TRENCHLESS TECHNOLOGY CENTER

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NASSCO CIPP Emissions Phase 2:
Evaluation of Air Emissions from Polyester Resin CIPP with Steam Cure

Final Report

RESEARCH REPORT

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LIST OF ACRONYMS

AEGL	Acute Exposure Guideline Level
AIHA	American Industrial Hygiene Association
ASOS	Automatic Surface Observing Systems
CDC	Centers for Disease Control
CIPP	Cured-In-Place Pipe
CUIRE	Center for Underground Infrastructure Research and Education
EPA	Unite States Environmental Protection Agency
FTIR	Fourier Transform-Infrared Spectroscopy
GC/MS	Gas Chromatography/Mass Spectrometry
IDLH	Immediately Dangerous to Life or Health
IRIS	Integrated Risk Information System
NASSCO	National Association of Sewer Service Companies
NIOSH	National Institute for Occupational Safety and Health
NOAA	US National Oceanic and Atmospheric Administration
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PEL (C)	Permissible Exposure Limit (Ceiling)
PPE	Personal Protective Equipment
PPM	Parts Per Million
REL	Recommended Exposure Limit
RFP	Request for Proposal
SSOs	Sanitary Sewer Overflows
STEL	Short-Term Exposure Limit
TO-15	Toxic Organics-15
TTC	Trenchless Technology Center
TWA	Time Weighted Average
USGS	United States Geological Survey
VCP	Vitrified Clay Pipe
VOC	Volatile Organic Compound

GLOSSARY

Acute Exposure Guideline Levels	Acute exposure guideline levels represent threshold exposure limits for airborne hazardous substances.
AERMOD	EPA preferred atmospheric steady-state dispersion modeling system for modeling pollutant dispersion up to 50 kilometers from stationary sources.
Fourier Transform-Infrared Spectroscopy	A technique in analytical chemistry for identifying materials in a sample using infrared radiation.
Gas Chromatography	A technique in analytical chemistry for separating and analyzing gas compounds in a sample by passing a sample through a medium that separates the sample into components. The components travel at different speeds and a detector senses and records them.
Immediately Dangerous to Life or Health	IDLH (Immediately Dangerous to Life or Health) is the level set by NIOSH as immediately dangerous to life or health at which a susceptible person may become disoriented, unable to breath and unable to escape.
Mass Spectrometer	A technique in analytical chemistry where a sample is broken into components through ionization and then separated using an electric or magnetic field so that they can be identified.
Permissible Exposure Limit	Exposure limit set by OSHA for an employee to a chemical substances or other hazards. Usually PELs are based on an eight-hour time weighted average, but can also be based on short-term exposure limits.
Permissible Exposure Limit Ceiling	PEL (C) is defined as the permitted concentration ceiling regardless of duration.
Short-Term Exposure Limit	The acceptable average exposure limit set over a short period of time, usually 15 minutes as long as the time-weighted average is not exceeded.
Time Weighted Average	An average values of exposure to a chemical, typically over the course of an 8-hour work shift.
Volatile Organic Compound	Organic chemicals that have a high vapor pressure at room temperature and are emitted from certain solids or liquids.

EXECUTIVE SUMMARY

INTRODUCTION

The report serves as a final report as required under the scope of the Phase 2 project sponsored by National Association of Sewer Service Companies (NASSCO) entitled "CIPP Emissions Testing". The scope of the project aims to measure air emissions from steam-cured, cured-in-place pipe (CIPP) installations; and determine potential impacts on workers and the surrounding community.

Figure 1: Example Site

RESEARCH OBJECTIVES

The primary project objectives of this project were to (1) measure and quantify worker/public exposure; and (2) evaluate potential health risks to workers and the public to CIPP emissions.

RESEARCH APPROACH

The research approach for the most part followed the scope of work outlined in Phase 1 of the project. The Phase 2 team made adjustments as necessary to the data collection and analysis. Many of the adjustments were due to unforeseen issues with equipment, sampling, site conditions and personnel. The following tasks were to be completed within the scope of the project.

(1) Directly measure worker/public exposure to emissions for locations onsite or immediately off site for several CIPP installation sites that represent a range of scenarios typical of CIPP installations.
(2) Model the dispersion of emissions to estimate compound concentrations for a large set of scenarios to include multiple locations and weather conditions.
(3) Evaluate potential health risks to workers and the community based on appropriate health-based action levels using both directly measured and modeled data.

