriptors



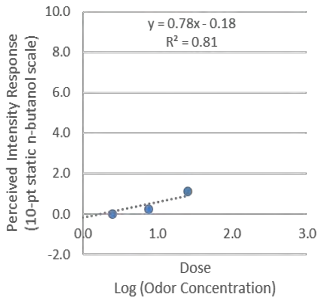


Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

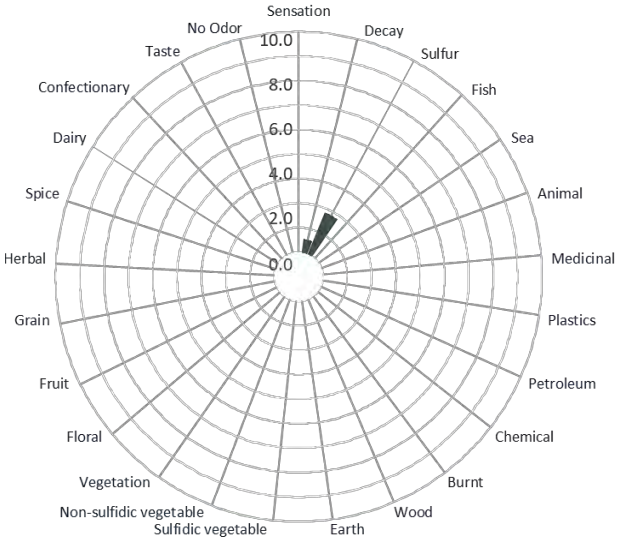
Report Number: 2117401
Client: Intertox
Project Name: CHRLF
Samples Evaluated: 6/23/2021

Field No: S11-Dup
Description: Duplicate

DT: 410
RT: 200
I: 2.9
HT: -1.7
DR: -2.01

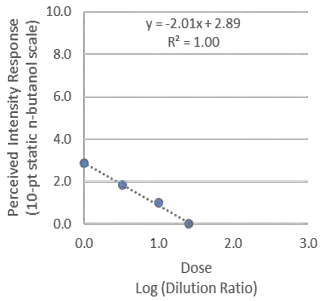
Comments:

Odor Descriptors



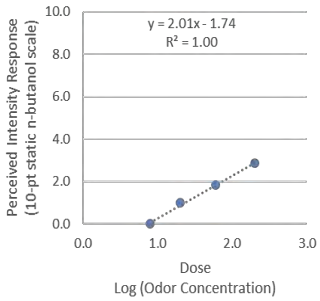
Strength	Descriptor	% of assessors (n=4)
	Sensation	
1.6	Decay	
2.8	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

Attachments

St. Croix Sensory, Inc.

CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES

Page 1 of 2

Client: Intertox / King Co. | Sampled By: Kelli H.

Project Name: CHRLF | Sampling Date: 6/22/2021

Comments:

Odor Evaluations Requested: (X)

For Laboratory use Only — Odor Evaluation Report No. 2117401

Line No.	Field No.	Sample Description	Sample Time	Field H_2S (ppm)	Odor Concentration* (Detection & Recognition Threshold)	Odor Intensity* (PPM 1-Butanol)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistency ("Dose-Response")	Laboratory Sample No. LN	Laboratory Sample No. FN
1	S13	Near extraction wells on top of 8, gaseous Manure/ scent. Pungent.	6:15 AM		7 D/T		manure			
2	S12	sweet, manure, earthy	7:29 AM		7 D/T					
3	S11	medicinal, astringent, alcohol, manure back tones ammonia	7:47		30 D/T					
4	S8	sweet, earthy, manure	8:19		15 D/T					
5	S4	" "	8:38		2 D/T					
6	S1	slightly sweet, earthy	8:56		2 D/T					
7	S3	Non detect | Faint detect of manure/earthy w/o	9:16		ND					
8	S2	slightly sweet, manure, earthy	9:35		2 D/T					
9	S9	floral, grassy, slight exhaust	10:08		2 D/T					
10	S10	herbaceous, grassy, floral	10:32		2 D/T					
11	Ref 1	Non detect	11:09		ND					
12	S7	Non detect	12:25		ND					

Transmittal

Number of Shipping Boxes: 3

Relinquished By	Date	Time	Accepted By	Date	Time	Comments & Exceptions Noted
						Trip Blank bag received
Received at St. Croix Sensory Laboratory			[signature]	6/23/21	10:00 AM	Without air

*Odor Concentration: ASTM E679-04 & EN13725:2003 and Odor Intensity: ASTM E544-10

St. Croix Sensory, Inc. ◆ 1150 Stillwater Blvd. N. ◆ Stillwater, MN 55082 U.S.A.◆ Tel:800-879-9231 ◆ Fax:651-439-1065 ◆ Email:reports@fivesenses.com ◆ Web:www.fivesenses.com

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St. Croix Sensory, Inc.

CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES

Page 2 of 2

Client: King County / Intertox | Sampled By: Kelli Hackney

Project Name: CHRLF | Sampling Date: 6/22/21

Comments:

Odor Evaluations Requested: (X)

For Laboratory use Only — Odor Evaluation Report No. 2117401

Line No.	Field No.	Sample Description	Sample Time	Field H_2S (ppm)	Odor Concentration* (Detection & Recognition Threshold)	Odor Intensity* (PPM 1-Butanol)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistency ("Dose-Response")	Laboratory Sample No. LN	Laboratory Sample No. FN
1	S6	Non Detect	12:42		ND					
2	S5	Non Detect	12:57		ND					
3	S11-Dup	Duplicate	8:01							
4										
5										
6										
7										
8										
9										
10										
11										
12										

Transmittal

Number of Shipping Boxes: 3

Relinquished By	Date	Time	Accepted By	Date	Time	Comments & Exceptions Noted
						S11-Duplicate added
Received at St. Croix Sensory Laboratory			[signature]	6/23/21	10:00 AM	to chain of custody

*Odor Concentration: ASTM E679-04 & EN13725:2003 and Odor Intensity: ASTM E544-10

St. Croix Sensory, Inc. ◆ 1150 Stillwater Blvd. N. ◆ Stillwater, MN 55082 U.S.A.◆ Tel:800-879-9231 ◆ Fax:651-439-1065 ◆ Email:reports@fivesenses.com ◆ Web:www.fivesenses.com

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St. Croix Sensory, Inc.

Odor Evaluation Report

Report Number: 2117503

Project Name: KCLF

Samples Collected: 6/23/21
Samples Received: 6/24/21
Samples Evaluated: 6/24/21

Report Prepared For: **Intertox**
600 Stewart St, Suite 1101
Seattle, WA 98101

Report Prepared By: **St. Croix Sensory, Inc.**
1150 Stillwater Boulevard North
Stillwater, MN 55082 U.S.A
1-800-879-9231
stcroix@fivesenses.com

Data Release Authorization:
Michelle Harty
Laboratory Manager

Reviewed and Approved:
Charles M. McGinley, P.E.
Technical Director

St. Croix Sensory is ISO/IEC 17025:2017 Accredited

Perry Johnson Laboratory Accreditation, Inc. Accreditation No.: 81047
Certificate No.: L20-534 Initial Accreditation Date: 19 May 2014

Odor Evaluation Report

St. Croix Sensory, Inc.

Client: **Intertox** Report Number: **2117503**

Project Name: **KCLF** Samples Evaluated: **6/24/21**

#	Field No.	Sample Description	DT	RT	I	HT	DR	Comments
1	S13	S13	160	75	2.3	+0.5	-1.63	Sample description was not provided.
2	S12	S12	160	90	2.3	+0.9	-1.69	Sample description was not provided.
3	S11	S11	510	220	3.8	-0.4	-2.48	Sample description was not provided.
4	S11-D	S11-D	180	90	3.5	-0.3	-2.39	Sample description was not provided.
5	S8	S8	90	45	2.0	+0.9	-1.49	Sample description was not provided.
6	S4	S4	370	220	2.5	+1.1	-1.56	Sample description was not provided.
7	S1	S1	240	130	2.5	+1.1	-1.76	Sample description was not provided.
8	S3	S3	170	80	2.7	+1.5	-1.88	Sample description was not provided.
9	S2	S2	180	100	2.3	+1.2	-1.33	Sample description was not provided.
10	S9	S9	110	65	2.7	+1.1	-1.75	Sample description was not provided.
11	S10	S10	150	85	1.7	-0.8	-1.00	Sample description was not provided.
12	Ref 1	Ref 1	160	85	2.8	-1.0	-1.86	Sample description was not provided.

Odor Detection Threshold Testing (Evaluations) conducted in compliance with and under all conditions specified or required by ASTM E679 and EN13725 unless noted in report "Comments" column. The Client Chain of Custody (COC) attached to the Odor Evaluation Report provides information that may include sampling location(s), methods, and/or environmental conditions during sampling. Client, designated agents, and/or reviewers provide interpretation of results based on sampling conditions.

DT - Detection Threshold as determined by ASTM E679 and EN13725. The Practical Detection Limit (PDL) of DT is 12, based on the nominal lowest dilution presentation ratio of 8. Result is dimensionless dilution ratio at which half the assessors detect the diluted air as different from the blank air. Odor Units (OU) or Odor Units per cubic meters (OU/m3) are commonly used as pseudo-units.

RT - Recognition Threshold as determined by ASTM E679 and EN13725. Result is dimensionless dilution ratio at which half the assessors recognize a character in the diluted odorous air. Odor Units (OU) or Odor Units per cubic meter (OU/m3) are commonly used pseudo-units.

I - Perceived odor intensity as determined by ASTM E544. Intensity is expressed as average reported scale value on 10pt n-butanol in water static scale.

HT – Hedonic Tone value. Average rating of assessors' opinion of odor pleasantness on scale of -10 (most unpleasant) to +10 (most pleasant).

DR – the slope of the dose-response relationship of odor intensity with dilution (persistency of odor).

Odor Evaluation Report

St. Croix Sensory, Inc.

Client: **Intertox**
Project Name: **KCLF**

Report Number: **2117503**
Samples Evaluated: **6/24/21**

#	Field No.	Sample Description	DT	RT	I	HT	DR	Comments
13	S6	S6	100	50	1.3	-0.4	-0.94	Sample description was not provided.
14	S5	S5	110	55	3.1	-1.0	-1.88	Sample description was not provided.
15	S7	S7	110	60	3.3	-0.9	-1.82	Sample description was not provided.
16	Trip Blank	Trip Blank	150	75	1.7	+1.8	-1.29	Sample description was not provided.

Odor Detection Threshold Testing (Evaluations) conducted in compliance with and under all conditions specified or required by ASTM E679 and EN13725 unless noted in report "Comments" column. The Client Chain of Custody (COC) attached to the Odor Evaluation Report provides information that may include sampling location(s), methods, and/or environmental conditions during sampling. Client, designated agents, and/or reviewers provide interpretation of results based on sampling conditions.

DT - Detection Threshold as determined by ASTM E679 and EN13725. The Practical Detection Limit (PDL) of DT is 12, based on the nominal lowest dilution presentation ratio of 8. Result is dimensionless dilution ratio at which half the assessors detect the diluted air as different from the blank air. Odor Units (OU) or Odor Units per cubic meters (OU/m3) are commonly used as pseudo-units.

RT - Recognition Threshold as determined by ASTM E679 and EN13725. Result is dimensionless dilution ratio at which half the assessors recognize a character in the diluted odorous air. Odor Units (OU) or Odor Units per cubic meter (OU/m3) are commonly used pseudo-units.

I - Perceived odor intensity as determined by ASTM E544. Intensity is expressed as average reported scale value on 10pt n-butanol in water static scale.

HT – Hedonic Tone value. Average rating of assessors' opinion of odor pleasantness on scale of -10 (most unpleasant) to +10 (most pleasant).

DR – the slope of the dose-response relationship of odor intensity with dilution (persistency of odor).

St. Croix Sensory, Inc.

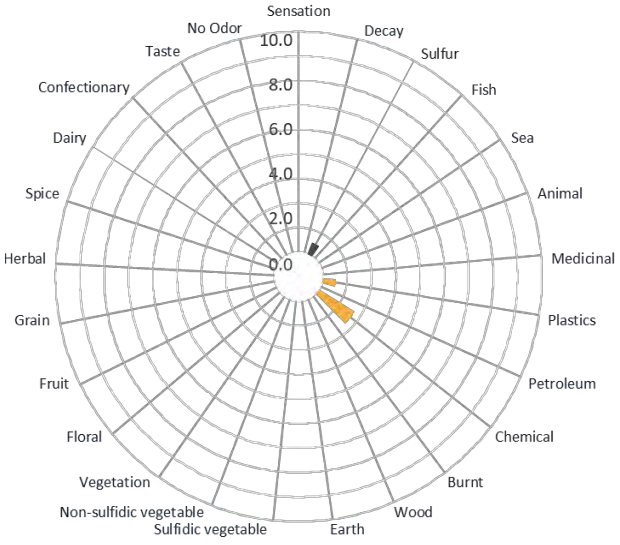
Report Number: 2117503
Client: Intertox
Project Name: KCLF
Samples Evaluated: 6/24/2021

Field No: S13
Description: S13

DT: 160
RT: 75
I: 2.3
HT: +0.5
DR: -1.63

Comments:
Sample description was not provided.

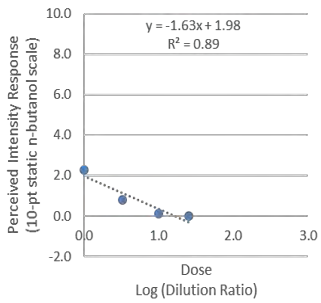
Odor Descriptors



Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
0.8	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
1.6	Plastics	
	Petroleum	
2.7	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

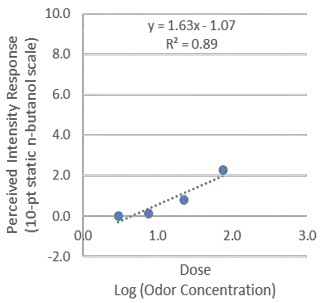
0% 20% 40% 60% 80% 100%

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

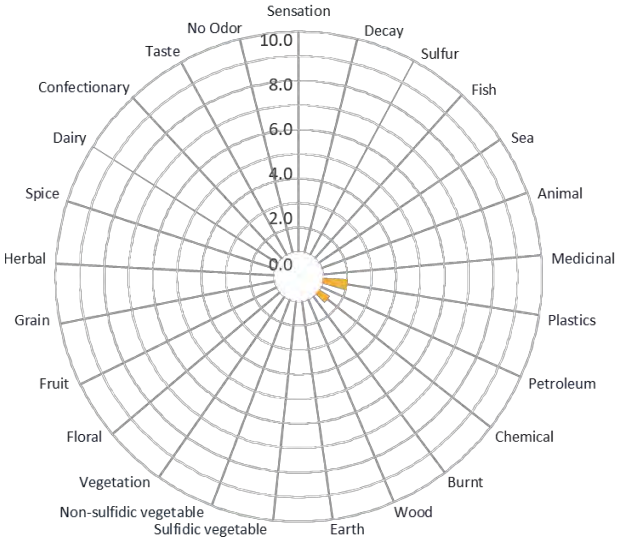
Report Number: 2117503
Client: Intertox
Project Name: KCLF
Samples Evaluated: 6/24/2021

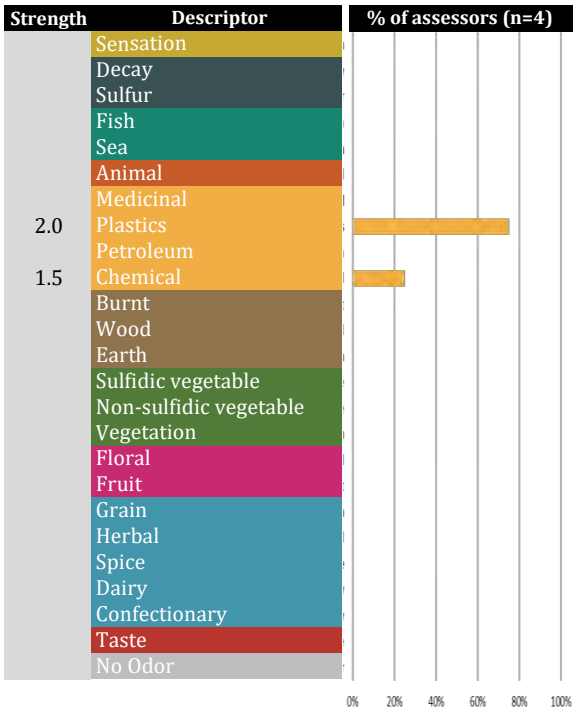
Field No: S12
Description: S12

DT: 160
RT: 90
I: 2.3
HT: +0.9
DR: -1.69

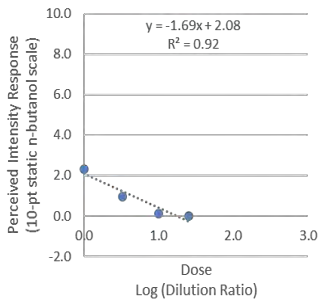
Comments:
Sample description was not provided.

Odor Descriptors



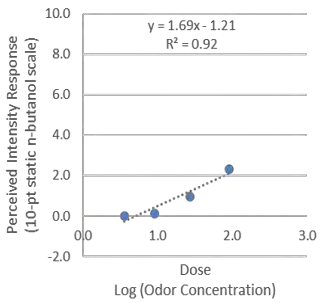


Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

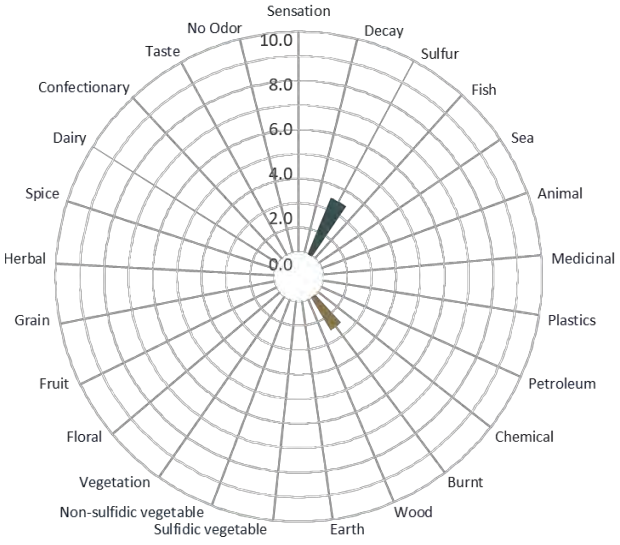
Report Number: 2117503
Client: Intertox
Project Name: KCLF
Samples Evaluated: 6/24/2021

Field No: S11
Description: S11

DT: 510
RT: 220
I: 3.8
HT: -0.4
DR: -2.48

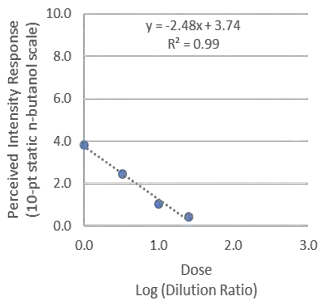
Comments:
Sample description was not provided.

Odor Descriptors



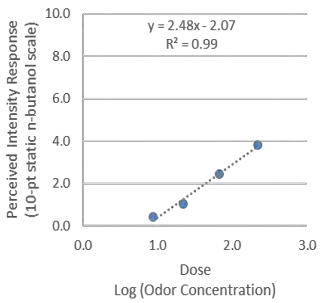
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
3.5	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
	Plastics	
	Petroleum	
	Chemical	
2.6	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

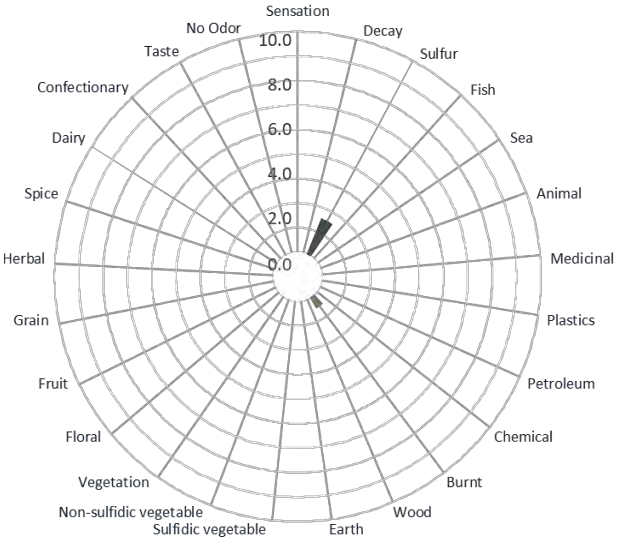
Report Number: 2117503
Client: Intertox
Project Name: KCLF
Samples Evaluated: 6/24/2021

Field No: S11-D
Description: S11-D

DT: 180
RT: 90
I: 3.5
HT: -0.3
DR: -2.39

Comments:
Sample description was not provided.

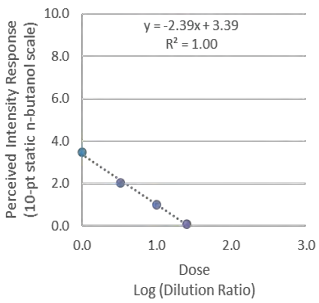
Odor Descriptors



Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
2.6	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
	Plastics	
	Petroleum	
	Chemical	
1.5	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

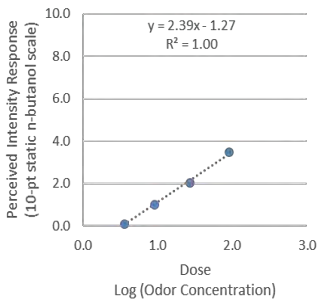
0% 20% 40% 60% 80% 100%

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

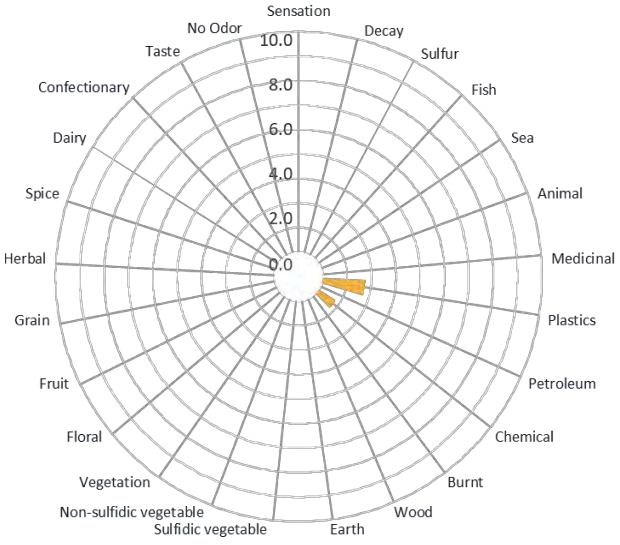
Report Number: 2117503
Client: Intertox
Project Name: KCLF
Samples Evaluated: 6/24/2021

Field No: S8
Description: S8

DT: 90
RT: 45
I: 2.0
HT: +0.9
DR: -1.49

Comments:
Sample description was not provided.

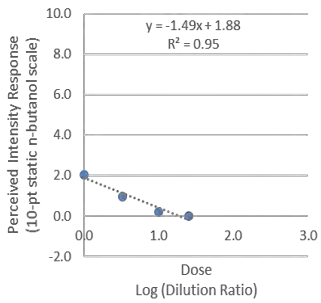
Odor Descriptors



Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
2.8	Plastics	
	Petroleum	
1.8	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

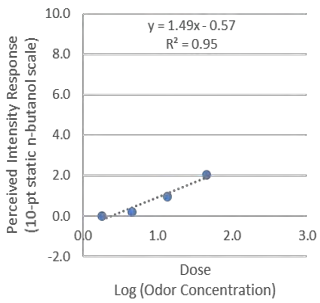
0% 20% 40% 60% 80% 100%

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

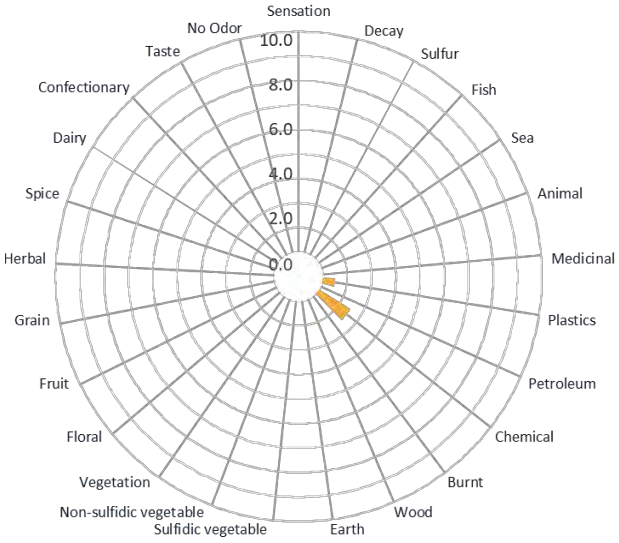
Report Number: 2117503
Client: Intertox
Project Name: KCLF
Samples Evaluated: 6/24/2021

Field No: S4
Description: S4

DT: 370
RT: 220
I: 2.5
HT: +1.1
DR: -1.56

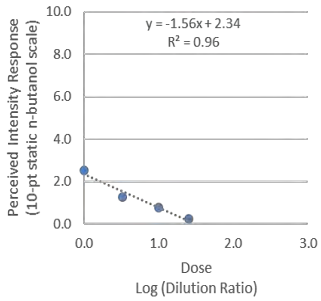
Comments:
Sample description was not provided.

Odor Descriptors



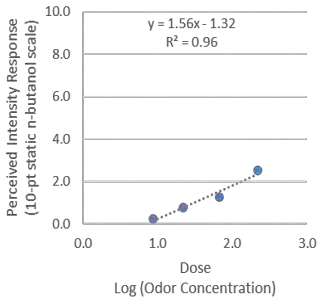
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
1.5	Plastics	
	Petroleum	
2.5	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

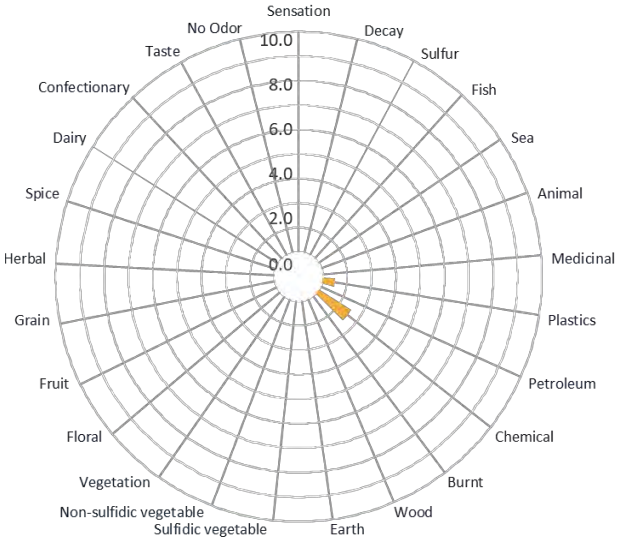
Report Number: 2117503
Client: Intertox
Project Name: KCLF
Samples Evaluated: 6/24/2021

Field No: S1
Description: S1

DT: 240
RT: 130
I: 2.5
HT: +1.1
DR: -1.76

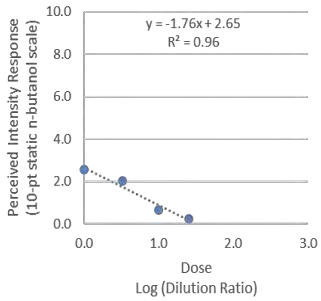
Comments:
Sample description was not provided.

Odor Descriptors



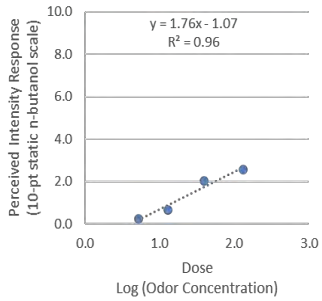
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
1.3	Plastics	
	Petroleum	
2.5	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

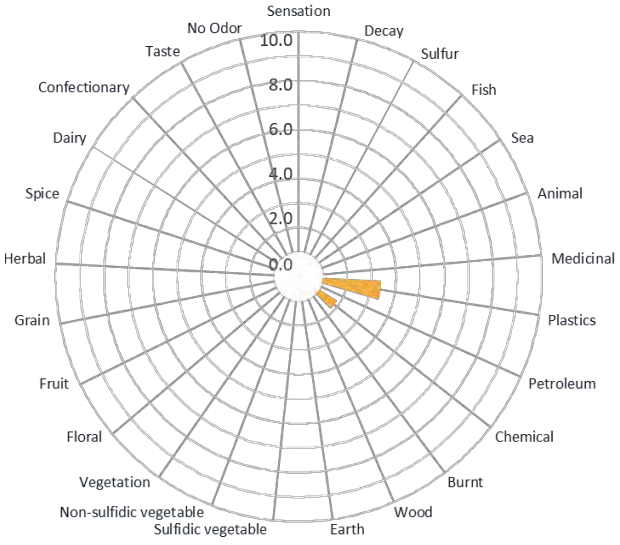
Report Number: 2117503
Client: Intertox
Project Name: KCLF
Samples Evaluated: 6/24/2021

Field No: S3
Description: S3

DT: 170
RT: 80
I: 2.7
HT: +1.5
DR: -1.88

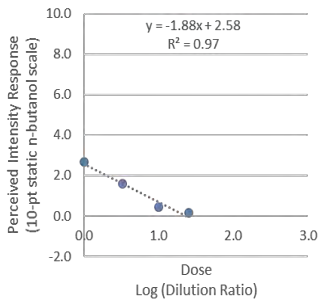
Comments:
Sample description was not provided.

Odor Descriptors



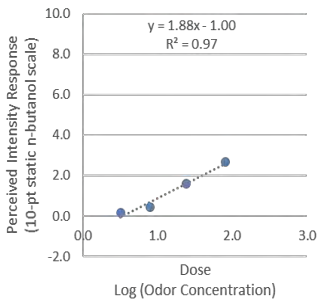
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
3.4	Plastics	
	Petroleum	
1.9	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

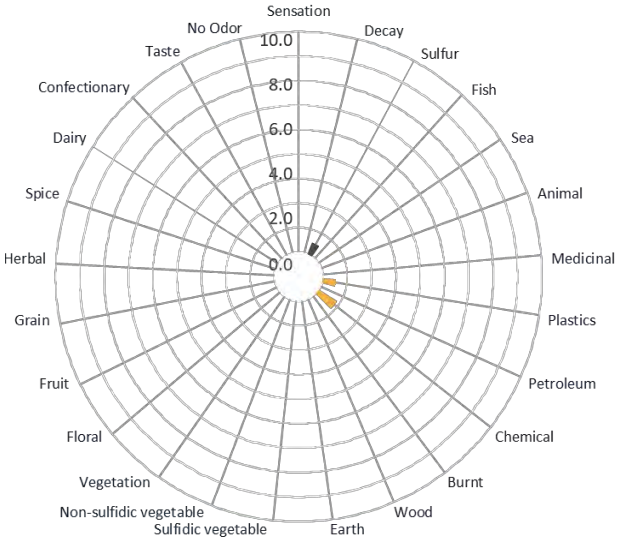
Report Number: 2117503
Client: Intertox
Project Name: KCLF
Samples Evaluated: 6/24/2021

Field No: S2
Description: S2

DT: 180
RT: 100
I: 2.3
HT: +1.2
DR: -1.33

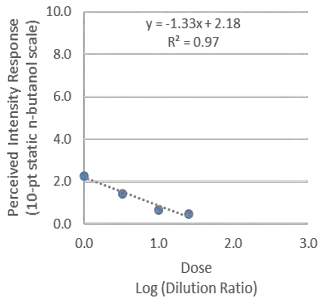
Comments:
Sample description was not provided.

Odor Descriptors



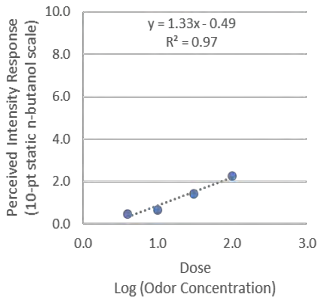
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
0.2	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
1.6	Plastics	
	Petroleum	
1.9	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

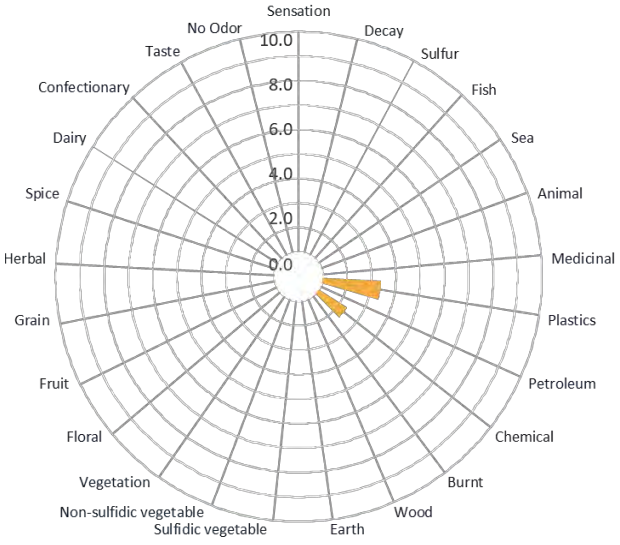
Report Number: 2117503
Client: Intertox
Project Name: KCLF
Samples Evaluated: 6/24/2021

Field No: S9
Description: S9

DT: 110
RT: 65
I: 2.7
HT: +1.1
DR: -1.75

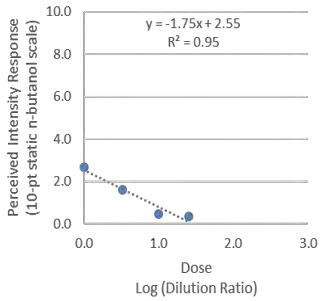
Comments:
Sample description was not provided.

Odor Descriptors



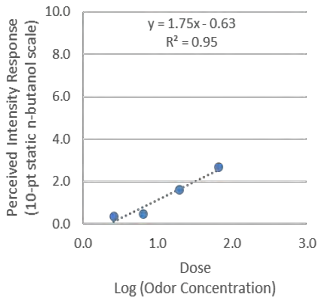
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
3.4	Plastics	
	Petroleum	
2.4	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

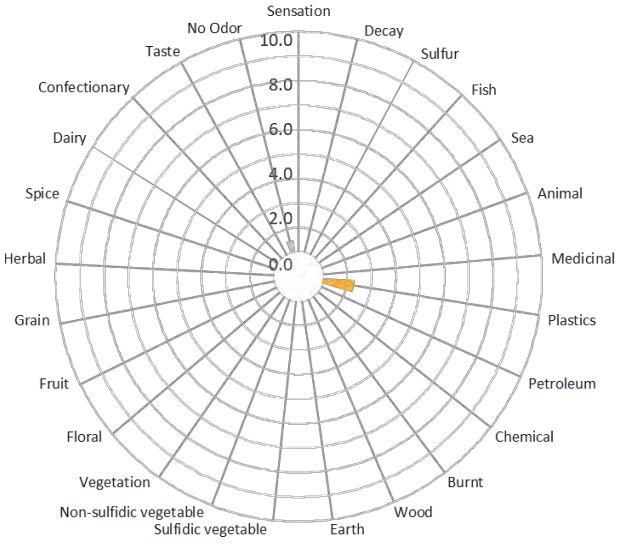
Report Number: 2117503
Client: Intertox
Project Name: KCLF
Samples Evaluated: 6/24/2021

Field No: S10
Description: S10

DT: 150
RT: 85
I: 1.7
HT: -0.8
DR: -1.00

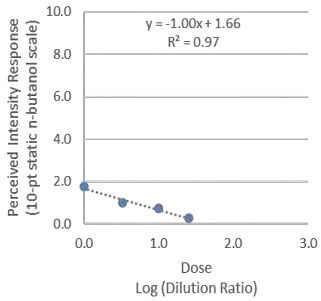
Comments:
Sample description was not provided.

Odor Descriptors



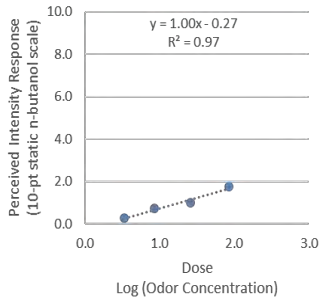
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
2.3	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
1.0	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

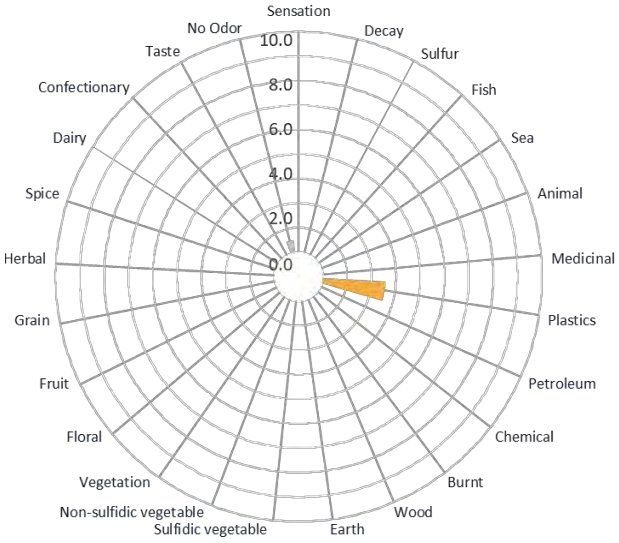
Report Number: 2117503
Client: Intertox
Project Name: KCLF
Samples Evaluated: 6/24/2021

Field No: **Ref 1**
Description: **Ref 1**

DT: **160**
RT: **85**
I: **2.8**
HT: **-1.0**
DR: **-1.86**

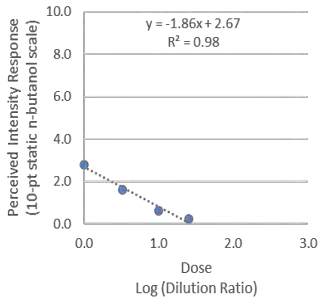
Comments:
Sample description was not provided.

Odor Descriptors



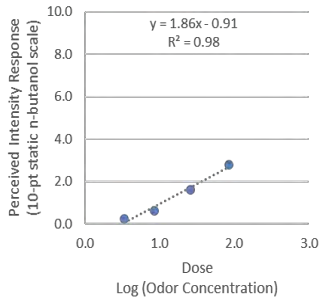
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
3.6	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
1.0	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

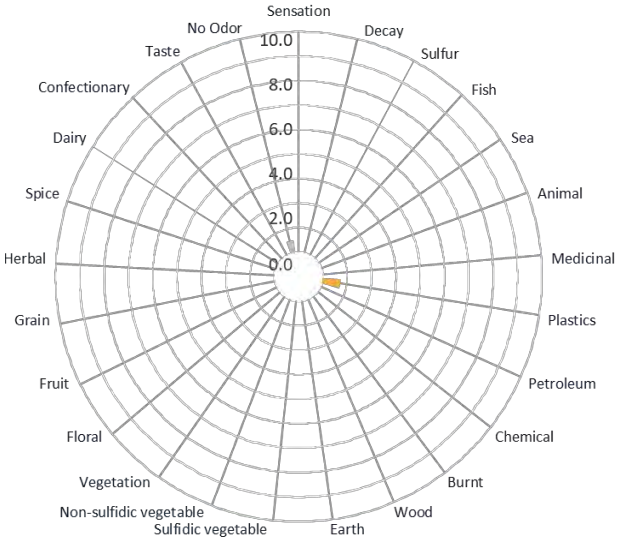
Report Number: 2117503
Client: Intertox
Project Name: KCLF
Samples Evaluated: 6/24/2021

Field No: S6
Description: S6

DT: 100
RT: 50
I: 1.3
HT: -0.4
DR: -0.94

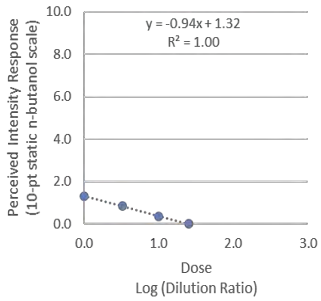
Comments:
Sample description was not provided.