RESULTS

Based on the data collected and the modeling completed in this study, styrene was the only compound of interest found at concentrations that had the potential to pose health risks. It was also determined that two primary locations on CIPP sites have the potential to pose health risk to workers and/or the public. The first is the liner truck immediately after opening and the second includes areas immediately adjacent to emission point sources (within 10 feet). It is recommended that suitable PPE with active air monitoring be worn at the time of the initial opening of the liner transport truck door by those entering the truck. It is likely that the air quality will improve once the door is open, but active air monitoring for VOCs is recommended to ensure a safe work environment in the transport truck or any storage unit. It is also recommended that a conservative perimeter of 15-ft be implemented around exhaust manholes and emission stacks during curing. This perimeter could be entered for short amounts of time not exceeding 5 minutes. If this area must be entered for longer than 5 minutes, suitable PPE should be used. The emissions stacks should be of vertical configuration at a minimum height of six feet to enhance the dispersion of emissions and lessen the likelihood of workers entering the perimeter from having to cross into emission plumes. The data in this study does not suggest additional PPE for the workers around steam cured CIPP emissions sites beyond the recommendations above and what is already standard practice. Standard practice typically includes eye and ear protection, gloves, steel toe boots, safety vests and hard hats.

RECOMMENDATIONS FOR FUTURE STUDIES

While this study represents an extensive collection of data beyond what previous studies have accomplished, there is still the potential for further data collection efforts. Future studies that focus on task-oriented worker exposure to emissions would be helpful in identifying certain tasks within the typical 8-hour shift window that could pose potential health risks. This could be accomplished through comparing health risk guidelines to measurements calculated by placing sorbent tubes on a worker at the beginning of a task and collecting those sorbent tubes at the end of the task, thereby targeting specific installation tasks at shorter time-weighted average exposures. Additional study is also needed to understand the dispersion of styrene from the liner truck after opening. Additional measurements taken at the liner transport truck over a 5-minute period after opening the cargo door would be useful in making any final definitive conclusions related to PPE or dissipation time. Also, factors such as the size and number of liners on the truck as well the duration each liner is on the truck could be evaluated. Capturing rogue emission concentrations was not part of the scope of this project, so work should be done to try and capture concentrations from rogue sources to evaluate health risks associated with these emissions.

CHAPTER 1: INTRODUCTION

1.1. BACKGROUND

Cured-in-place pipe (CIPP) was first used commercially in 1971. This in-situ rehabilitation technique involves installing a resin-impregnated liner on the interior walls of sanitary sewer, storm sewer and drinking water pipes. The liner is then cured with steam, water, or ultra-violet light. The application of CIPP, which has seen significant growth world-wide in the last 30 years, accounts for approximately fifty percent of all pipe rehabilitation (Sterling et al., 2010).

As CIPP installation has become more common, health officials, utilities and industry representatives have recognized the need to know more about the air-borne chemical emissions created during the CIPP installation process, most specifically in the exhaust produced for steam-cured liners, which is the cure method focused on in this study. Water and UV-light cure CIPP was not evaluated in this study. With growing concern for understanding health risks posed by CIPP emissions (Ra et al., 2019; Sendesi et al, 2017; Ajdari, 2016), the National Association of Sewer Service Companies (NASSCO) sponsored a two-phase project to help quantify these risks.

The first phase was completed in the spring of 2018 by a team of researchers led by the Center for Underground Infrastructure Research and Education (CUIRE) at the University of Texas at Arlington. Phase 1 of the project first focused on reviewing CIPP emission study literature and found that of the 21 papers reviewed, previous studies have "defective methodologies" that do not adequately evaluate CIPP emissions (Najafi et al., 2018). The CUIRE team then developed a more robust scope of work to address the limitations of published literature for capturing and analyzing CIPP emissions data (Najafi et al., 2018). Phase 2 of the project includes the effort carried out to complete this scope of work developed in Phase 1. Phase 2 of the project was awarded to a team of researchers at the Trenchless Technology Center (TTC) located at Louisiana Tech University. The Phase 2 team also partnered with experts at the U.S. Army Engineer Research and Development Center (ERDC) to carry out this important comprehensive, independent study.

1.2. OBJECTIVES

The Phase 2 project aims to (1) evaluate air emissions from steam-cured, cured-in-place pipe (CIPP) installations; and (2) determine potential impacts on workers and the surrounding community.

The following are the primary project objectives of this project:

1. Directly measure worker/public exposure to emissions for locations onsite or immediately off site for several CIPP installation sites that represent a range of scenarios typical of CIPP installations (Chapter 3).
2. Model the dispersion of emissions to estimate compound concentrations for a large set of scenarios to including multiple locations and weather conditions (Chapter 4).
3. Evaluate potential health risks to workers and the community based on appropriate health-based action levels using both directly measured and modeled data (Chapter 5).