Odor Descriptors



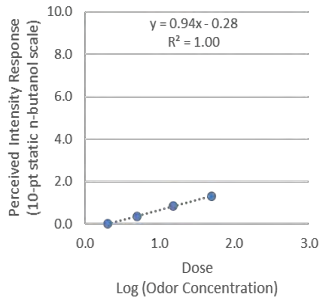
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
1.7	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
1.0	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

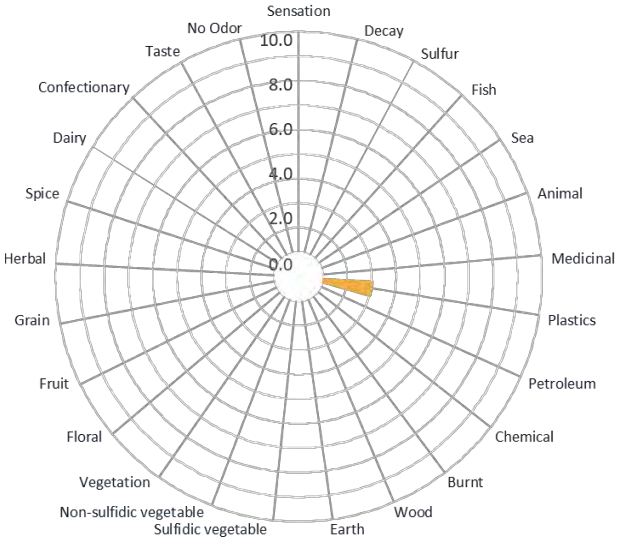
Report Number: 2117503
Client: Intertox
Project Name: KCLF
Samples Evaluated: 6/24/2021

Field No: S5
Description: S5

DT: 110
RT: 55
I: 3.1
HT: -1.0
DR: -1.88

Comments:
Sample description was not provided.

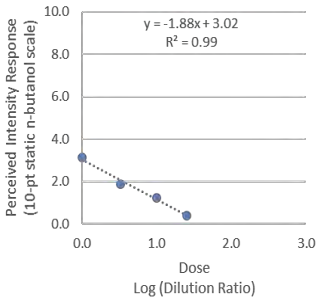
Odor Descriptors



Strength	Descriptor	% of assessors (n=4)
3.1	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

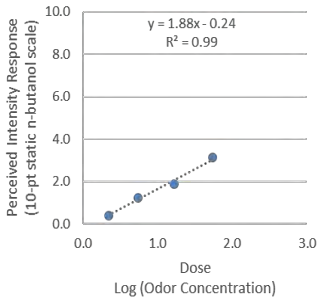
0% 20% 40% 60% 80% 100%

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

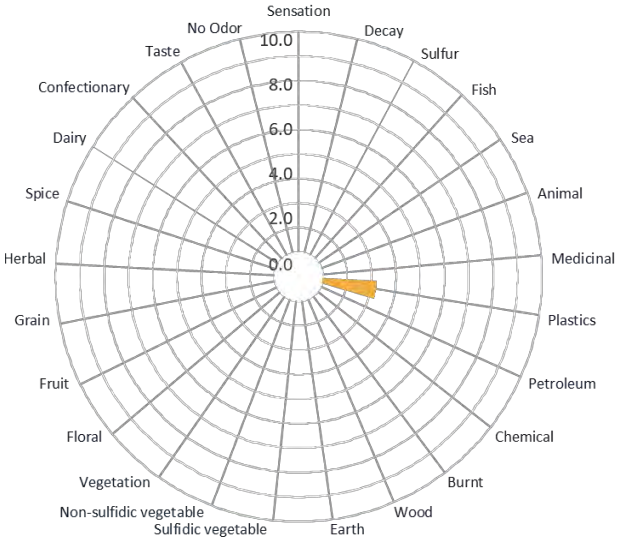
Report Number: 2117503
Client: Intertox
Project Name: KCLF
Samples Evaluated: 6/24/2021

Field No: S7
Description: S7

DT: 110
RT: 60
I: 3.3
HT: -0.9
DR: -1.82

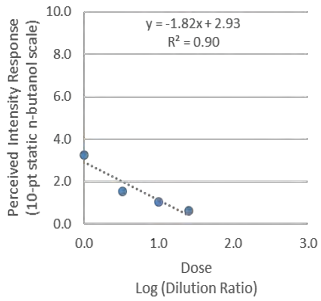
Comments:
Sample description was not provided.

Odor Descriptors



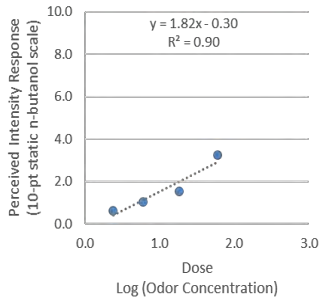
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
3.2	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

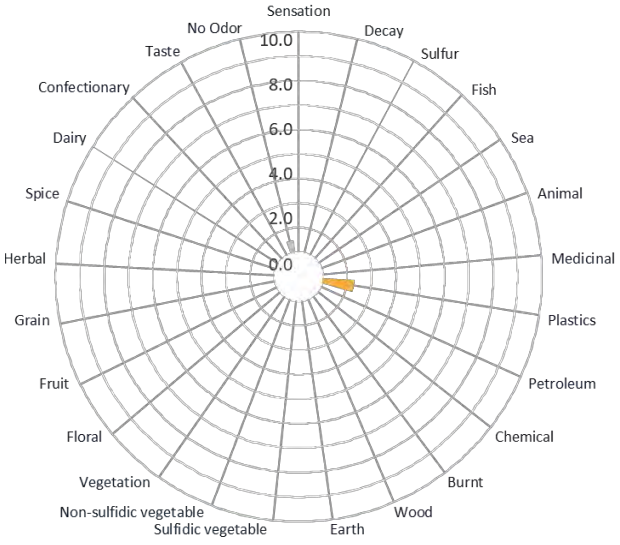
Report Number: 2117503
Client: Intertox
Project Name: KCLF
Samples Evaluated: 6/24/2021

Field No: **Trip Blank**
Description: **Trip Blank**

DT: **150**
RT: **75**
I: **1.7**
HT: **+1.8**
DR: **-1.29**

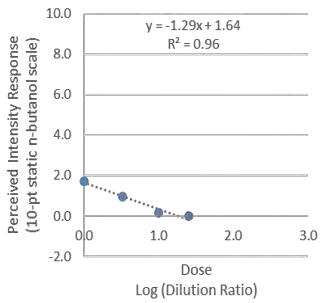
Comments:
Sample description was not provided.

Odor Descriptors



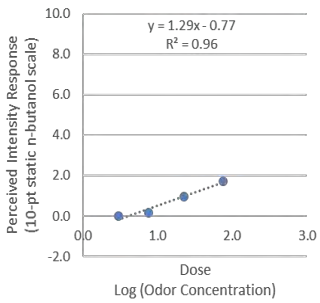
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
2.3	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
1.0	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

Attachments

St. Croix Sensory, Inc.

CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES

Page 1 of 2

Client: Intertox / King Co.
Sampled By: Cameron Bellamoroso
Project Name: KCLF
Sampling Date: 6/23/2021
Comments:

Odor Evaluations Requested: (X)

For Laboratory use Only
Odor Evaluation Report No. 2117503

Line No.	Field No.	Sample Description	Sample Time	Field H_2S (ppm)	Odor Concentration* (Detection & Recognition Threshold)	Odor Intensity* (PPM 1-Butanol)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistency ("Dose-Response")	Laboratory Sample No. LN	Laboratory Sample No. FN
1	S13		6:38		X	X	X	X		
2	S12		7:02		X	X	X	X		
3	S11		7:22		X	X	X	X		
4	S11-D		7:32		X	X	X	X		
5	S8		8:06		X	X	X	X		
6	S4		8:25		X	X	X	X		
7	S1		8:39		X	X	X	X		
8	S3		8:59		X	X	X	X		
9	S2		9:14		X	X	X	X		
10	S9		9:41		X	X	X	X		
11	S10		9:56		X	X	X	X		
12	Ref1		10:32		X	X	X	X		

Transmittal
Number of Shipping Boxes 3

Relinquished By	Date	Time	Accepted By	Date	Time	Comments & Exceptions Noted
	6/23	12:33		6/24/21	9:00Am	

Received at St. Croix Sensory Laboratory

*Odor Concentration: ASTM E679-04 & EN13725:2003 and Odor Intensity: ASTM E544-10

St. Croix Sensory, Inc. ♦ 1150 Stillwater Blvd. N. ♦ Stillwater, MN 55082 U.S.A.♦ Tel:800-879-9231 ♦ Fax:651-439-1065 ♦ Email:reports@fivesenses.com ♦ Web:www.fivesenses.com

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St. Croix Sensory, Inc.

CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES

Page 2 of 2

Client: Intertox / King Co.
Sampled By: Cameron Bellamoroso
Project Name: KCLF
Sampling Date: 6/23/2021
Comments:

Odor Evaluations Requested: (X)

For Laboratory use Only
Odor Evaluation Report No. 2117503

Line No.	Field No.	Sample Description	Sample Time	Field H_2S (ppm)	Odor Concentration* (Detection & Recognition Threshold)	Odor Intensity* (PPM 1-Butanol)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistency ("Dose-Response")	Laboratory Sample No. LN	Laboratory Sample No. FN
1	S6		11:15		X	X	X	X		
2	S5		11:31		X	X	X	X		
3	S7		11:50		X	X	X	X		
4	Trip Blank		10:41		X	X	X	X		
5										
6										
7										
8										
9										
10										
11										
12										

Transmittal
Number of Shipping Boxes 3

Relinquished By	Date	Time	Accepted By	Date	Time	Comments & Exceptions Noted
	6/23	12:33		6/24/21	9:00Am	

Received at St. Croix Sensory Laboratory

*Odor Concentration: ASTM E679-04 & EN13725:2003 and Odor Intensity: ASTM E544-10

St. Croix Sensory, Inc. ♦ 1150 Stillwater Blvd. N. ♦ Stillwater, MN 55082 U.S.A.♦ Tel:800-879-9231 ♦ Fax:651-439-1065 ♦ Email:reports@fivesenses.com ♦ Web:www.fivesenses.com

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St. Croix Sensory, Inc.

Odor Evaluation Report

Report Number: 2118902

Project Name: KCLF

Samples Collected: 7/7/21
Samples Received: 7/8/21
Samples Evaluated: 7/8/21

Report Prepared For: **Intertox**
600 Stewart St, Suite 1101
Seattle, WA 98101

Report Prepared By: **St. Croix Sensory, Inc.**
1150 Stillwater Boulevard North
Stillwater, MN 55082 U.S.A
1-800-879-9231
stcroix@fivesenses.com

Data Release Authorization:
Michelle Harty
Laboratory Manager

Reviewed and Approved:
Charles M. McGinley, P.E.
Technical Director

St. Croix Sensory is ISO/IEC 17025:2017 Accredited

Perry Johnson Laboratory Accreditation, Inc. Accreditation No.: 81047
Certificate No.: L20-534 Initial Accreditation Date: 19 May 2014

Odor Evaluation Report

St. Croix Sensory, Inc.

Client: **Intertox**
Project Name: **KCLF**

Report Number: **2118902**
Samples Evaluated: **7/8/21**

#	Field No.	Sample Description	DT	RT	I	HT	DR	Comments
1	S13	S13	90	45	2.6	-1.3	-1.50	Sample description was not provided.
2	S12	S12	85	40	2.2	-0.9	-1.55	Sample description was not provided.
3	S11	S11	85	40	2.4	-1.2	-1.66	Sample description was not provided.
4	S11D	S11D	85	40	2.4	-0.9	-1.76	Sample description was not provided.
5	S8	S8	110	55	2.3	-0.5	-1.69	Sample description was not provided.
6	S9	S9	85	40	2.0	-0.3	-1.30	Sample description was not provided.
7	S10	S10	85	40	2.5	-1.1	-1.76	Sample description was not provided.
8	S2	S2	100	50	2.1	-0.5	-1.51	Sample description was not provided.
9	S3	S3	85	40	2.5	-0.8	-1.58	Sample description was not provided.
10	S1	S1	85	40	2.6	-0.6	-1.64	Sample description was not provided.
11	S4	S4	100	55	1.2	-0.3	-0.83	Sample description was not provided.
12	Ref 1	Ref 1	90	50	1.2	-0.5	-0.82	Sample description was not provided.

Odor Detection Threshold Testing (Evaluations) conducted in compliance with and under all conditions specified or required by ASTM E679 and EN13725 unless noted in report "Comments" column. The Client Chain of Custody (COC) attached to the Odor Evaluation Report provides information that may include sampling location(s), methods, and/or environmental conditions during sampling. Client, designated agents, and/or reviewers provide interpretation of results based on sampling conditions.

DT - Detection Threshold as determined by ASTM E679 and EN13725. The Practical Detection Limit (PDL) of DT is 12, based on the nominal lowest dilution presentation ratio of 8. Result is dimensionless dilution ratio at which half the assessors detect the diluted air as different from the blank air. Odor Units (OU) or Odor Units per cubic meters (OU/m3) are commonly used as pseudo-units.

RT - Recognition Threshold as determined by ASTM E679 and EN13725. Result is dimensionless dilution ratio at which half the assessors recognize a character in the diluted odorous air. Odor Units (OU) or Odor Units per cubic meter (OU/m3) are commonly used pseudo-units.

I - Perceived odor intensity as determined by ASTM E544. Intensity is expressed as average reported scale value on 10pt n-butanol in water static scale.

HT – Hedonic Tone value. Average rating of assessors' opinion of odor pleasantness on scale of -10 (most unpleasant) to +10 (most pleasant).

DR – the slope of the dose-response relationship of odor intensity with dilution (persistency of odor).

Odor Evaluation Report

St. Croix Sensory, Inc.

Client: **Intertox** Report Number: **2118902**

Project Name: **KCLF** Samples Evaluated: **7/8/21**

#	Field No.	Sample Description	DT	RT	I	HT	DR	Comments
13	Trip	Trip Blank	90	65	0.7	-0.2	-0.48	
14	S7	S7	100	50	0.7	-0.3	-0.52	Sample description was not provided.
15	S6	S6	90	60	1.1	-0.4	-0.78	Sample description was not provided.
16	S5	S5	120	70	0.5	-0.1	-0.35	Sample description was not provided.

Odor Detection Threshold Testing (Evaluations) conducted in compliance with and under all conditions specified or required by ASTM E679 and EN13725 unless noted in report "Comments" column. The Client Chain of Custody (COC) attached to the Odor Evaluation Report provides information that may include sampling location(s), methods, and/or environmental conditions during sampling. Client, designated agents, and/or reviewers provide interpretation of results based on sampling conditions.

DT - Detection Threshold as determined by ASTM E679 and EN13725. The Practical Detection Limit (PDL) of DT is 12, based on the nominal lowest dilution presentation ratio of 8. Result is dimensionless dilution ratio at which half the assessors detect the diluted air as different from the blank air. Odor Units (OU) or Odor Units per cubic meters (OU/m3) are commonly used as pseudo-units.

RT - Recognition Threshold as determined by ASTM E679 and EN13725. Result is dimensionless dilution ratio at which half the assessors recognize a character in the diluted odorous air. Odor Units (OU) or Odor Units per cubic meter (OU/m3) are commonly used pseudo-units.

I - Perceived odor intensity as determined by ASTM E544. Intensity is expressed as average reported scale value on 10pt n-butanol in water static scale.

HT – Hedonic Tone value. Average rating of assessors' opinion of odor pleasantness on scale of -10 (most unpleasant) to +10 (most pleasant).

DR – the slope of the dose-response relationship of odor intensity with dilution (persistency of odor).

St. Croix Sensory, Inc.

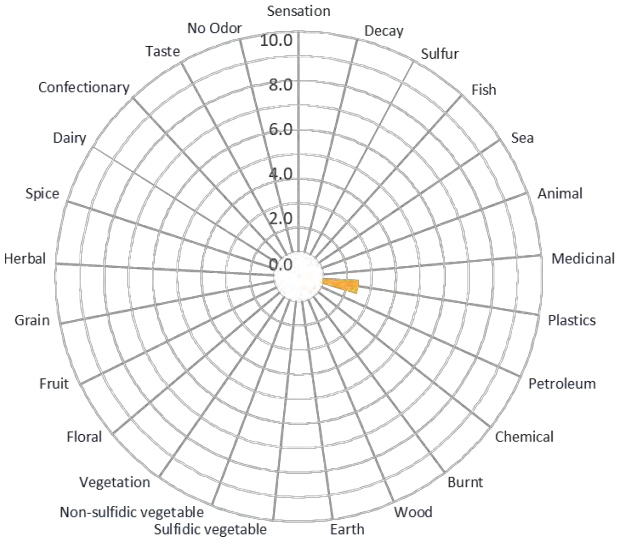
Report Number: 2118902
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/8/2021

Field No: S13
Description: S13

DT: 90
RT: 45
I: 2.6
HT: -1.3
DR: -1.50

Comments:
Sample description was not provided.

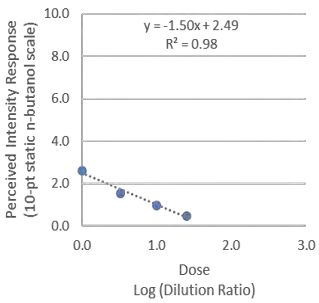
Odor Descriptors



Strength	Descriptor	% of assessors (n=4)
2.5	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

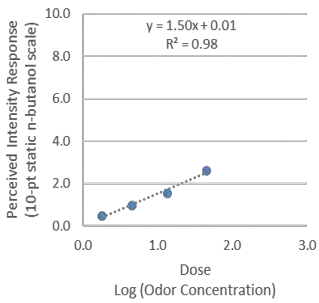
0% 20% 40% 60% 80% 100%

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

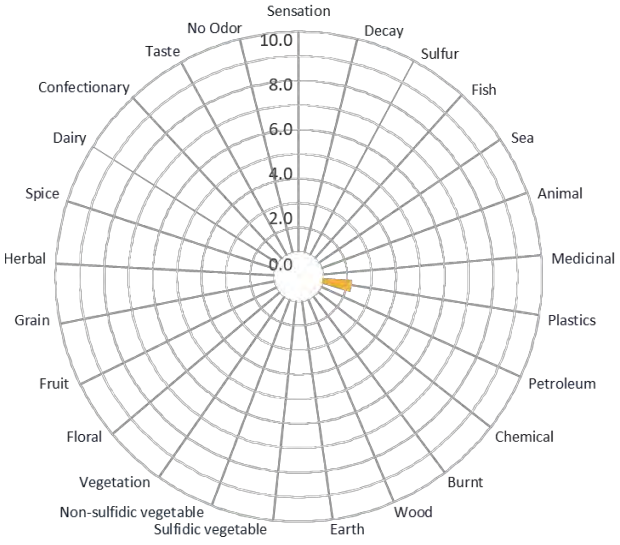
Report Number: 2118902
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/8/2021

Field No: S12
Description: S12

DT: 85
RT: 40
I: 2.2
HT: -0.9
DR: -1.55

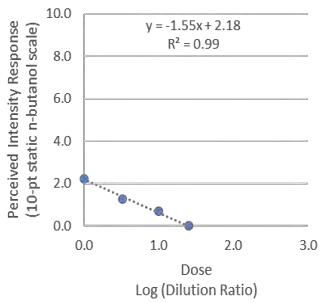
Comments:
Sample description was not provided.