1.3. PROJECT TEAM

The project team consisted of researchers associated with Louisiana Tech University, the Trenchless Technology Center (TTC), and the U.S. Army Engineer Research and Development Center (ERDC).

Dr. Elizabeth Matthews, Assistant Professor, Louisiana Tech University – Civil Engineering, PI
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Dr. Anthony Bednar and Charles Laber, Research Chemists, U.S. Army Corps of Engineers ERDC

1.4. FINAL REPORT FORMAT

This report serves at the final report for Phase 2 of the project. The report includes six chapters and two appendices. Following Chapter 1 (Introduction), Chapter 2 (Research Approach) is a description of the overall project methodology. Chapter 3 (Field Measured Results) describes the general site measurements, field measured styrene emissions, degree of cure and condensate test results. Chapter 4 (Dispersion Model Analysis) describes the dispersion modeling results and presents a comparison between model results and field measurements. Chapter 5 (Analysis of Health Risks) provides an analysis of health risks based on site hazard locations (e.g. liner truck, emission stack). Chapter 6 (Recommendations) gives recommendations for best practice based on the analysis and suggests areas for future study. *Appendix A* includes the laboratory reports for emission concentration and condensate testing. *Appendix B* includes modeling preprocessor input files for the dispersion model and the primary input and output files for AERMOD.

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CHAPTER 2: RESEARCH APPROACH

2.1. MEASURING WORKER/PUBLIC EXPOSURE TO CIPP INSTALLATION EMISSIONS

Nineteen chemical compounds are found both in CIPP emissions and on the US Environmental Protection Agency's (EPA) TO-15 list. TO-15 identifies a list of toxic organic compounds and describes procedures for measuring those airborne compounds. TO-15 compounds potentially found in the emissions of steam cured CIPP installations include: Acetone, Benzene, 1,3-Butadiene, Carbon Disulfide, Carbon Tetrachloride, Chloroform, Cyclohexane, 1,4-Dioxane, Ethyl Acetate, Ethylbenzene, Hexane, Isopropanol, Methyl Ethyl Ketone, Styrene, Toluene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, M,P-Xylene and O-Xylene (Najafi et al., 2018). These chemical compounds are common in manufacturing settings and have been subject to extensive study and scrutiny. These chemicals were targeted for analysis when measuring public exposure to CIPP installation emissions. The analytical methodology for identifying these compounds was gas chromatography/mass spectrometry (GC/MS), which was either carried out in real-time onsite with portable equipment or through the laboratory analysis of samples collected on site. The emission results data is provided in Chapter 3.

SITE SELECTION

The project team targeted six total sites for data collection, however to meet data collection goals additional sites were added. Overall, data was collected from a total of nine sites. The sites spanned across three cities: Shreveport, LA; Saint Louis, MO; and Aurora, CO. The cities were selected primarily to capture jobsites in varies climates; however other limiting factors were considered (e.g. availability of jobsites, project characteristics and site characteristics). Climate and geographic elevation play a significant role in the dispersion of air emissions; therefore, it was important to try to capture sites with a range of climates and elevations so that study results could be compared across sites.

The City of Shreveport is located in the northwest part of the state of Louisiana (pop. 200,000 approx.) and is the third largest city in Louisiana. The city is currently under EPA consent decree to repair the city's sewer network because of multiple sanitary sewer overflows (SSOs). The city is extensively using steam-cured CIPP to make repairs to its small to medium diameter mains (mostly from 6-in to 15-in diameters) throughout the city in an effort to reduce inflow and infiltration and ultimately reduce incidences of SSOs. For this reason, multiple potential jobsites were available for data collection. The city was also conveniently located near all project team members. The climate in Shreveport is typically humid and wet and the city is located at a lower elevation (approximately 150 to 250 feet above sea level). The city of St. Louis, MO is located in the eastern part of the state of Missouri (pop. 309,000 approx.). St. Louis which is at a slightly higher elevation than Shreveport (approximately 380 to 615 feet above sea level), is also a humid climate with cooler winters than Shreveport. Aurora is located near Denver in Colorado (pop. 325,000 approx.). Of the three cities Aurora has the highest elevation (approximately 5,400 feet above sea level) and driest climate. Other than trying to capture a variety of climates, St. Louis and Aurora were selected since active steam-cured large and medium diameter projects were ongoing in these cities.

In addition to climate and elevation, ranges of project characteristics were also important to capture. A range of pipe diameters (small, medium, large), with approximately the same length were targeted. At least three sites were selected representing a range of pipe lengths (short, medium and long), with the same diameter pipe. Site selection also aimed to capture different development characteristics (e.g. residential, commercial/public or mixed development), with at least two sites located near publically accessible or vacant buildings accessible for measurement of emission within structures. All of these factors were used to select sites to better understand the potential contribution of each factor in the measured emissions. *Table 1* outlines the targeted project site characteristic selection criteria.