Odor Descriptors



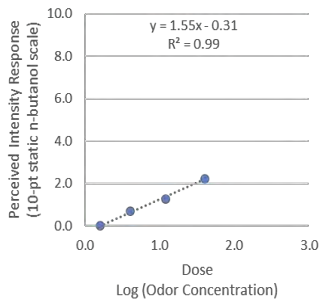
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
2.2	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

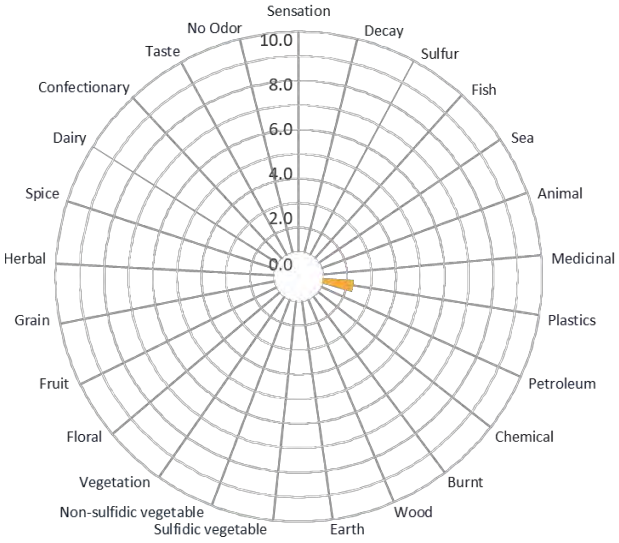
Report Number: 2118902
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/8/2021

Field No: S11
Description: S11

DT: 85
RT: 40
I: 2.4
HT: -1.2
DR: -1.66

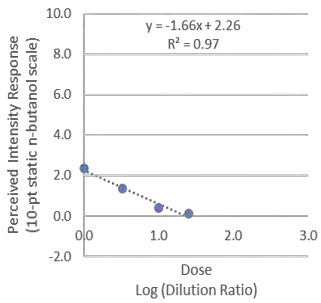
Comments:
Sample description was not provided.

Odor Descriptors



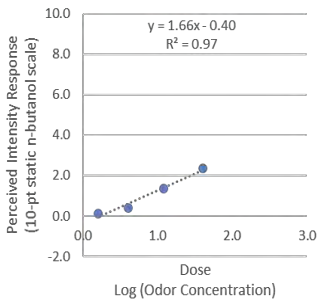
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
2.3	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

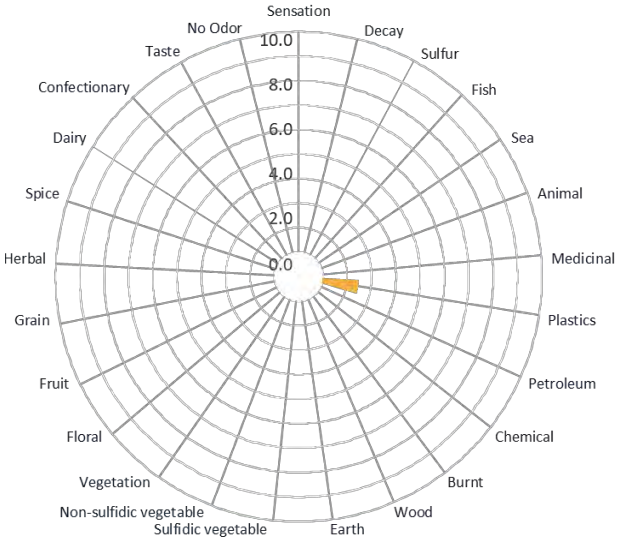
Report Number: 2118902
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/8/2021

Field No: S11D
Description: S11D

DT: 85
RT: 40
I: 2.4
HT: -0.9
DR: -1.76

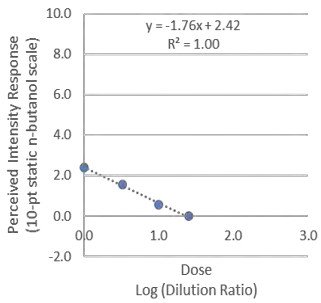
Comments:
Sample description was not provided.

Odor Descriptors



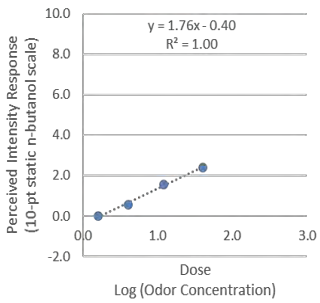
Strength	Descriptor	% of assessors (n=4)
2.5	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

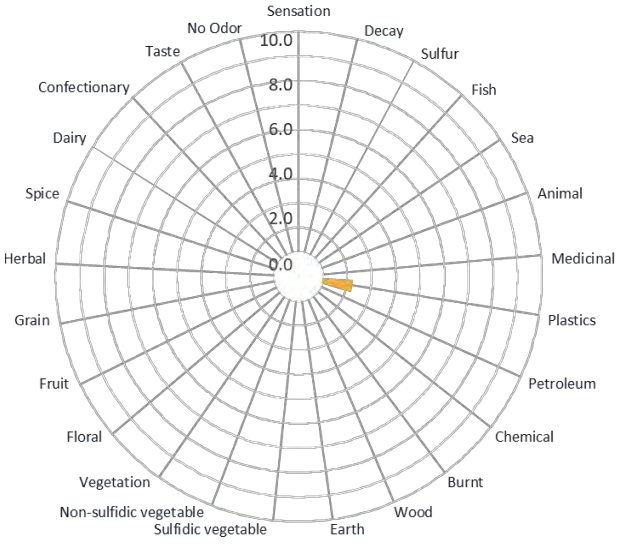
Report Number: 2118902
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/8/2021

Field No: S8
Description: S8

DT: 110
RT: 55
I: 2.3
HT: -0.5
DR: -1.69

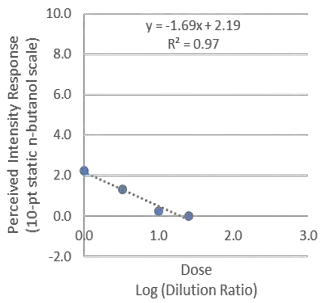
Comments:
Sample description was not provided.

Odor Descriptors



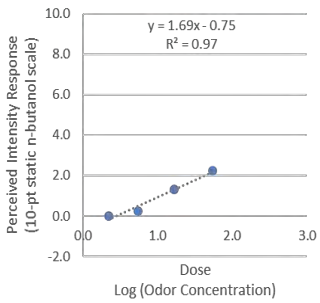
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
2.2	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

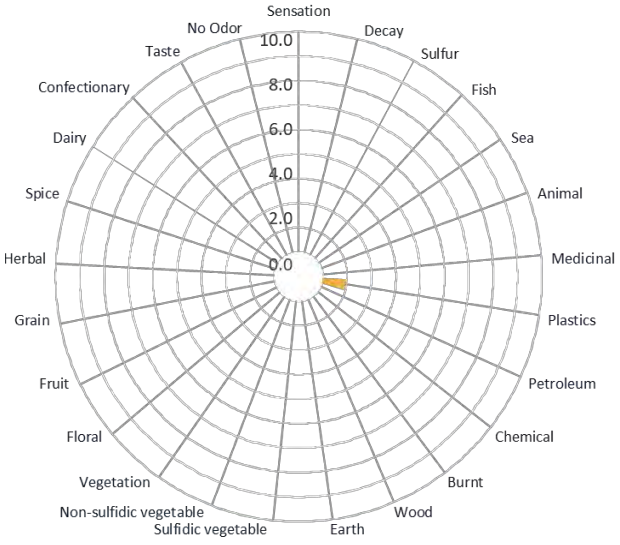
Report Number: 2118902
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/8/2021

Field No: S9
Description: S9

DT: 85
RT: 40
I: 2.0
HT: -0.3
DR: -1.30

Comments:
Sample description was not provided.

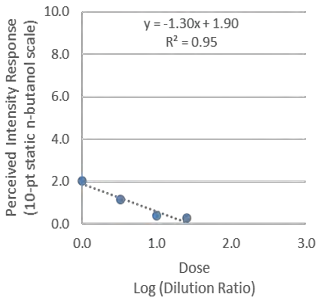
Odor Descriptors



Strength	Descriptor	% of assessors (n=4)
2.0	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

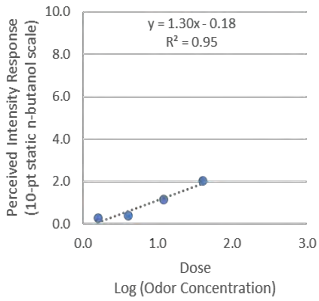
0% 20% 40% 60% 80% 100%

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

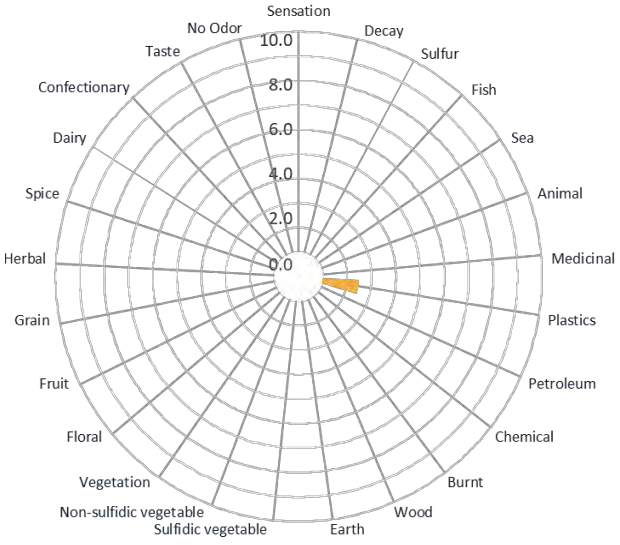
Report Number: 2118902
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/8/2021

Field No: **S10**
Description: **S10**

DT: **85**
RT: **40**
I: **2.5**
HT: **-1.1**
DR: **-1.76**

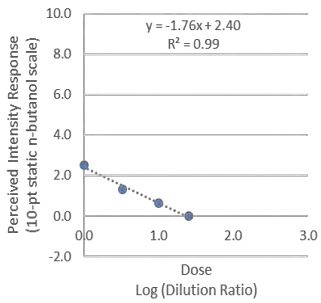
Comments:
Sample description was not provided.

Odor Descriptors



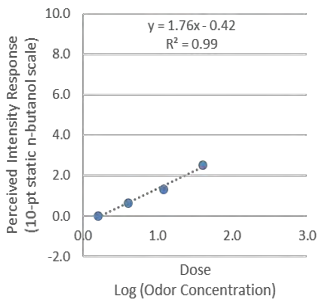
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
	Plastics	
2.5	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

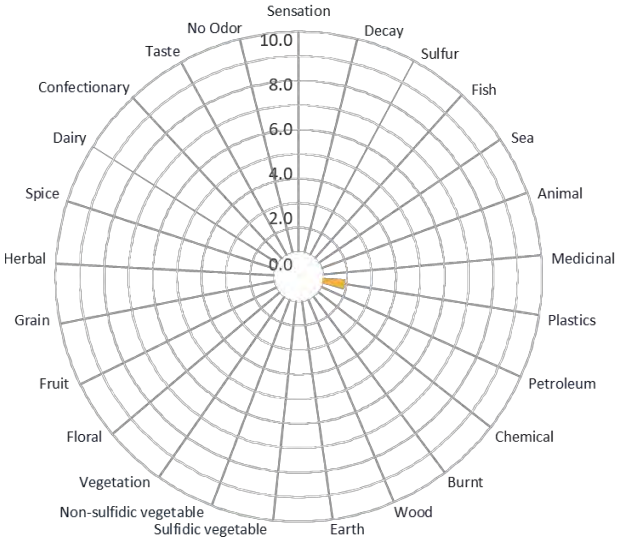
Report Number: 2118902
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/8/2021

Field No: S2
Description: S2

DT: 100
RT: 50
I: 2.1
HT: -0.5
DR: -1.51

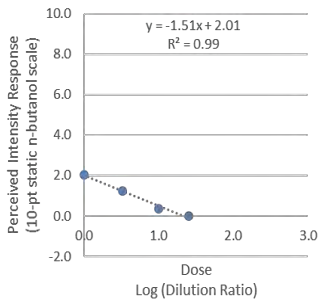
Comments:
Sample description was not provided.

Odor Descriptors



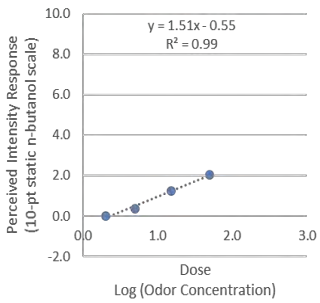
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
1.9	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

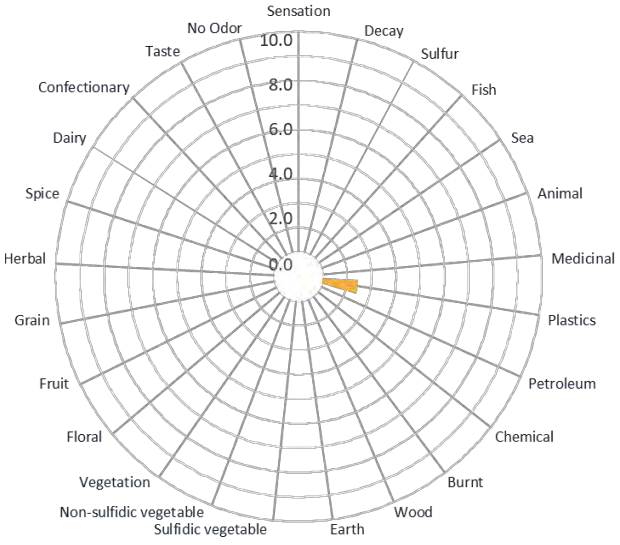
Report Number: 2118902
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/8/2021

Field No: S3
Description: S3

DT: 85
RT: 40
I: 2.5
HT: -0.8
DR: -1.58

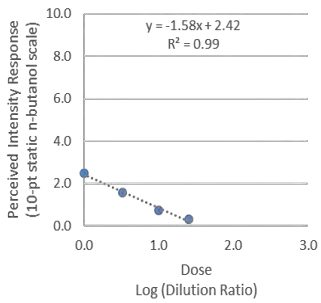
Comments:
Sample description was not provided.

Odor Descriptors



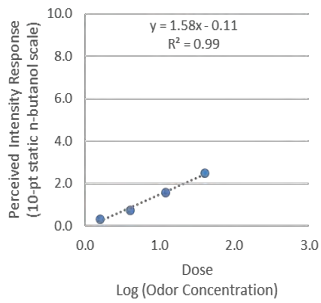
Strength	Descriptor	% of assessors (n=4)
2.5	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

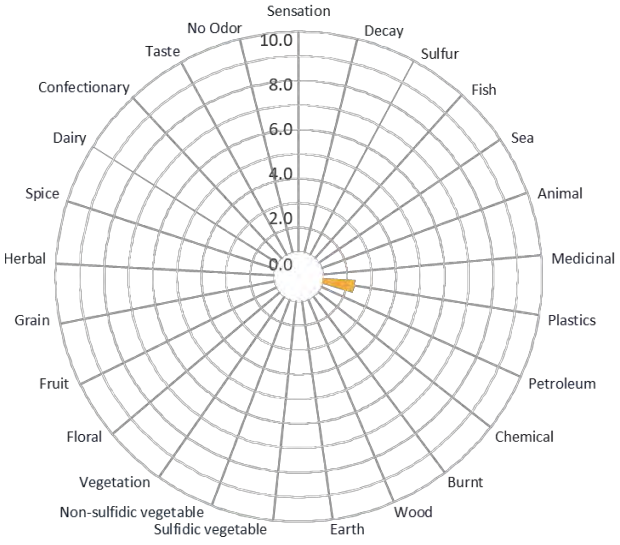
Report Number: 2118902
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/8/2021

Field No: S1
Description: S1

DT: 85
RT: 40
I: 2.6
HT: -0.6
DR: -1.64

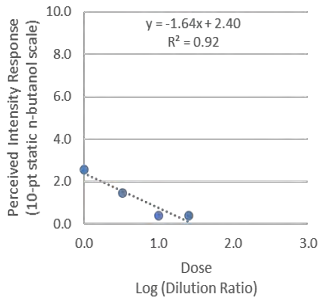
Comments:
Sample description was not provided.

Odor Descriptors



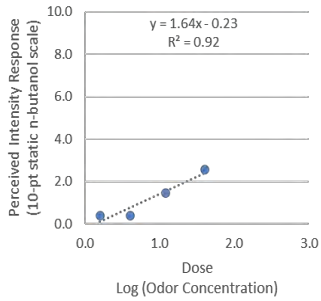
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
2.3	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

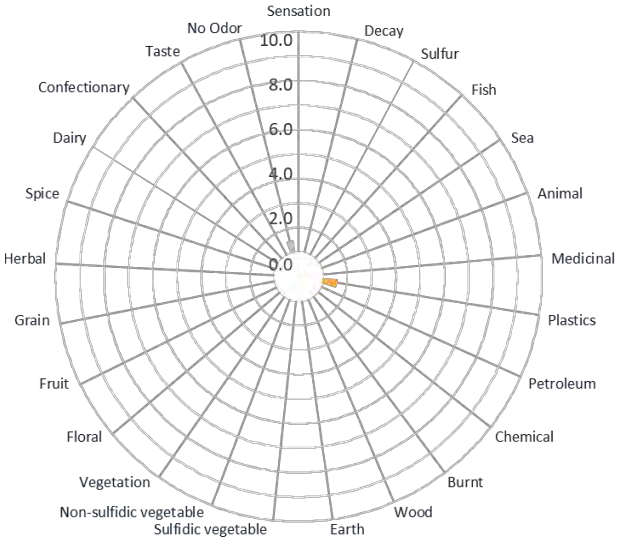
Report Number: 2118902
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/8/2021

Field No: S4
Description: S4

DT: 100
RT: 55
I: 1.2
HT: -0.3
DR: -0.83

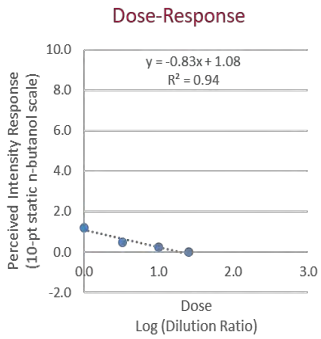
Comments:
Sample description was not provided.

Odor Descriptors

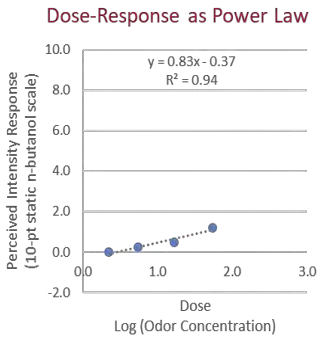


Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
1.6	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
1.0	No Odor	

0% 20% 40% 60% 80% 100%



Log I = n Log C + Log k



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

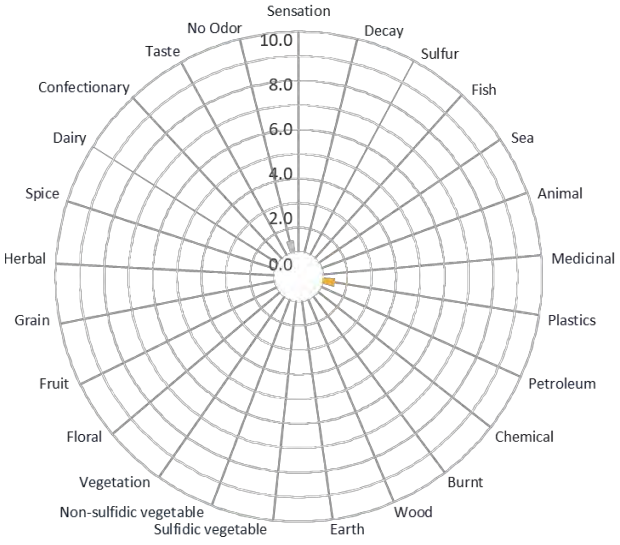
Report Number: 2118902
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/8/2021

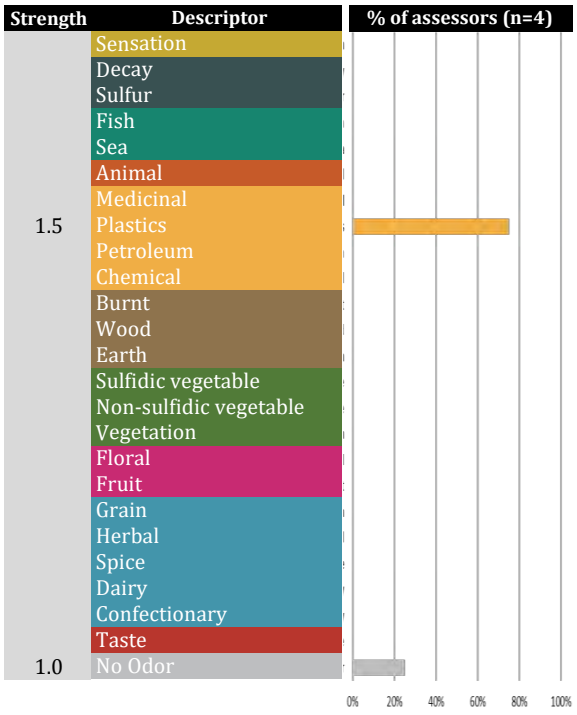
Field No: **Ref 1**
Description: **Ref 1**

DT: **90**
RT: **50**
I: **1.2**
HT: **-0.5**
DR: **-0.82**

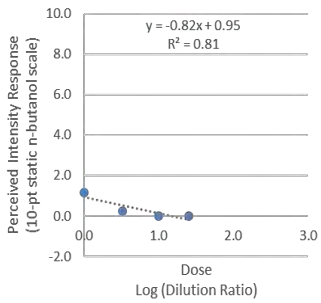
Comments:
Sample description was not provided.