Table 1: Site Selection Criteria

Pipe Diameter (Same Length)	**Small (8-inch to 10-inch)**	**Medium (12-inch to 24-inch)**	**Large Larger than 24-inch**
Pipe Length (Same Diameter)	Short	Medium	Long
Surrounding Built Environment	Residential	Commercial/Public	Mixed-use

Table 2 outlines the sites selected and the specific criteria categories within which they fall. More specific site and job characteristics are also provided in Chapter 3.

Table 2: Site Specific Descriptions

Site	***City***	***Address***	***Date***	***Criteria***		
				Diameter	**Pipe Length**	**Environment**
1	*Shreveport, LA*	*Milam St.*	*12/11/18*	6-inch	315-feet	Residential
2		*Delaware St.*	*12/11/18*	10-inch	147-feet	Residential
3		*Dilg League Dr./Jewella Ave.*	*12/12/18*	8-inch	608-feet	Residential
3a		*Samford Ave.*	*08/21/19*	6-inch	275-feet	Residential
3b		*Texas Ave.*	*08/22/19*	6-inch	270-feet	Mixed
4	*St. Louis, MO*	*Affton Athletic Fields*	*02/26/19*	8-inch	500-feet	Residential
4a		*Squire Meadows Drive*	*02/26/19*	8-inch	270-feet	Residential
5		*Highland Park Dr.*	*02/27/19*	24-inch	535-feet	Commercial
6	*Aurora, CO*	*North Airport Rd.*	*05/14/19*	36-inch	348-feet	Rural

EQUIPMENT AND SAMPLING TECHNIQUES USED TO COLLECT EMISSION DATA

Various pieces of equipment were utilized to collect data from the selected sites (see *Figure 2*). The equipment was selected based on the types of data that needed to be collected, the limitations of equipment and expected conditions on site. The following sections describe in general the equipment used, however it should be noted that due the varying site conditions and circumstances the utilization of the equipment varied. All samples were collected according to proper procedures by professional chemists from ERDC.

Emission data from site was collect using a combination of field portable equipment and laboratory sampling. A portable HAPSITE GC/MS unit was used to collect emission concentrations in a number of locations. This equipment was selected for this purpose because it could provide real-time data at any location onsite. Also, considering the number of proposed measurements, the field portable equipment was the most feasible option. Due to the possibility of damage to the equipment sampling moist air and the potential for saturating the equipment detector, this equipment was not used to sample directly from the emission's stacks. The equipment was primarily used to sample the surrounding areas around the site. Initially multiple issues arose with the equipment (e.g. loss of battery life, failure of equipment to auto-tune and failure of rental company to include battery charger) which significantly hampered the use of the equipment on the sites in Shreveport (Sites 1-3). These issues were later corrected at the other sites in St. Louis and Aurora (Sites 4, 4a, 5 and 6), and the equipment was utilized as originally planned for collecting emissions measures in the surrounding area. At the initial sites in Shreveport, the team utilized

additional laboratory sampling to collect some of the data that was proposed to be collected using the HAPSITE unit. Additional sites were also added (Sites 3a and 3b) to collect additional data from areas surrounding the stacks using the Hapsite unit.

Laboratory sampling included both canisters and sorbent tubes. Canisters were primarily used to collect (1) baseline air samples prior to liner installation, 2) liner truck samples and 3) steam plum exit samples at Sites 1 & 2. However, additional canister samples were taken for Site 3 after the HAPSITE unit stopped functioning. At least one canister sample at Sites 1, 2, 3, 4, 5, and 6 was taken as close to maximum temperature during curing as possible to try and target maximum exotherm, which is when maximum emissions are thought to occur. Personnel sampling using sorbent tubes was also used, with two sorbent tubes attached to workers per site and at least one sorbent tube blank also carried to site but not worn. All personnel sampling was carried out, however one worker lost one sorbent tube at Site 2 and Site 6. Additional sorbent tubes were also used on Site 3 to collect air samples in the vicinity of the exit plume (measurements originally meant to be collected with the HAPSITE unit).

At sites 4 and 5, canisters were primarily used to collect 1) liner truck samples and (2) samples from the steam plume exit. Personnel sampling using sorbent tubes was also carried out, with two sorbent tubes attached to two workers per site and one sorbent tube blank taken to each site but not worn. On the second site, two sorbent tubes were set up (one downwind of inlet & one upwind of outlet) with sampling pumps to be used as comparisons to tubes worn by workers. On Site 4a, the Hapsite was used to collect emissions measurements from the surrounding area. Site 4a was adjacent to Site 4 and due its convenience the team decided to use the opportunity to collect additional Hapsite data.