Odor Descriptors



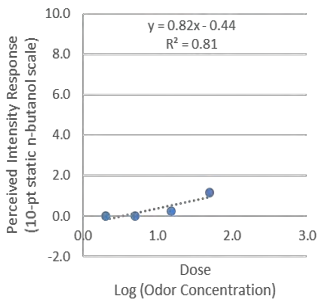


Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

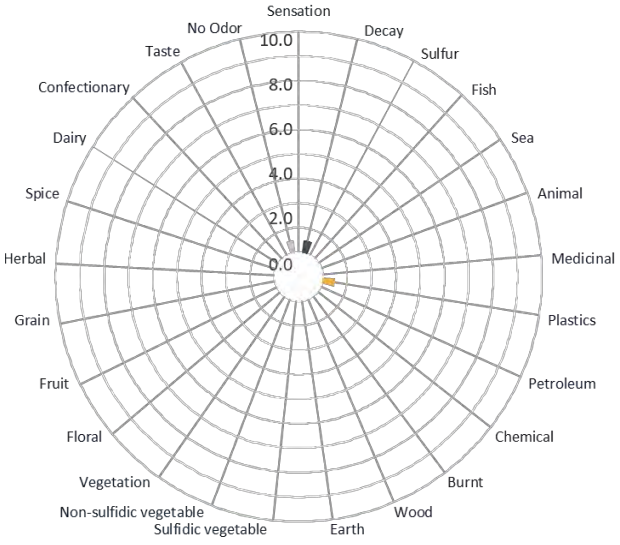
Report Number: 2118902
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/8/2021

Field No: **Trip**
Description: **Trip Blank**

DT: **90**
RT: **65**
I: **0.7**
HT: **-0.2**
DR: **-0.48**

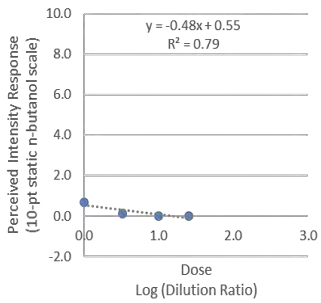
Comments:

Odor Descriptors



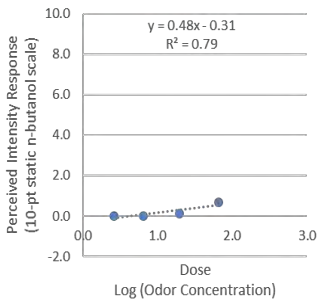
Strength	Descriptor	% of assessors (n=4)
	Sensation	
0.3	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
1.2	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
1.0	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

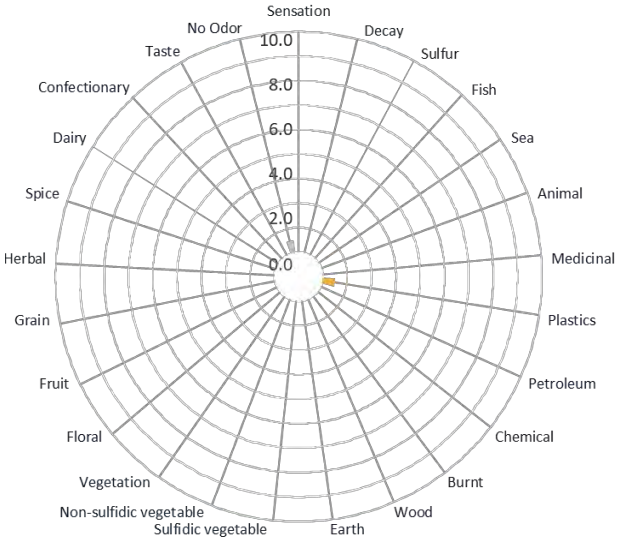
Report Number: 2118902
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/8/2021

Field No: S7
Description: S7

DT: 100
RT: 50
I: 0.7
HT: -0.3
DR: -0.52

Comments:
Sample description was not provided.

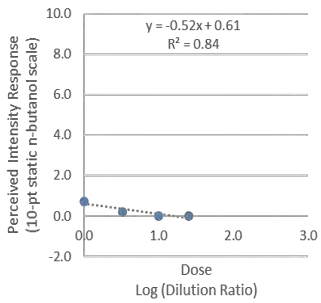
Odor Descriptors



Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
0.9	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
1.0	No Odor	

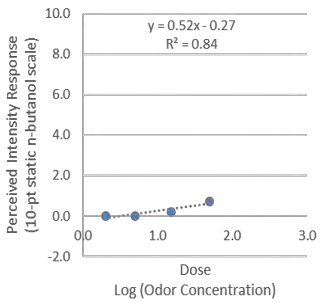
0% 20% 40% 60% 80% 100%

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

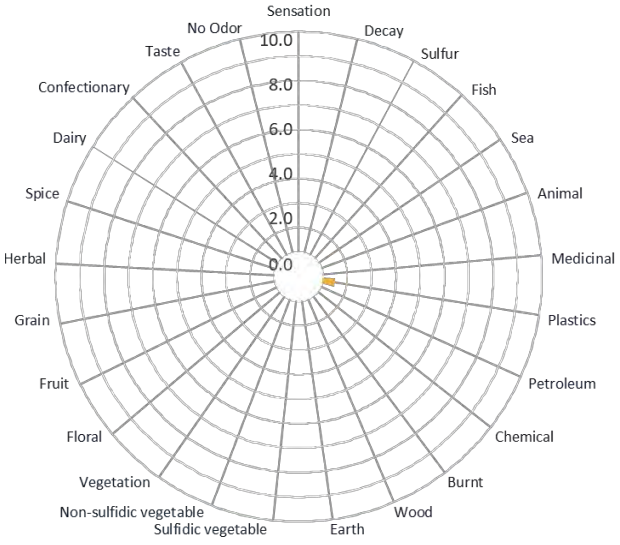
Report Number: 2118902
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/8/2021

Field No: S6
Description: S6

DT: 90
RT: 60
I: 1.1
HT: -0.4
DR: -0.78

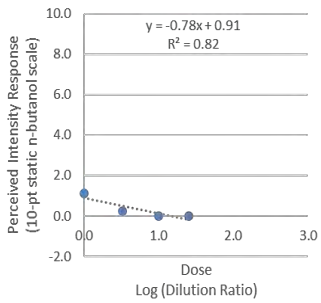
Comments:
Sample description was not provided.

Odor Descriptors



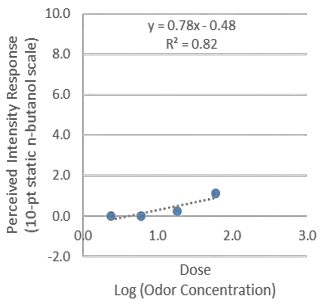
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
1.5	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

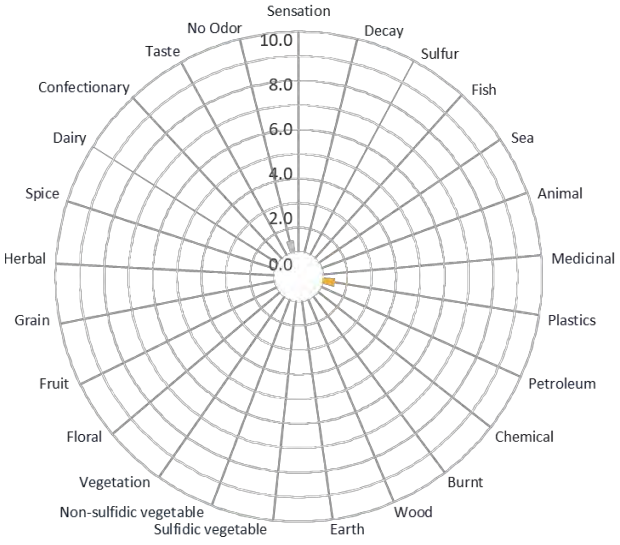
Report Number: 2118902
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/8/2021

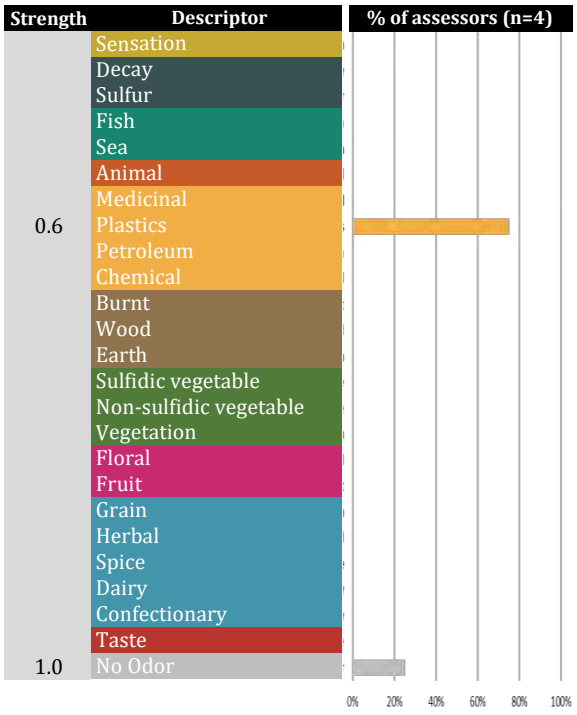
Field No: S5
Description: S5

DT: 120
RT: 70
I: 0.5
HT: -0.1
DR: -0.35

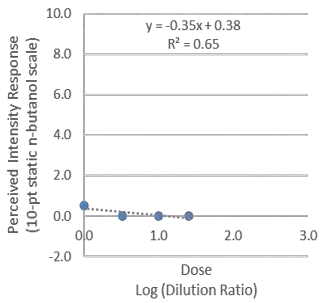
Comments:
Sample description was not provided.

Odor Descriptors



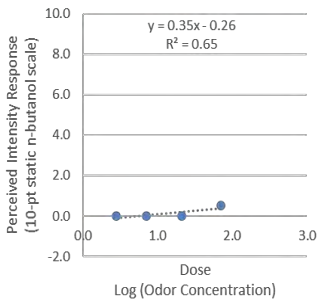


Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

Attachments

St. Croix Sensory, Inc.

CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES

Page 1 of 2

Client: Intertox | Sampled By: Cameron Ballamoro 80 | Odor Evaluations Requested: (X)

Project Name: KCLF | Sampling Date: 7/7/21

Comments:

Line No.	Field No.	Sample Description	Sample Time	Field H_2S (ppm)	Odor Concentration* (Detection & Recognition Threshold)	Odor Intensity* (PPM 1-Butanol)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistency (*Dose-Response*)	For Laboratory use Only: Odor Evaluation Report No. 2118902 — Laboratory Sample No. LN	FN
1	S13		0716		X	X	X	X		
2	S12		0738		↓	↓	↓	↓		
3	S11		0753							
4	S11 D		0801							
5	S8		0822							
6	S9		0838							
7	S10		0853							
8	S2		0917							
9	S3		0930							
10	S1		0945							
11	S4		1002							
12					↓	↓	↓	↓		

Transmittal Number of Shipping Boxes 3

Relinquished By	Date	Time	Accepted By	Date	Time	Comments & Exceptions Noted
Tom Cruz	7/7/21	1:00 pm				
Received @ St. Croix Sensory Laboratory			MHarty	7/8/21	9:55AM	

*Odor Concentration: ASTM E679-04 & EN13725:2003 and Odor Intensity: ASTM E544-10

St. Croix Sensory, Inc. ◆ 1150 Stillwater Blvd. N. ◆ Stillwater, MN 55082 U.S.A.◆ Tel:800-879-9231 ◆ Fax:651-439-1065 ◆ Email:reports@fivesenses.com ◆ Web:www.fivesenses.com

LAB COPIES WHITE & YELLOW CLIENT COPY PINK

St. Croix Sensory, Inc.

CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES

Page 2 of 2

Client: Intertox | Sampled By: Cameron Ballamoro 80 | Odor Evaluations Requested: (X)

Project Name: KCLF | Sampling Date: 7/7/21

Comments:

Line No.	Field No.	Sample Description	Sample Time	Field H_2S (ppm)	Odor Concentration* (Detection & Recognition Threshold)	Odor Intensity* (PPM 1-Butanol)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistency (*Dose-Response*)	For Laboratory use Only: Odor Evaluation Report No. 2118902 — Laboratory Sample No. LN	FN
1	REF 1		10:54		X	X	X	X		
2	TRIP	Trip Blank	11:00		X	X	X	X		
3	S7		11:36		X	X	X	X		
4	S6		11:50		X	X	X	X		
5	S5		12:03		X	X	X	X		
6										
7										
8										
9										
10										
11										
12										

Transmittal Number of Shipping Boxes 3

Relinquished By	Date	Time	Accepted By	Date	Time	Comments & Exceptions Noted
Tom Cruz	7/7/21	1:00 pm				
Received @ St. Croix Sensory Laboratory			MHarty	7/8/21	9:55AM	

*Odor Concentration: ASTM E679-04 & EN13725:2003 and Odor Intensity: ASTM E544-10

St. Croix Sensory, Inc. ◆ 1150 Stillwater Blvd. N. ◆ Stillwater, MN 55082 U.S.A.◆ Tel:800-879-9231 ◆ Fax:651-439-1065 ◆ Email:reports@fivesenses.com ◆ Web:www.fivesenses.com

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St. Croix Sensory, Inc.

Odor Evaluation Report

Report Number: 2119001

Project Name: KCLF

Samples Collected: 7/8/21
Samples Received: 7/9/21
Samples Evaluated: 7/9/21

Report Prepared For: **Intertox**
600 Stewart St, Suite 1101
Seattle, WA 98101

Report Prepared By: **St. Croix Sensory, Inc.**
1150 Stillwater Boulevard North
Stillwater, MN 55082 U.S.A
1-800-879-9231
stcroix@fivesenses.com

Data Release Authorization:
Michelle Harty
Laboratory Manager

Reviewed and Approved:
Charles M. McGinley, P.E.
Technical Director

St. Croix Sensory is ISO/IEC 17025:2017 Accredited

Perry Johnson Laboratory Accreditation, Inc. Accreditation No.: 81047
Certificate No.: L20-534 Initial Accreditation Date: 19 May 2014

Odor Evaluation Report

St. Croix Sensory, Inc.

Client: **Intertox**
Project Name: **KCLF**

Report Number: **2119001**
Samples Evaluated: **7/9/21**

#	Field No.	Sample Description	DT	RT	I	HT	DR	Comments
1	S6	S6	100	60	1.7	-0.5	-1.14	Sample description was not provided.
2	S5	S5	75	40	1.2	-0.3	-0.76	Sample description was not provided.
3	S7	S7	50	25	1.9	-0.4	-1.32	Sample description was not provided.
4	Ref 1	Ref 1	60	30	1.5	-0.4	-1.03	Sample description was not provided.
5	Trip	Trip Blank	90	45	1.5	+1.8	-1.04	
6	S13	S13	85	50	1.0	-0.4	-0.65	Sample description was not provided.
7	S12	S12	85	50	1.6	-0.7	-1.15	Sample description was not provided.
8	S11	S11	70	40	0.7	-0.1	-0.49	Sample description was not provided.
9	S11D	S11D	85	45	1.2	-0.3	-0.60	Sample description was not provided.
10	S4	S4	70	35	2.6	+1.3	-1.89	Sample description was not provided.
11	S8	S8	150	70	2.8	+0.1	-1.97	Sample description was not provided.
12	S9	S9	110	55	1.7	+1.9	-1.20	Sample description was not provided.

Odor Detection Threshold Testing (Evaluations) conducted in compliance with and under all conditions specified or required by ASTM E679 and EN13725 unless noted in report "Comments" column. The Client Chain of Custody (COC) attached to the Odor Evaluation Report provides information that may include sampling location(s), methods, and/or environmental conditions during sampling. Client, designated agents, and/or reviewers provide interpretation of results based on sampling conditions.

DT - Detection Threshold as determined by ASTM E679 and EN13725. The Practical Detection Limit (PDL) of DT is 12, based on the nominal lowest dilution presentation ratio of 8. Result is dimensionless dilution ratio at which half the assessors detect the diluted air as different from the blank air. Odor Units (OU) or Odor Units per cubic meters (OU/m3) are commonly used as pseudo-units.

RT - Recognition Threshold as determined by ASTM E679 and EN13725. Result is dimensionless dilution ratio at which half the assessors recognize a character in the diluted odorous air. Odor Units (OU) or Odor Units per cubic meter (OU/m3) are commonly used pseudo-units.

I - Perceived odor intensity as determined by ASTM E544. Intensity is expressed as average reported scale value on 10pt n-butanol in water static scale.

HT – Hedonic Tone value. Average rating of assessors' opinion of odor pleasantness on scale of -10 (most unpleasant) to +10 (most pleasant).

DR – the slope of the dose-response relationship of odor intensity with dilution (persistency of odor).

Odor Evaluation Report

St. Croix Sensory, Inc.

Client: **Intertox**
Project Name: **KCLF**

Report Number: **2119001**
Samples Evaluated: **7/9/21**

#	Field No.	Sample Description	DT	RT	I	HT	DR	Comments
13	S10	S10	100	55	2.3	+0.2	-1.74	Sample description was not provided.
14	S2	S2	60	30	2.6	+0.1	-1.89	Sample description was not provided.
15	S3	S3	70	40	2.4	+0.0	-1.41	Sample description was not provided.
16	S1	S1	70	35	2.1	-0.4	-1.52	Sample description was not provided.

Odor Detection Threshold Testing (Evaluations) conducted in compliance with and under all conditions specified or required by ASTM E679 and EN13725 unless noted in report "Comments" column. The Client Chain of Custody (COC) attached to the Odor Evaluation Report provides information that may include sampling location(s), methods, and/or environmental conditions during sampling. Client, designated agents, and/or reviewers provide interpretation of results based on sampling conditions.

DT - Detection Threshold as determined by ASTM E679 and EN13725. The Practical Detection Limit (PDL) of DT is 12, based on the nominal lowest dilution presentation ratio of 8. Result is dimensionless dilution ratio at which half the assessors detect the diluted air as different from the blank air. Odor Units (OU) or Odor Units per cubic meters (OU/m3) are commonly used as pseudo-units.

RT - Recognition Threshold as determined by ASTM E679 and EN13725. Result is dimensionless dilution ratio at which half the assessors recognize a character in the diluted odorous air. Odor Units (OU) or Odor Units per cubic meter (OU/m3) are commonly used pseudo-units.

I - Perceived odor intensity as determined by ASTM E544. Intensity is expressed as average reported scale value on 10pt n-butanol in water static scale.

HT – Hedonic Tone value. Average rating of assessors' opinion of odor pleasantness on scale of -10 (most unpleasant) to +10 (most pleasant).

DR – the slope of the dose-response relationship of odor intensity with dilution (persistency of odor).

St. Croix Sensory, Inc.

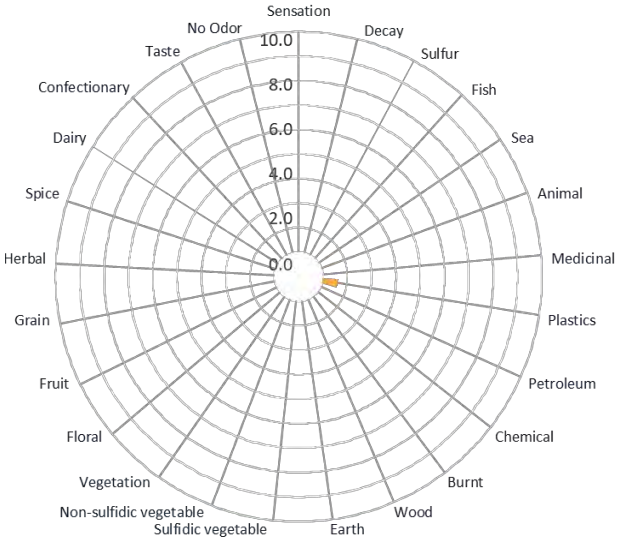
Report Number: 2119001
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/9/2021

Field No: S6
Description: S6

DT: 100
RT: 60
I: 1.7
HT: -0.5
DR: -1.14

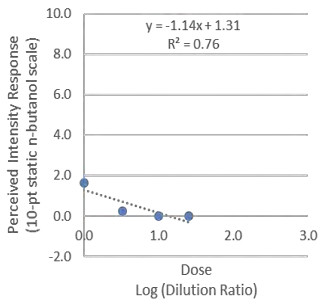
Comments:
Sample description was not provided.

Odor Descriptors



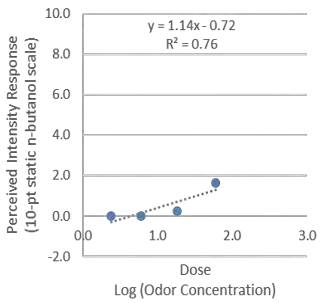
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
1.6	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

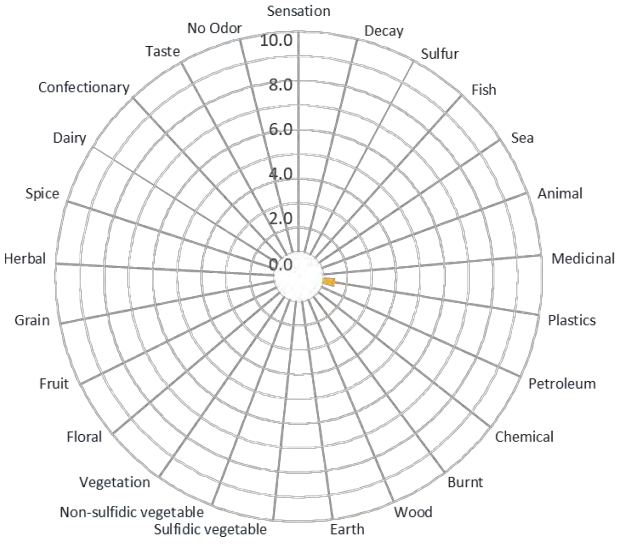
Report Number: 2119001
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/9/2021

Field No: S5
Description: S5

DT: 75
RT: 40
I: 1.2
HT: -0.3
DR: -0.76

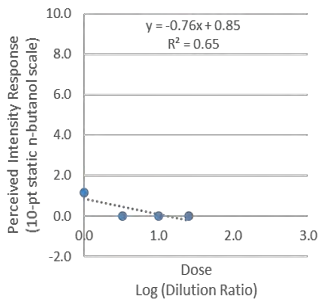
Comments:
Sample description was not provided.

Odor Descriptors



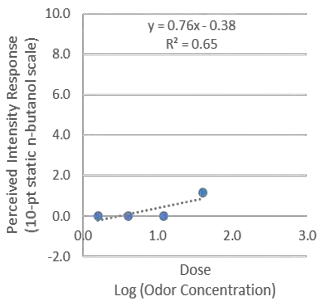
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
1.2	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

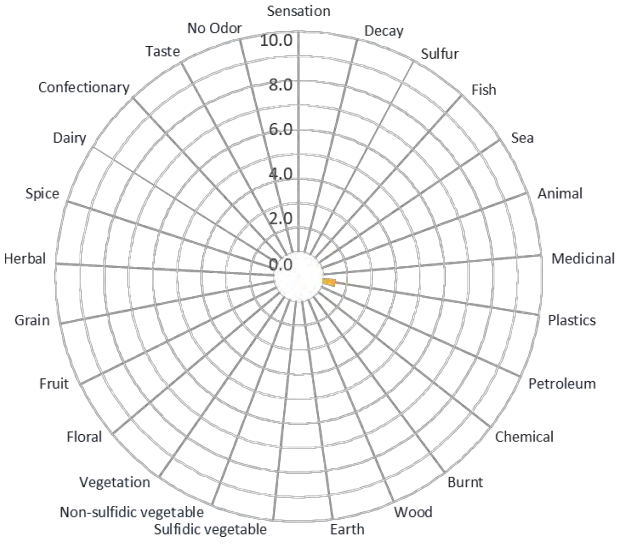
Report Number: 2119001
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/9/2021

Field No: S7
Description: S7

DT: 50
RT: 25
I: 1.9
HT: -0.4
DR: -1.32

Comments:
Sample description was not provided.

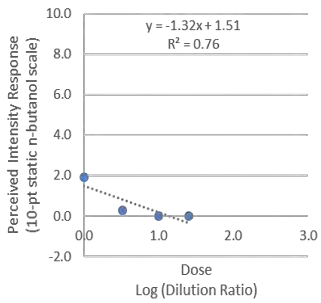
Odor Descriptors



Strength	Descriptor	% of assessors (n=4)
1.5	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

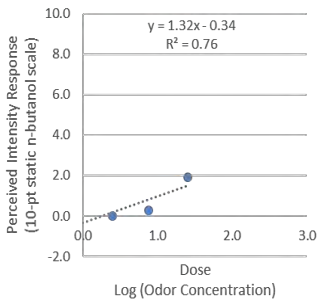
0% 20% 40% 60% 80% 100%

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

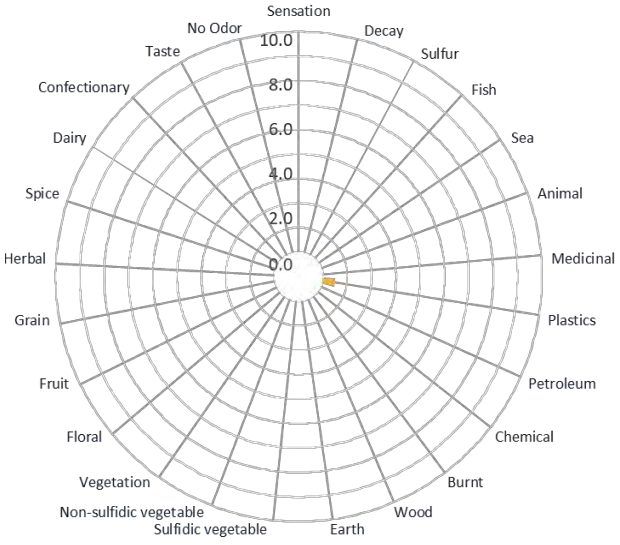
Report Number: 2119001
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/9/2021

Field No: **Ref 1**
Description: **Ref 1**

DT: **60**
RT: **30**
I: **1.5**
HT: **-0.4**
DR: **-1.03**

Comments:
Sample description was not provided.

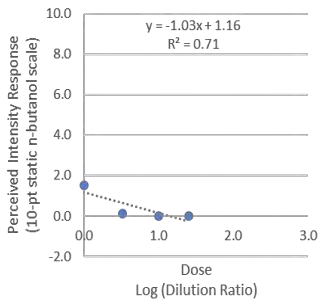
Odor Descriptors



Strength	Descriptor	% of assessors (n=4)
1.5	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

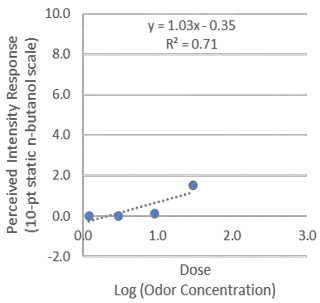
0% 20% 40% 60% 80% 100%

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

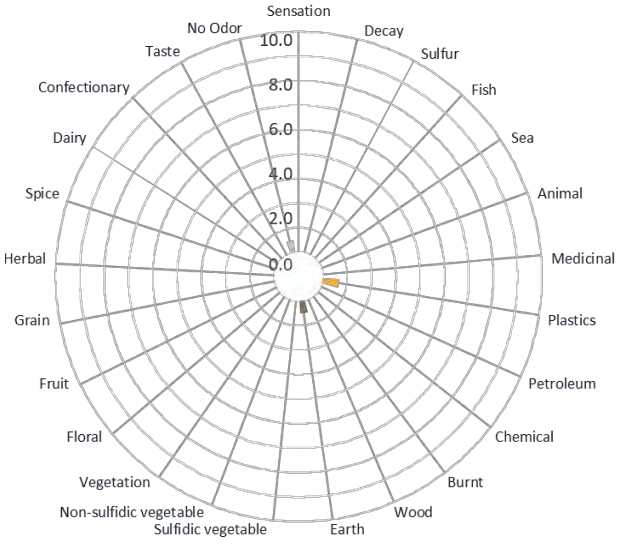
Report Number: 2119001
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/9/2021

Field No: **Trip**
Description: **Trip Blank**

DT: **90**
RT: **45**
I: **1.5**
HT: **+1.8**
DR: **-1.04**

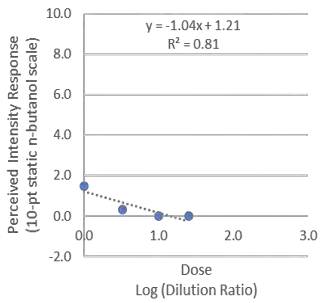
Comments:

Odor Descriptors



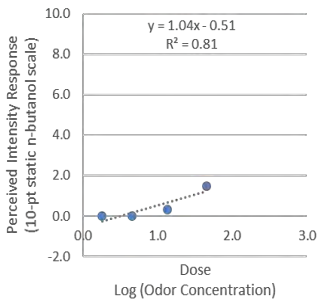
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
1.7	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
0.6	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
1.0	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

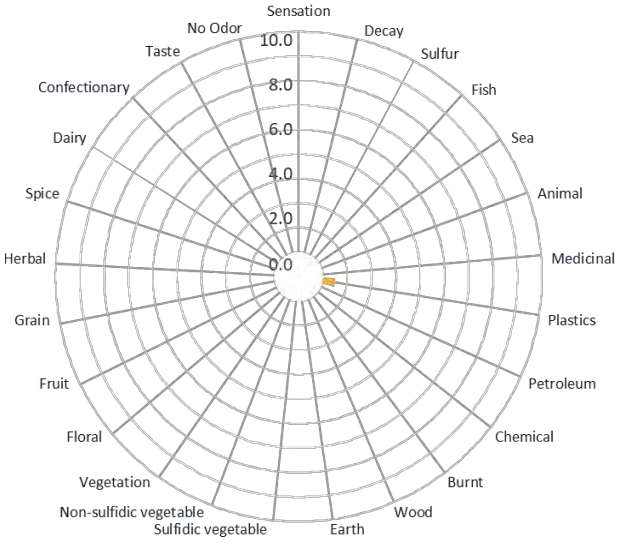
Report Number: 2119001
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/9/2021

Field No: S13
Description: S13

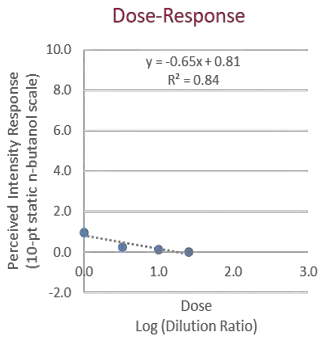
DT: 85
RT: 50
I: 1.0
HT: -0.4
DR: -0.65

Comments:
Sample description was not provided.

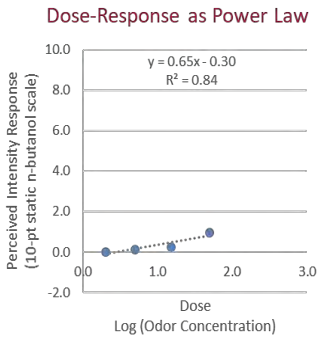
Odor Descriptors



Strength	Descriptor	% of assessors (n=4)
0.9	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	



Log I = n Log C + Log k



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

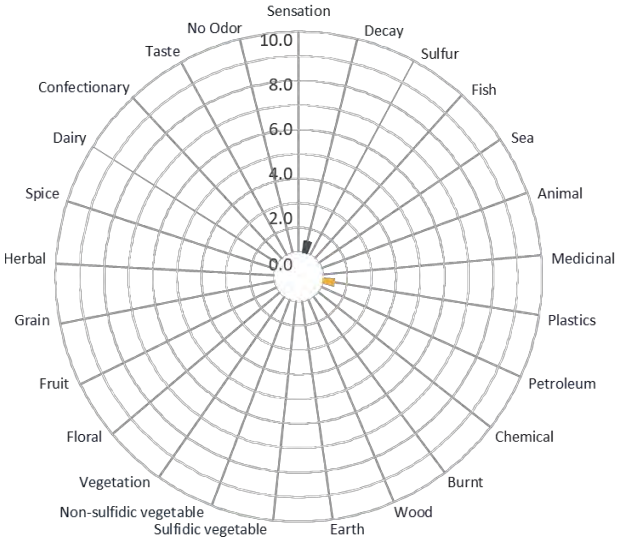
Report Number: 2119001
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/9/2021

Field No: S12
Description: S12

DT: 85
RT: 50
I: 1.6
HT: -0.7
DR: -1.15

Comments:
Sample description was not provided.

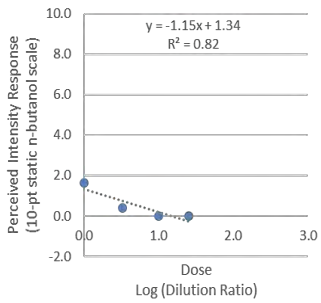
Odor Descriptors



Strength	Descriptor	% of assessors (n=4)
	Sensation	
1.0	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
1.5	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

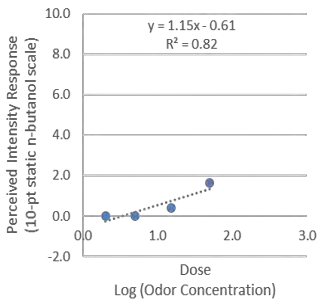
0% 20% 40% 60% 80% 100%

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

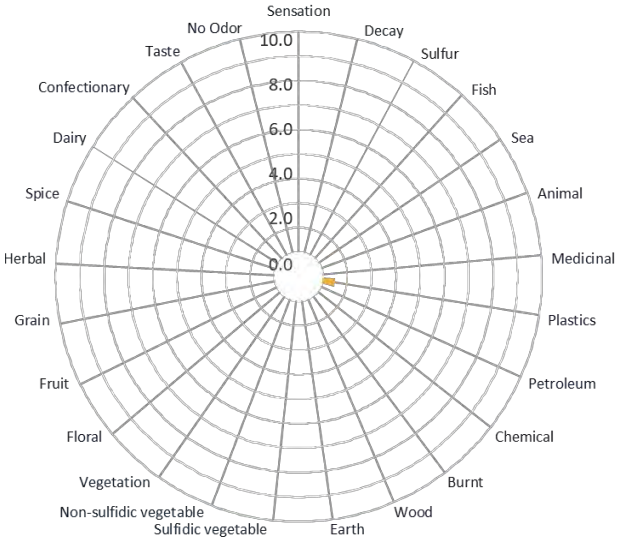
Report Number: 2119001
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/9/2021

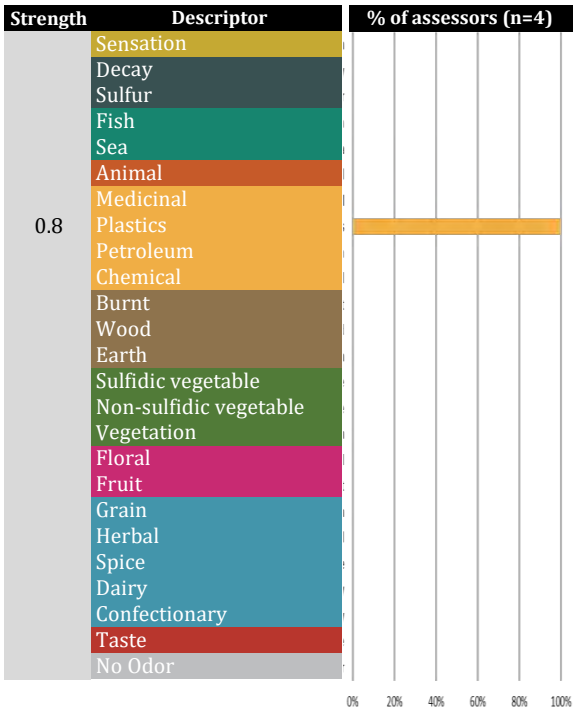
Field No: S11
Description: S11

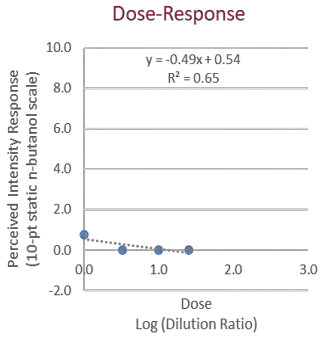
DT: 70
RT: 40
I: 0.7
HT: -0.1
DR: -0.49

Comments:
Sample description was not provided.

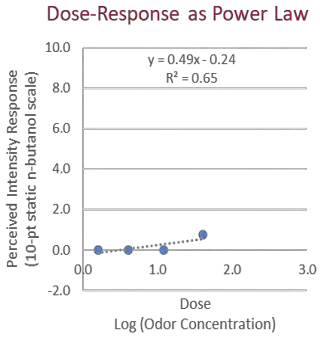
Odor Descriptors







Log I = n Log C + Log k



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

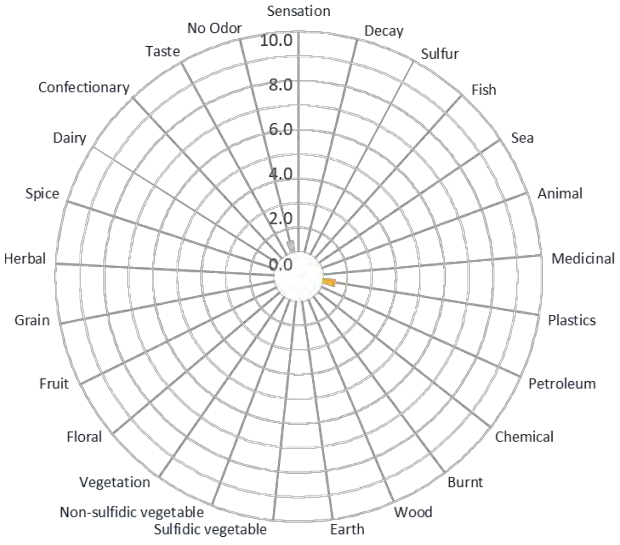
Report Number: 2119001
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/9/2021

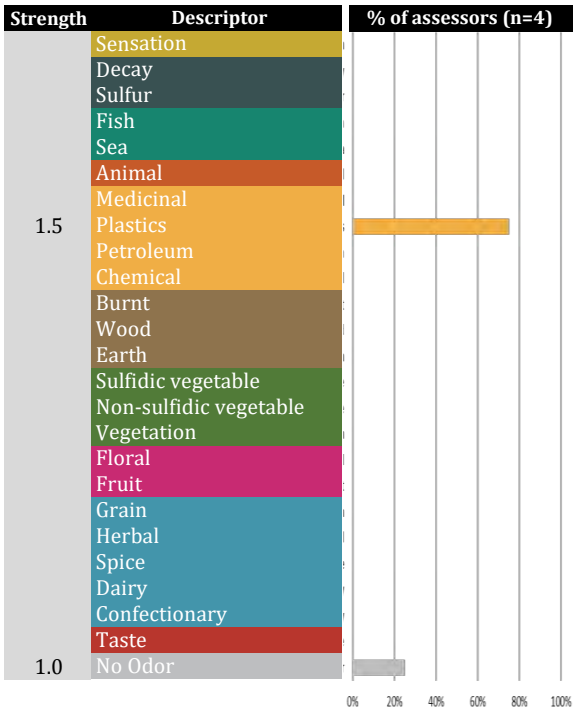
Field No: S11D
Description: S11D

DT: 85
RT: 45
I: 1.2
HT: -0.3
DR: -0.60

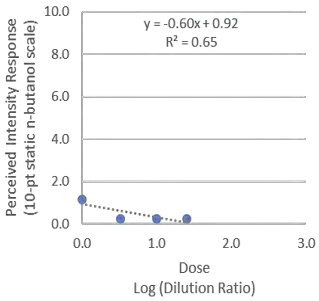
Comments:
Sample description was not provided.