At Site 6, canisters were primarily used to collect 1) liner truck air samples, 2) samples from the steam plume exits and 3) a sample from inside the manhole. Sorbent tubes was also used, with multiple sorbent tubes attached to workers and at various locations on the site. Duplicate sorbent tubes and two duplicate canisters were also collected. The primary reason for using duplicates was to run the analysis through two laboratories so that results could be compared.

2.2. OTHER SAMPLING AND DATA COLLECTED

In addition to measuring air emissions on each site, other sample and data collection activities were carried out. These activities included degree of cure sample analysis of cured liner samples, steam plume characterization measurements, and site-specific weather data. Degree of cure and condensate sample results are provided in Chapter 3. Steam plume characteristic and weather data are provided in Chapters 3 and 4. It should be noted that there were various rogue emissions at most sites from either the exit manhole or end of the curing liner. These points were not part of the original data collection plan, so very limited sampling of these emissions was carried out.

DEGREE OF CURE SAMPLING

Degree of cure samples were collected by the CIPP contractor from the field at each site and provided to the TTC for testing. Samples were stored in coolers with ice for transport from the site to the laboratory. Samples were kept in cold storage until testing. Fourier Transform-Infrared Spectroscopy (FTIR) testing was carried out to determine if there was any residual styrene in the cured samples. Results are presented in Section 3.3.

CONDENSATE SAMPLING

Condensate samples were collected from the exhaust points at Sites 3, 4, 4a, 5 and 6 for GC/MS analysis at the lab. Condensate was collected from exhaust stack pipe when condensate was observed dripping or streaming from pipe. In some cases there was not enough condensate dripping from the stack for collecting multiple samples. While the original plan was to collect samples from inside the pipe liner in the manhole, it was expected that the potential for cross-contamination between condensate and

sewer water might cause errors in the analysis results. At Site 3, 5 and 6 the team was able to collect multiple condensate vials. The condensate was stored in vials with acid preservative. Only in one case was a sample not preserved immediately after collection, however the sample was preserved on site prior to transport. Samples were shipped to the lab immediately after data collection efforts were completed. The laboratory used GC/MS to identify all VOCs in the sample. The standard operating procedures carried out by the lab for sample analysis were taken from USEPA SW-846, which outlines techniques for the chemical analysis of water and wastewater including GC/MS for analysis of VOCs (method 8260). For more information see *Appendix A*.

STEAM PLUME CHARACTERISTICS AND WEATHER DATA

Flow velocity and temperature of the steam plume from the curing liner were measured using a TSI VelociCALC anemometer and Venier temperature probe. Standard distance measuring tools (e.g. tapes, calipers, etc.) were used to measure the diameters and heights of the release points for the steam plume and curing liner. A mobile weather station (Davis Vantage Pro2) was used to collect wind speed, wind direction, temperature, relative humidity, atmospheric pressure, and solar radiation at each site.

Figure 2: Equipment – Hapsite Unit (a, b), Davis Vantage Pro2 Weather Station (c, d), velocity measurement and canister sample collection from stack at Site 6 (e), air sampling canister (f), duplicate canisters used to sample air inside truck at Site 6 (g), sorbent tube on fixed stake (h), sorbent tube on worker (i)

2.3. MODELING DISPERSION OF EMISSIONS

Dispersion modeling was utilized to estimate styrene concentrations for each of the six primary sites (Sites 1, 2, 3, 4, 5 and 6) using the AERMOD modeling system. The primary reason for modeling emissions was to evaluate the emissions concentrations for possible "worst case scenarios" over a range of weather conditions to determine best practice recommendations. AERMOD is the EPA-preferred regulatory software model for modeling steady-state Gaussian air dispersion for distances less than 50 kilometers from a stationary source (typically a stack). The model uses meteorological data, terrain data and building data to determine plume behavior and calculates concentrations for pollutants of interest. The interaction of plume with buildings can also cause downwash effects, where pollution can be directed down toward the ground surface rather than up into the atmosphere. For the modeling effort, the following parameters and criteria were utilized:

- Annual hourly meteorological data from the nearest stations
- Measurements from source plume
- Source plum location
- Measurements of building environment
- Receptor grid and digital terrain data
- 1-hour averaging time