Odor Descriptors



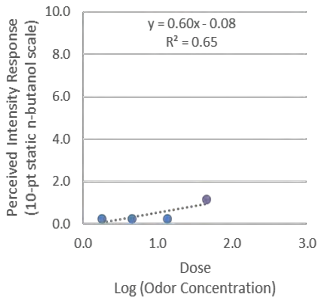


Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

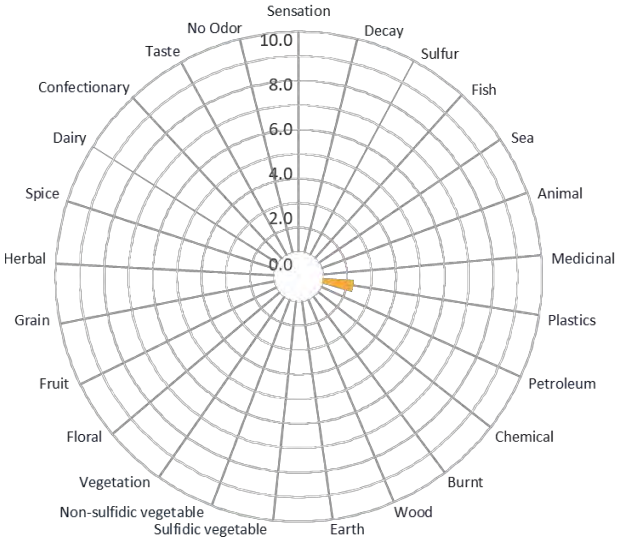
Report Number: 2119001
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/9/2021

Field No: S4
Description: S4

DT: 70
RT: 35
I: 2.6
HT: +1.3
DR: -1.89

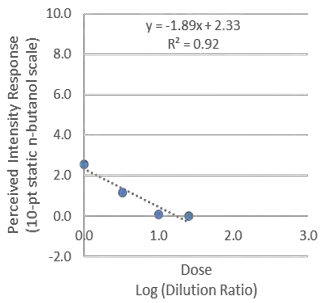
Comments:
Sample description was not provided.

Odor Descriptors



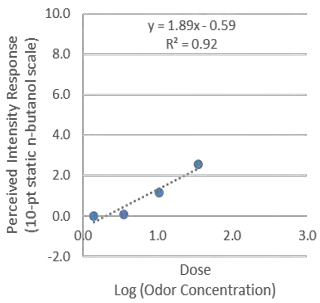
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
2.3	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

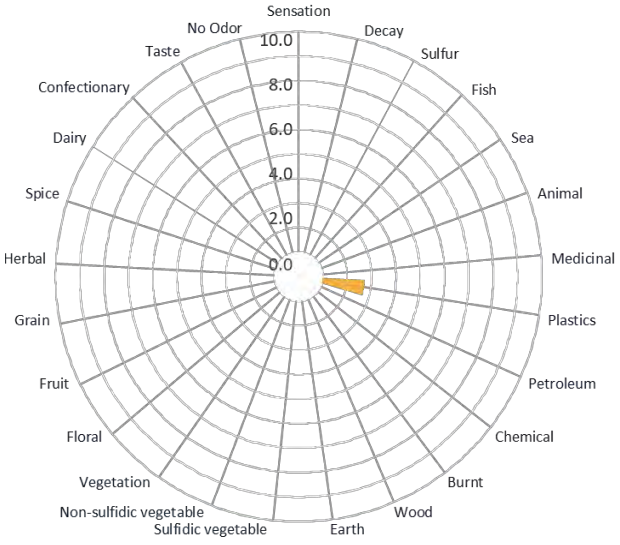
Report Number: 2119001
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/9/2021

Field No: S8
Description: S8

DT: 150
RT: 70
I: 2.8
HT: +0.1
DR: -1.97

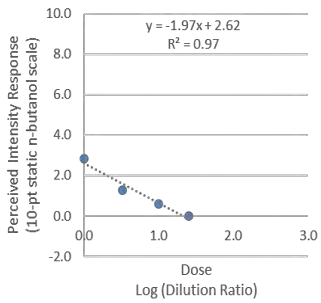
Comments:
Sample description was not provided.

Odor Descriptors



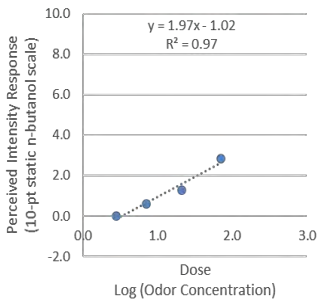
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
2.7	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

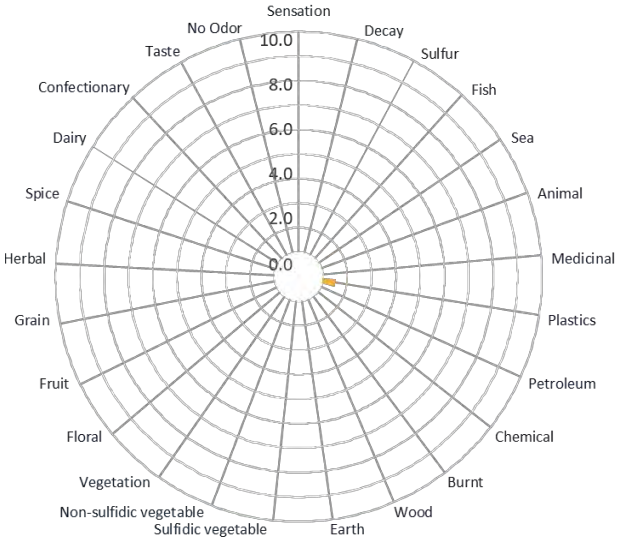
Report Number: 2119001
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/9/2021

Field No: S9
Description: S9

DT: 110
RT: 55
I: 1.7
HT: +1.9
DR: -1.20

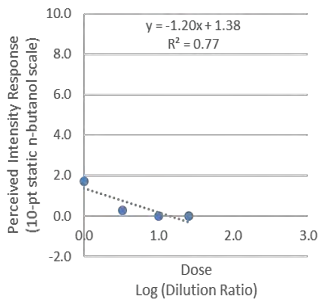
Comments:
Sample description was not provided.

Odor Descriptors



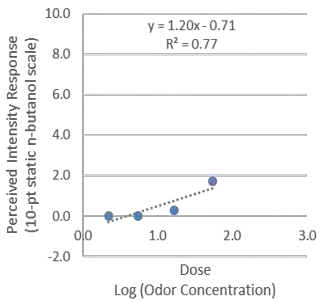
Strength	Descriptor	% of assessors (n=4)
1.5	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

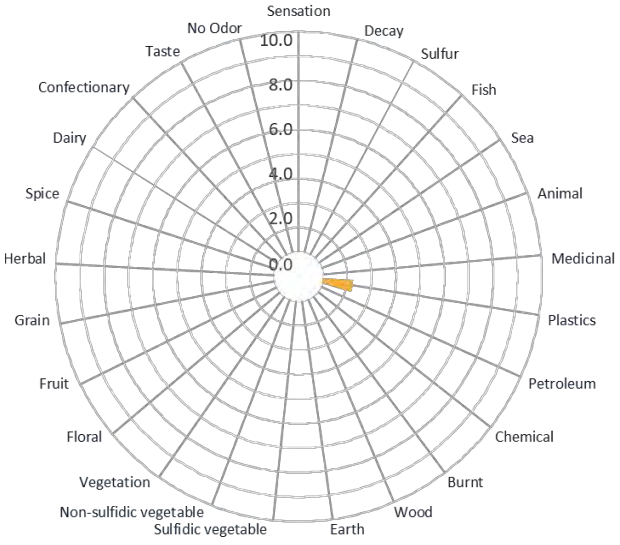
Report Number: 2119001
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/9/2021

Field No: S10
Description: S10

DT: 100
RT: 55
I: 2.3
HT: +0.2
DR: -1.74

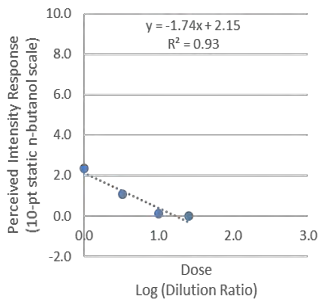
Comments:
Sample description was not provided.

Odor Descriptors



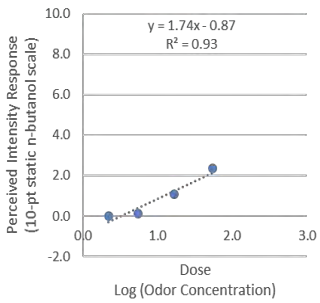
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
2.3	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

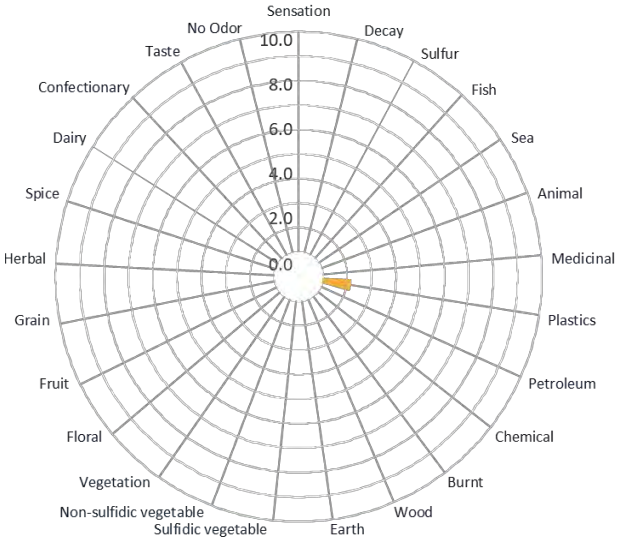
Report Number: 2119001
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/9/2021

Field No: S2
Description: S2

DT: 60
RT: 30
I: 2.6
HT: +0.1
DR: -1.89

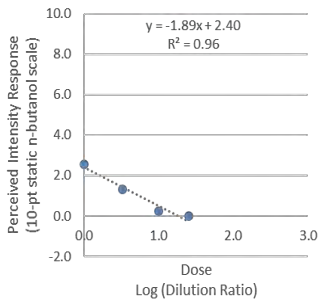
Comments:
Sample description was not provided.

Odor Descriptors



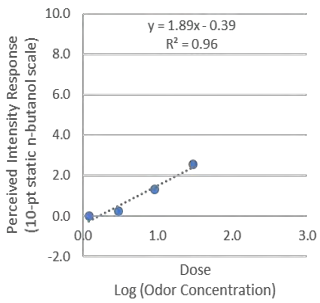
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
2.2	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

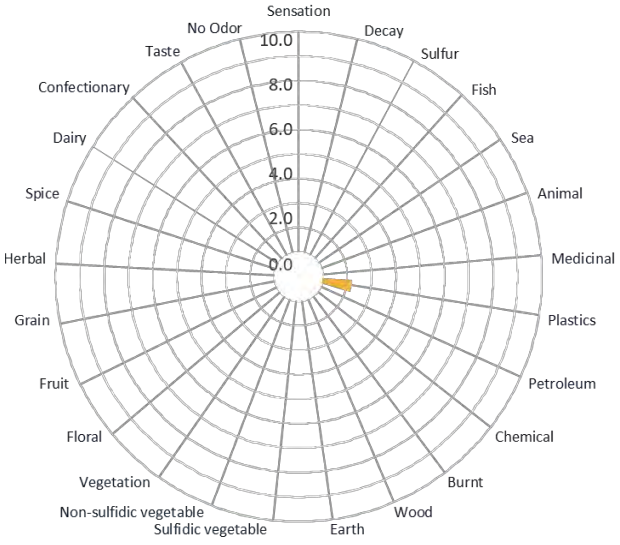
Report Number: 2119001
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/9/2021

Field No: S3
Description: S3

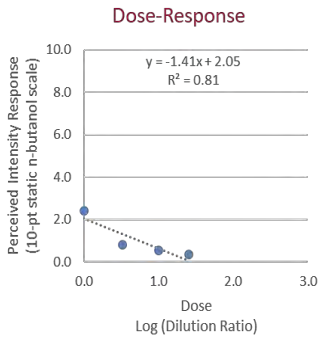
DT: 70
RT: 40
I: 2.4
HT: +0.0
DR: -1.41

Comments:
Sample description was not provided.

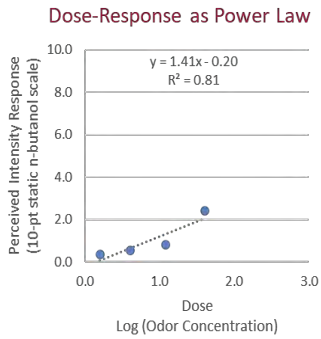
Odor Descriptors



Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
2.2	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	



Log I = n Log C + Log k



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

St. Croix Sensory, Inc.

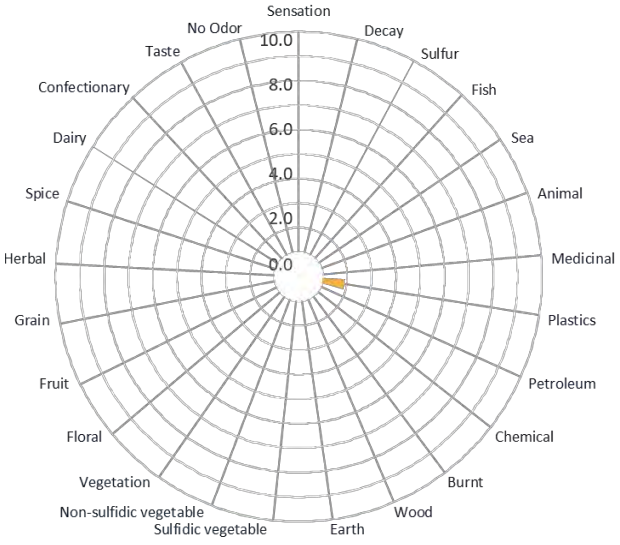
Report Number: 2119001
Client: Intertox
Project Name: KCLF
Samples Evaluated: 7/9/2021

Field No: S1
Description: S1

DT: 70
RT: 35
I: 2.1
HT: -0.4
DR: -1.52

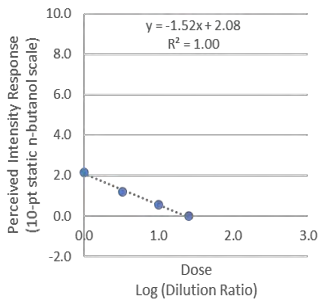
Comments:
Sample description was not provided.

Odor Descriptors



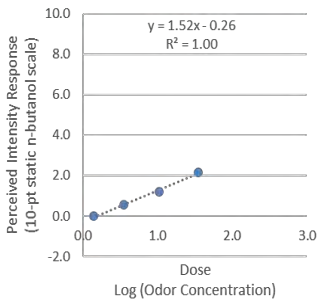
Strength	Descriptor	% of assessors (n=4)
	Sensation	
	Decay	
	Sulfur	
	Fish	
	Sea	
	Animal	
	Medicinal	
1.9	Plastics	
	Petroleum	
	Chemical	
	Burnt	
	Wood	
	Earth	
	Sulfidic vegetable	
	Non-sulfidic vegetable	
	Vegetation	
	Floral	
	Fruit	
	Grain	
	Herbal	
	Spice	
	Dairy	
	Confectionary	
	Taste	
	No Odor	

Dose-Response



Log I = n Log C + Log k

Dose-Response as Power Law



Log I = n' Log (RT/C) + Log k'

DT - Detection Threshold as determined by ASTM E679 and EN13725.
RT - Recognition Threshold as determined by ASTM E679 and EN13725.
I - Perceived odor intensity as determined by ASTM E544.
HT – Hedonic Tone value (pleasantness rating).
DR – The slope of the dose-response (dilution–intensity) relationship.
C – Dilution ratio of the odor sample presentation.
n, k, n', and k' – computed constants for the specific odor sample.

Attachments

St. Croix Sensory, Inc.

CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES

Page 1 of 2

Client: Intertox	Sampled By: Cameron Bellamordo	Odor Evaluations Requested: (X)
Project Name: KCLF	Sampling Date: 7/8/21	
Comments:		

Line No.	Field No.	Sample Description	Sample Time	Field H_2S (ppm)	Odor Concentration* (Detection & Recognition Threshold)	Odor Intensity* (PPM 1-Butanol)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistency ("Dose-Response")	Laboratory Sample No. LN	Laboratory Sample No. FN
1	S6		05:15		X	X	X	X		
2	S5		05:29							
3	S7		05:43							
4	REF1		06:17							
5	TRIP	Trip Blank	06:24							
6	S13		06:56							
7	S12		07:16							
8	S11		07:28							
9	S11D		07:35							
10	S4		07:49							
11	S8		08:03							
12	S9		08:15							

For Laboratory use Only

Odor Evaluation Report No. 2119001

Transmittal	Relinquished By	Date	Time	Accepted By	Date	Time	Comments & Exceptions Noted
Number of Shipping Boxes 3	Ron Cory	7/8/21	13:00				
	Received at St. Croix Sensory Laboratory				7/9/21	10:00AM	

*Odor Concentration: ASTM E679-04 & EN13725:2003 and Odor Intensity: ASTM E544-10

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St. Croix Sensory, Inc.

CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES

Page 2 of 2

Client: Intertox	Sampled By: Cameron Bellamordo	Odor Evaluations Requested: (X)
Project Name: KCLF	Sampling Date: 7/8/21	
Comments:		

Line No.	Field No.	Sample Description	Sample Time	Field H_2S (ppm)	Odor Concentration* (Detection & Recognition Threshold)	Odor Intensity* (PPM 1-Butanol)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistency ("Dose-Response")	Laboratory Sample No. LN	Laboratory Sample No. FN
1	S10		08:27							
2	S2		09:00							
3	S3		09:12							
4	S1		09:26							
5										
6										
7										
8										
9										
10										
11										
12										

For Laboratory use Only

Odor Evaluation Report No. 2119001

Transmittal	Relinquished By	Date	Time	Accepted By	Date	Time	Comments & Exceptions Noted
Number of Shipping Boxes 3	Ron Cory	7/8/21	13:00				
	Received at St. Croix Sensory Laboratory				7/9/21	10:00AM	

*Odor Concentration: ASTM E679-04 & EN13725:2003 and Odor Intensity: ASTM E544-10

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APPENDIX J
ODOR PANEL RESULTS SUMMARY

Table J-1. Odor Threshold, 6/22/2021

Sample	*DT*	*RT*	*I*	*HT*	*DR*
Ref 1	70	40	0.2	+0.1	-0.14
S1	250	140	3.7	-2	-1.99
S2	270	140	3.5	-1.2	-1.93
S3	210	140	3.4	-1.5	-1.76
S4	200	100	3.0	-2.5	-1.78
S5	50	25	1.1	-0.3	-0.78
S6	60	30	1.0	-0.4	-0.69
S7	60	30	0.7	+0.1	-0.43
S8	200	120	3.8	-1.5	-2.25
S9	190	110	2.8	-0.9	-1.71
S10	140	85	3.3	-1.2	-1.74
S11	560	290	4.8	-2.8	-2.59
S11-D	410	200	2.9	-1.7	-2.01
S12	130	80	3.2	-1	-2.03
S13	120	65	4.0	-1.3	-2.07

Table J-2. Odor Threshold, 6/23/2021

Sample	*DT*	*RT*	*I*	*HT*	*DR*
Ref 1	160	85	2.8	-1.0	-1.86
S1	240	130	2.5	+1.1	-1.76
S2	180	100	2.3	+1.2	-1.33
S3	170	80	2.7	+1.5	-1.88
S4	370	220	2.5	+1.1	-1.56
S5	110	55	3.1	-1.0	-1.88
S6	100	50	1.3	-0.4	-0.94
S7	110	60	3.3	-0.9	-1.82
S8	90	45	2.0	+0.9	-1.49
S9	110	65	2.7	+1.1	-1.75
S10	150	85	1.7	-0.8	-1.00
S11	510	220	3.8	-0.4	-2.48
S11-D	180	90	3.5	-0.3	-2.39
S12	160	90	2.3	+0.9	-1.69
S13	160	75	2.3	+0.5	-1.63

Table J-3. Odor Threshold, 7/07/2021

Sample	*DT*	*RT*	*I*	*HT*	*DR*
Ref 1	90	50	1.2	-0.5	-0.82
S1	85	40	2.6	-0.6	-1.64
S2	100	50	2.1	-0.5	-1.51
S3	85	40	2.5	-0.8	-1.58
S4	100	55	1.2	-0.3	-0.83
S5	120	70	0.5	-0.1	-0.35
S6	90	60	1.1	-0.4	-0.78
S7	100	50	0.7	-0.3	-0.52
S8	110	55	2.3	-0.5	-1.69
S9	85	40	2.0	-0.3	-1.30
S10	85	40	2.5	-1.1	-1.76
S11	85	40	2.4	-1.2	-1.66
S11-D	85	40	2.4	-0.9	-1.76
S12	85	40	2.2	-0.9	-1.55
S13	90	45	2.6	-1.3	-1.50

Table J-4. Odor Threshold, 7/08/2021

Sample	*DT*	*RT*	*I*	*HT*	*DR*
Ref 1	60	30	1.5	-0.4	-1.03
S1	70	35	2.1	-0.4	-1.52
S2	60	30	2.6	+0.1	-1.89
S3	70	40	2.4	+0.0	-1.41
S4	70	35	2.6	+1.3	-1.89
S5	75	40	1.2	-0.3	-0.76
S6	100	60	1.7	-0.5	-1.14
S7	50	25	1.9	-0.4	-1.32
S8	150	70	2.8	+0.1	-1.97
S9	110	55	1.7	+1.9	-1.20
S10	100	55	2.3	+0.2	-1.74
S11	70	40	0.7	-0.1	-0.49
S11-D	85	45	1.2	-0.3	-0.60
S12	85	45	1.2	-0.3	-0.60
S13	85	50	1.0	-0.4	-0.65

Odor Detection Threshold Testing (Evaluations) conducted in compliance with and under all conditions specified or required by ASTM E679 and EN13725 unless noted in report "Comments" column. The Client Chain of Custody (COC) attached to the Odor Evaluation Report provides information that may include sampling location(s), methods, and/or environmental conditions during sampling. Client, designated agents, and/or reviewers provide interpretation of results based on sampling conditions.

DT - Detection Threshold as determined by ASTM E679 and EN13725. The Practical Detection Limit (PDL) of DT is 12, based on the nominal lowest dilution presentation ratio of 8. Result is dimensionless dilution ratio at which half the assessors detect the diluted air as different from the blank air. Odor Units (OU) or Odor Units per cubic meters (OU/m3) are commonly used as pseudo-units.

RT - Recognition Threshold as determined by ASTM E679 and EN13725. Result is dimensionless dilution ratio at which half the assessors recognize a character in the diluted odorous air. Odor Units (OU) or Odor Units per cubic meter (OU/m3) are commonly used pseudo-units.

I - Perceived odor intensity as determined by ASTM E544. Intensity is expressed as average reported scale value on 10pt n-butanol in water static scale.

HT – Hedonic Tone value. Average rating of assessors' opinion of odor pleasantness on scale of -10 (most unpleasant) to +10 (most pleasant).

DR – the slope of the dose-response relationship of odor intensity with dilution (persistency of odor).

Table J-5. Odor Descriptor, 6/22/2021

	Strength														
Descriptor	R1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S11D	S12	S13
Sensation	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Decay	NR	NR	NR	0.2	1.0	NR	NR	NR	NR	NR	0.7	0.8	1.6	NR	NR
Sulfur	NR	3.2	2.1	2.3	3.5	NR	NR	NR	3.6	2.2	2.4	4.2	2.8	2.1	2.4
Fish	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sea	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Animal	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Medicinal	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Plastics	0.3	3.9	3.5	2.7	1.9	1.5	1.3	1.2	3.1	2.9	3.7	NR	NR	3.0	4.4
Petroleum	NR	2.0	NR	0.5	NR	NR	NR	NR	NR	NR	NR	1.0	NR	NR	NR
Chemical	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Burnt	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	2.5	NR	NR	NR
Wood	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Earth	NR	NR	0.2	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sulfidic vegetable	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Non-sulfidic vegetable	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Vegetation	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Floral	NR	NR	NR	NR	0.8	NR	NR	NR	0.4	NR	NR	NR	NR	0.9	0.8
Fruit	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Grain	NR	0.3	NR	NR	0.2	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Herbal	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Spice	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Dairy	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Confectionary	NR	NR	NR	0.4	0.3	NR	NR	NR	0.5	NR	NR	NR	NR	0.5	1.0
Taste	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
No Odor	3.0	NR	NR	NR	NR	1.0	1.0	2.0	NR	NR	NR	NR	NR	NR	NR

Table J-6. Odor Descriptors, 6/23/2021

	Strength														
Descriptor	R1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S11D	S12	S13
Sensation	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Decay	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sulfur	NR	NR	0.2	NR	NR	NR	NR	NR	NR	NR	NR	3.5	2.6	NR	0.8
Fish	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sea	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Animal	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Medicinal	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Plastics	3.6	1.3	1.6	3.4	1.5	3.1	1.7	3.2	2.8	3.4	2.3	NR	NR	2.0	1.6
Petroleum	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chemical	NR	2.5	1.9	1.9	2.5	NR	NR	NR	1.8	2.4	NR	NR	NR	1.5	2.7
Burnt	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	2.6	1.5	NR	NR
Wood	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Earth	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sulfidic vegetable	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Non-sulfidic vegetable	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Vegetation	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Floral	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Fruit	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Grain	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Herbal	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Spice	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Dairy	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Confectionary	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Taste	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
No Odor	1.0	NR	NR	NR	NR	NR	1.0	NR	NR	NR	1.0	NR	NR	NR	NR

Table J-7. Odor Descriptors, 7/07/2021

	Strength														
Descriptor	R1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S11D	S12	S13
Sensation	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Decay	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sulfur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Fish	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sea	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Animal	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Medicinal	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Plastics	1.5	2.3	1.9	2.5	1.6	0.6	1.5	0.9	2.2	2.2	2.5	2.2	2.5	2.2	2.5
Petroleum	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chemical	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Burnt	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Wood	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Earth	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sulfidic vegetable	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Non-sulfidic vegetable	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Vegetation	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Floral	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Fruit	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Grain	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Herbal	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Spice	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Dairy	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Confectionary	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Taste	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
No Odor	1.0	NR	NR	NR	1.0	1.0	NR	1.0	NR	NR	NR	NR	NR	NR	NR

Table J-8. Odor Descriptors, 7/08/2021

	Strength														
Descriptor	R1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S11D	S12	S13
Sensation	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Decay	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	1.0	NR
Sulfur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Fish	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sea	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Animal	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Medicinal	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Plastics	1.5	2.2	2.2	2.2	2.3	1.2	1.6	1.5	2.7	1.5	2.3	0.8	1.5	1.5	0.9
Petroleum	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chemical	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Burnt	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Wood	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Earth	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sulfidic vegetable	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Non-sulfidic vegetable	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Vegetation	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Floral	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Fruit	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Grain	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Herbal	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Spice	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Dairy	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Confectionary	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Taste	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
No Odor	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	1.0	NR	NR

APPENDIX K
STATE REGULATIONS AND GUIDELINES FOR ODOR

K-1. STATE REGULATIONS AND GUIDELINES FOR ODOR

Other states throughout the U.S. provide more specific odor regulations using the common approach of fixed ambient odor dilution-to-threshold (D/T) limits. This type of regulation typically uses field olfactometers (e.g., Nasal Ranger, Scentometer) to measure D/T values often at the odor receptor location or property line of the odor source (Brancher et al. 2017). For example, the state of Colorado (Regulation No. 2 Odor Emissions, 5 CCR 1001-4) states the maximum allowable odor concentration is 7 D/T for areas used predominantly for residential or commercial purposes and 15 D/T for all other land uses (Brancher et al. 2017; CAQCC 2013.). The California Bay Area Air Quality Management District's limit on odorous substances (Regulation 7 Odorous Substances) at or beyond a property line states, "a person shall not discharge any odorous substance which causes the ambient air at or beyond the property line of such person to be odorous and to remain odorous after dilution with four parts of odor-free air" (BAAQMD 1982).

The table below provides more examples of states where fixed ambient odor D/T limits are used to regulate odors. Each state generally has a different method of evaluating whether an odor exceedance has occurred. Regulatory odor standards range from 4 to 24 D/T. The most common maximum odor concentration for residential receptor areas is 7 D/T. Additionally, Huey et al. (1960), in discussing the Scentometer, stated that ambient odors above 7 D/T would probably cause complaints while those measuring 31 D/T could be described as a serious nuisance if they persisted for a considerable length of time (EPA 1978).

TABLE K-1. DILUTION-TO-THRESHOLD (D/T) ODOR REGULATIONS BY STATE

State/Region	*Regulatory No.*	*Evaluation Method*	*Regulatory Standard*	*Source*
Colorado	Regulation No. 2 Odor Emission, 5 CCR 1001-4	2 odor measurements shall be made within a period of 1-hr with these measurements being separated by at least 15 minutes. Personnel for evaluating odors are selected using a "detectability rating test" as outlined in "Selection and Training of Judges for Sensory Evaluation of the Intensity and Character of Diesel Exhaust Odors."	Maximum allowable odor concentration is 7 D/T for areas used predominantly for residential or commercial purposes and 15 D/T for all other land uses.	Brancher et al. 2017; CAQCC 2013
California Bay Area	Regulation 7-302	The limitation of the regulation shall not be applicable until the APCO receives odor complaints from 10 or more complainants within a 90-day period. Eval Apparatus: Dynamic field olfactometer.	A person shall not discharge any odorous substance which causes the ambient air at or beyond the property line of such person to be odorous and to remain odorous after dilution with (4) four parts of odor-free air.	Brancher et al. 2017; BAAQMD 1982
Kentucky	401KAR53:010	As prescribed by the Environmental and Public Protection cabinet	At any time when 1 volume of ambient air is mixed with 7 volume units of odorless air, the mixture must have no detectable odor.	Commonwealth of Kentucky 2016
Delaware	Title 7 Natural Resources and Environmental Control 1100 Air Quality Management Section 1119 Control of Odorous Air Contaminants	Methods for determining a condition of air pollution due to odorous air contaminant may include, but are not limited to, Scentometer tests, air quality monitoring, and affidavits from affected citizens and investigators.	No person shall cause or allow the emission of an odor air contaminant such as to cause a condition of air pollution.	State of Delaware 1981
Illinois	Title 35: Environmental Protection, Subtitle B: Air Pollution, Chapter I: Air Quality Standards and Episodes, Part 245 Odors, Section 245.121 objectionable odor nuisance determination	When concurrent determinations made by three trained inspectors as outlined above in any given one-hour period and at intervals of not less than fifteen minutes result in two positive determinations in each series of three determinations; and provided that any quantitative odor level measurements taken to arrive at a determination that an objectionable odor nuisance exists shall be at or beyond the property line or at	An objectionable odor nuisance exists: a) On or adjacent to residential, recreational, institutional, retail sales, hotel or educational premises when odor is detectable in the ambient air after it is diluted with eight (8) volumes of odor-free air as measured by the Scentometer; b) On or adjacent to industrial premises when odor is detectable in the ambient air after it is diluted with twenty-four (24) volumes of odor-free air as measured by the	State of Illinois 1972

State/Region	*Regulatory No.*	*Evaluation Method*	*Regulatory Standard*	*Source*
		or near places where people live or work.	Scentometer; c) On or adjacent to premises other than those above when odor is detectable in the ambient air after it is diluted with sixteen (16) volumes of odor-free air as measured by the Scentometer.	
Missouri	10 CSR 10-6.165 Restriction of Emission of Odors	Measurements shall be made with a Nasal Ranger as manufactured by St. Croix Sensory, Inc. or by a similar instrument or technique that will give substantially similar results, or as approved by the department.	No person may cause, permit, or allow the emission of odorous matter in concentrations and frequencies or for durations that odor can be perceived when one (1) volume of odorous air is diluted with seven (7) volumes of odor-free air for two (2) separate trials not less than fifteen (15) minutes apart within the period of one (1) hour. This odor evaluation shall be taken at a location outside of the installation's property boundary.	Kander 2014
Nevada	Nevada Administrative Code 445B.22087 - Odors	The Director shall investigate an odor when 30 percent or more of a sample of the people exposed to it believe it to be objectionable in usual places of occupancy. The sample must be at least 20 people or 75 percent of those exposed if fewer than 20 people are exposed. The Director shall deem the odor to be a violation if he or she is able to make two odor measurements within a period of 1 hour. These measurements must be separated by at least 15 minutes.	No person may discharge or cause to be discharged, from any stationary source, any material or regulated air pollutant which is or tends to be offensive to the senses, injurious or detrimental to health and safety, or which in any way interferes with or prevents the comfortable enjoyment of life or property. An odor measurement consists of a detectable odor after the odorous air has been diluted with eight (8) or more volumes of odor-free air.	State of Nevada 2018

State/Region	*Regulatory No.*	*Evaluation Method*	*Regulatory Standard*	*Source*
N. Dakota	Chapter 33-15-16 Restriction of Odorous Air Contaminants	1. An odor will be considered objectionable when a department-certified inspector or at least thirty percent of a randomly selected group of persons, or an odor panel exposed to the odor would deem that odor objectionable if the odor were present in their place of residence. 2. An "odor concentration unit" is defined as a volume of odor-free air mixed with an equal volume of odorous air such that the combination would be at the threshold level of the olfactory senses. The intensity of an odor is determined by the ratio of the volume of odor-free air that must be mixed with a standard volume of odorous air so that a department-certified inspector or at least fifty percent of an odor panel can still detect the odor in the diluted mixture.	A person may not discharge into the ambient air any objectionable odorous air contaminant that measure seven (7) odor concentration units or higher outside the property boundary where the discharge is occurring.	State of North Dakota 2007
Wyoming	Chapter 2, Section 11 Ambient standards for odors	The occurrence of odors shall be measured so that at least two measurements can be made within a period of one hour, these determinations being separated by at least 15 minutes.	An odor emission at the property line which is undetectable at seven (7) dilutions with odor free air as determined by a Scentometer as manufactured by the Barnebey-Cheney Co. or any other instrument, device, or technique designated by the Division as producing equivalent results.	Wyo. Code R. ch. 2, § 2-11

APPENDIX L
PROTECTIVE ACTION CRITERIA

L-1. PROTECTIVE ACTION CRITERIA

National Oceanic and Atmospheric Administration (NOAA) Office of Response and Restoration has developed a hierarchy-based system of the three common public exposure guideline systems to set Protection Action Criteria for Chemicals (PAC). The PAC implement the following hierarchy when choosing which values to use: Final, 60-minute Acute Exposure Guideline Level (AEGL) values (preferred); Interim, 60-minute AEGL values; Emergency Response Planning Guidelines (ERPG) values; Temporary Emergency Exposure Limits (TEEL) values (NOAA 2020). Each of these guidelines has three tiers of exposure values (e.g., AEGL-1, AEGL-2, and AEGL-3), where the first tier is a temporary, non-disabling effects threshold and the second and third tiers are disabling and life-threatening thresholds, respectively (NOAA 2016).

For ethanol, no AGEL-1 was available so the ERPG-1 of 1800 ppm (3507 mg/m3) was used as the 60-minute PAC value (NOAA 2021). ERPGs are developed by the Emergency Response Planning committee of the American Industrial Hygiene Association. The ERPG-1 is defined as the maximum airborne concentration below which nearly all individuals (excluding sensitive individuals) could be exposed for up to 1 hour without experiencing more than mild, transient adverse health effects (NOAA 2019). The ERPG-1 is based on human experimental data from in which all six subjects exposed to ethanol at 1800 ppm for 30 minutes had initial coughing which subsided, and a dry throat (Zuskin, et al. 1981 as cited in AIHA 2010). Three of the six reported chest tightness. A decrease in flow rates on partial expiratory flow volume curves that lasted up to 90 minutes following inhalation was observed, but there was no change in the forced expiratory volume in 1 second (FEV1).

An interim 60-minute AEGL-1 for ethylbenzene of 33 ppm (144 mg/m3) has been proposed by National Advisory Committee for Acute Exposure Guideline Levels for Hazardous Substances (EPA, 2009). AEGL-1 is the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic, nonsensory effects (EPA 2009). These effects are transient and reversible upon cessation of exposure. The interim 60-minute AEGL-1 value was based on data from humans exposed to 100 or 180 ppm ethylbenzene for 8 hours. No effects were reported at 100 ppm. However, at 180 ppm irritation of the upper respiratory tract and eye, headache, sleepiness towards the end of the exposure, and transient feelings of drunkenness were reported (Bardodej and Bardodejova 1961 as cited in EPA 2009). The AEGL-1 was derived using the NOAEL of 100 ppm divided by an uncertainty factor of 3 (human variation).

The final 60-minute AEGL-1 for hydrogen sulfide is 0.51 ppm (0.71 mg/m3) based on data from humans with asthma exposed to 2 ppm hydrogen sulfide for 30 minutes (Jappinen et al. 1990 as cited in NRC 2010). Three of ten volunteers complained of headache and eight of

ten experienced nonsignificant increased airway resistance. No clinical symptoms of respiratory difficulty and no significant changes in forced vital capacity (FVC) or FEV1 were observed. The final 60-minute AEGL-1 was derived by using the hydrogen sulfide concentration of 2 ppm, time-scaled using a concentration-exposure duration relationship, and dividing by a modifying factor of 3 to account for the wide variability in complaints associated with the foul odor of hydrogen sulfide (NRC 2010).

Table L-1. PACs for all chemicals with detections

Chemical	***Lowest detection threshold (ppb)***	***PAC-1 60 minute (ppb)***
1,2-Dibromoethane	<10,000	17,000
1,2-Dichloropropane	260	30,000
2-Butanone (MEK)	70	200,000
2-Propanol (isopropyl alcohol)	1000	400,000
4-Methyl-2-pentanone	100	150,000
Acetone	400	200,000
Benzene	470	52,000
Bromodichloromethane	**2100**	**1300**
Carbon Disulfide	16	13,000
Carbon Tetrachloride	**1680**	**1200**
Chlorodifluoromethane	**200,192,000**	**1,250,000**
Chloroform	102	2000
Chloromethane	>10,000	150,000
Dichlorodifluoromethane	**200,000,000**	**3,000,000**
Dichloromethane (Methylene Chloride)	1200	200,000
Ethanol	90	1,800,000
Ethylbenzene	<2	33,000
n-Hexane	1500	260,000
Hydrogen sulfide	0.04	510
m,p-Xylenes	12	130,000
o-Xylene	12	130,000
Tetrachloroethene	767	35,000
Toluene	21	67,000
Trichloroethene	500	130,000
Trichlorofluoromethane	5000	91,000

Bold type denotes chemicals that have odor thresholds greater than their PAC-1. These chemicals were measured at levels much lower than the PAC-1 air concentrations (Appendix C).