METEOROLOGICAL AND LAND SURFACE DATA

Meteorological data was processed in the AERMET preprocessor using hourly surface meteorological data and upper air sounding data from the nearest station to each site. Typically, these stations are located at airports. For all the sites, the hourly surface meteorological and upper air sounding data for the year 2018 was extracted from National Oceanic and Atmospheric Administration (NOAA) online data sources (NOAA, 2020; ESRL, 2020) and used for the model. Automatic Surface Observing Systems (ASOS) 1-minute wind data was also utilized and processed in AERMINUTE before being used as input to AERMET. AERMINUTE calculates the hourly averaged wind speed from the ASOS data. ASOS data was extracted from NOAA online datasets (NOAA, 2020). Land surface characteristics are also required to run AERMET. Surface data includes National Land Cover Data obtained through the National Land Cover Database on the United States Geological Survey (USGS) website (USGS, 2020). This data is processed through the AERSURFACE preprocessor before running AERMET. Information about specific data stations utilized and data inputs and outputs from these preprocessors can be found in *Appendix B*.

SOURCE PLUME MEASUREMENTS AND STACK LOCATION

To run the AERMOD dispersion model certain source plume characteristics were measured on each site that was modeled. With the exception of Site 6, the main source of emissions modeled came from a single stationary stack. Site 6 had three stacks, however only the main stack was modeled since the team was limited by the number of sampling canisters available. Also, the stack modeled for Site 6 was the only stack that produced emissions throughout the curing process. The parameters needed to model each site included the stack plume velocity (meters/sec), stack height (meters), stack diameter (meters), stack temperature (Kelvin) and emission rate for the pollutant of interest (grams/sec). Velocity, stack height, stack diameter and temperature were measured directly with instruments in the field as described in Section 2.1.

The pollutant of interest for modeling was determined to be styrene based on the data collected. While other compounds could have been modeled, only styrene demonstrated measured concentrations in the field that had the potential to pose a health hazard. It was decided based on these measurements that the modeling effort would focus only on styrene. The styrene emission rate was extrapolated from the GC/MS results for canisters collected directly at the steam plume. Concentration results for styrene

given in the laboratory analysis results were converted from parts-per-million to grams-per-cubic-meter using the ideal gas law at standard conditions:

$$Concentraion\ \left(\frac{g}{m^3}\right) = \frac{Concentration\ (PPM) * 101.32 * 104.15}{8.3144 * 273.15 * 1000}$$

where, 101.32 is the standard pressure (kPa)

273.15 is the standard temperature K

104.15 is the molecular weight of styrene $\frac{g}{mol}$

8.3144 is the gas constant $\frac{m^3 * Pa}{K * mol}$

The emission rate was then calculated using the following formula:

$$Emission\ Rate\ \left(\frac{g}{s}\right) = Concentration\ \left(\frac{g}{m^3}\right) * \left(\frac{\pi}{4} * (D_{stack})^2\right) * V_{stack}$$

Where, D_{stack} is the stack diameter in meters

V_{stack} is the stack velocity in meters/sec

While the calculated emission rate was used to initially run the model, the emission rate was adjusted so that the model simulation better matched the field results. The model was calibrated to match the field data for weather conditions similar to those during the field visits. Calibration focused on correlating the model to field emission data farther from the stack rather than emissions close to the stack. The field data collected close to the stack was more likely to include rogue emissions. Calibrating the stack emission model to this data would most likely result in an overly conservative model. Once the model was calibrated, the model was run across all hourly meteorological data in 2018. Future studies should incorporate rogue emissions into any modelling effort to better simulate emissions close to the stack.

The stack x- and y-coordinates were determined based on Universal Transverse Mercator system. The stack x- and y-coordinates were either measured in the field using the GPS receivers on a cellular phone or through estimating the location based on GIS or Google Earth imagery. The stack elevation (z-coordinate) was determined based on Lidar data available through online sources (e.g. LSU Atlas, Missouri Spatial Data Information Service) (LSU, 2020; Mizzou, 2020) and/or Google Earth.

BUILDING ENVIRONMENT MEASUREMENTS

To model the building environment, building corner x, y coordinates were derived from Google Earth. The elevation of each building was derived from the same LIDAR sources mentioned in the previous section. The building height for each story was estimated base on Google Street View imagery. For residential structures, the sloped roofs were ignored since there wasn't a way to model these in AERMOD. These data were collected and compiled for a number of buildings on each site, with the exception of Sites 4 and 6, which had no buildings near the stack location. These data were used within the input files for the BPIPPRM preprocessor to determine which buildings had downwash effects. Of all the sites where buildings were modeled only one site indicated downwash effects from a nearby building (Site 5 in St. Louis).

RECEPTOR GRID AND DIGITAL TERRAIN DATA

The receptor grid is a defined set of analysis points at which AERMOD calculates the pollution concentration based on all the input data provided to the model. For the receptor grid at each site, the receptor points were set as polar grid with 36 total points (10-degree intervals) at each of the defined distances (2, 3, 4, 6, 8, 15, 20 and 45 meters). The origin or center of the polar grid was set as the main stack location for each site. The distances were selected based on the distances of the surrounding area field measurements and when converted to feet represent a range from about 6.5 to 150 feet.

The digital terrain data represents the elevation data for the site and is run in the AERMAP preprocessor to determine the receptor elevations and hill heights. Digital terrain data was taken from the National Elevation Data set, which is located through USGS.

AVERAGING TIMES

An averaging period of 1-hour was required in the scope of work. The averaging period defines the time over which the concentrations are averaged. The 1-hour highest average concentrations represent the highest concentration output for the model. The modeled concentrations for the 1-hour highest average concentrations were compared to field measurements (see Chapter 4).

2.4. EVALUATION OF POTENTIAL HEALTH RISKS TO WORKERS AND COMMUNITY

Human exposure limit guidelines for the TO-15 chemicals have been published by the United States Environmental Protection Agency (EPA), the Center for Disease Control (CDC), American Industrial Hygiene Association (AIHA), Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH). The guidelines provide exposure boundaries for several scenarios and play a vital role in the analysis of the data collected in this study. It is important to remember that while NIOSH and EPA exposure guidelines are recommendations based on most recent medical research, OSHA exposure guidelines are regulatory and should be enforced. In some instances, the NIOSH, EPA and OSHA guidelines differ. The OSHA limit is enforceable, but, in some cases, the NIOSH and EPA guidelines may offer more stringent recommendations for best practices. OSHA recommends that more stringent guidelines are used if they exist since many of the OSHA limits have not been updated since they were originally established (OSHA, 2019).

OSHA and NIOSH use common shorthand to describe exposure limits for different cases. The shorthand PEL stands for permissible exposure limit. A PEL-TWA refers to a limit set for the average exposure of an individual over a certain time, usually an 8 hour period. PEL-STEL stands for short-term exposure limit. STEL is a limit set for exposure over a short period. A STEL is defined as a TWA over a short time period, typically 15 minutes. A PEL-C defines a ceiling limit, the exposure level that may not be exceeded for any length of time, except for very short time periods (5 minutes or less) and only up to an acceptable peak limit (NIOSH, 2019). It is indeed possible for a PEL-TWA exposure measurement to fall within the safe bounds of published guidelines for an 8 hour period, while the peak short-term exposure events would reveal exposure levels that exceed the PEL-STEL or PEL-C guidelines.

Styrene, one of the TO-15 chemicals most commonly used in CIPP liner resins, is found in CIPP emissions at concentrations much higher than the other compounds and is, therefore, of particular interest as an air-borne toxin. Styrene, C_8H_8, has an odor threshold that according to some literature can vary from 0.16 – 0.64 ppm (EPA, 2008; Amoore & Hautala, 1983). Other sources present even lower concentrations for odor thresholds (e.g. WHO, 2000). These odor threshold concentrations indicate that the presence of a styrene odor is not, necessarily, indicative of dangerous styrene levels. Styrene produces a noticeable smell at levels far below the most cautious and conservative regulatory exposure limits. While

all TO-15 chemicals are being quantified in this study, the chemicals selected for the evaluation of potential health risks to workers and community are those found at concentration levels high enough to pose a health risks.

Evaluation of potential health risks to workers and community for this study were based on published regulatory guidelines from the Environmental Protection Agency (EPA), the National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA). As an example, the summary of regulatory guidelines for styrene are provided in the following description and are summarized in *Table 3*.

AEGL (Acute Exposure Guideline Levels), as published by the EPA for Acute Exposure Guideline Levels for Hazardous substances, represent threshold exposure limits for the general public at the following three levels (EPA, 2008). AEGL exposure limits are listed below:

- 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, non-sensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.
    - Styrene Exposure Limit: 20 ppm (for any duration)
- AEGL – 2 is the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
    - Styrene Exposure Limit: 230 ppm for exposure less than 10 minutes
    - Styrene Exposure Limit: 160 ppm for exposures from 10 to 30 minutes
    - Styrene Exposure Limit: 130 ppm for exposures greater than 30 minutes
- AEGL-3 is the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.
    - Styrene Exposure Limit: 1900 ppm for exposures less than 30 minutes
    - Styrene Exposure Limit: 1100 ppm for exposures from 30 minutes to 1 hour
    - Styrene Exposure Limit: 340 ppm for exposures greater than 1 hour

In addition to AEGL guideline, NIOSH and OSHA also set upper limits on styrene exposure. A summary of these guidelines taken from (NIOSH, 2019) and (OSHA, 2019) and are as follows:

- IDLH, NIOSH (Immediately Dangerous to Life or Health is the level set by NIOSH as immediately dangerous to life or health at which a susceptible person may become disoriented, unable to breath and unable to escape. NIOSH estimates this number based on an exposure duration of 30 minutes or less, however workers should escape immediately when exposed to this concentration.
    - Styrene Exposure Limit: 700 ppm
- STEL, NIOSH (Short-term Exposure Limits) is defined as a 15-minute TWA exposure which should not be exceeded at any time during an 8 hour workday.
    - Styrene Exposure Limit: 100 ppm
- REL-TWA, NIOSH (Recommended Exposure Limit – Time Weighted Average) is defined a 10-hr TWA exposure.
    - 50 ppm
- PEL-TWA, OSHA (Permissible Exposure Limits – Time Weighted Average) calculates an acceptable time weighted average exposure for any exposure duration of 8 hours.
    - Styrene Exposure Limit: 100 ppm

- Acceptable Peak, OSHA (Occupational Health and Safety Administration, Permissible Exposure Limits) is the acceptable peak calculated for a single exposure event with a duration of 5 minutes or less in any 3 hours within an 8-hour shift.
    - Styrene Exposure Limit: 600 ppm
- PEL-C, OSHA (Occupational Health and Safety Administration, Permissible Exposure Limits) is defined as the permitted concentration ceiling regardless of duration and must not be exceeded during and 8-hr shift, except for exposures as defined by the acceptable peak (see above) . This number corresponds to OSHA Construction PEL-C guidelines.
    - Styrene Exposure Limit: 200 ppm

Table 3: Exposure Guidelines for Styrene

Guideline	Exposure Duration					
	5 min	10 min	30 min	1 hour	4 hours	8 hours
AEGL-1 (EPA, 2008)		20 ppm	20 ppm	20 ppm	20 ppm	20 ppm
AEGL-2 (EPA, 2008)		230 ppm	160 ppm	130 ppm	130 ppm	130 ppm
AEGL-3 (EPA, 2008)		1900 ppm	1900 ppm	1100 ppm	340 ppm	340 ppm
IDLH (NIOSH, 2019)			700 ppm*			
REL- TWA (NIOSH, 2019)						50 ppm [10 hr]
STEL-TWA (NIOSH, 2019)		100 ppm [15 min]				
PEL-C (OSHA, 2019)	200 ppm	200 ppm	200 ppm	200 ppm	200 ppm	200 ppm
PEL-TWA (OSHA, 2019)						100 ppm
Acceptable Peak (OSHA, 2019)	600 ppm					

* NIOSH estimates this number based on an exposure duration of 30 minutes, however workers should escape immediately when expose to this concentration (NIOSH, 2019)

Short-term exposure to styrene can result in mucus membrane and eye irritation as well as gastrointestinal irritation. Long-term exposure to styrene can result in central nervous system [CNS] problems such as headaches, fatigue, muscle weakness, depression, hearing loss, peripheral neuropathy (damage to nerves outside of the brain and spinal cord). Exposure to very high concentrations can lead to death [HHS, 2010; EPA, 2008]. The National Toxicology Program (NTP) under the U.S. Department of Health and Human Services has also declared styrene to be a "reasonably anticipated human carcinogen" (NTP, 2011).

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CHAPTER 3: FIELD MEASURED RESULTS

3.1. GENERAL SITE MEASUREMENTS AND OBSERVATIONS

The following sections provide general site measurements, observations and descriptions of the nine total sites that were visited. Five of the sites (Sites 1-3, 3a and 3b) were in Shreveport, LA; three were in St. Louis, M); and one was in Aurora, CO. For all the sites, descriptions include general location information and CIPP installation project details. Only descriptions of the primary sites (Sites 1-6) include stack and weather measurements and job safety observations. Standard safety practices include eye and ear protection, steel toe boots, safety vests and hard hats.

3.1.1 Site 1

Site Address: *2801 Milam St., Shreveport, LA*

Date of Site Visit: *December 11, 2018*

Description: *Intersection of Milam Street and Missouri Avenue, Shreveport, Louisiana*

Development Type: *Residential*

Land Use Category: *Suburban Area, grassy*

Figure 3: Site 1 Map

CIPP INSTALLATION DETAILS

Pipe Details
Length of Pipe Run: 315 feet
Pipe Diameter: 6 inches
Host Pipe Type: Vitrified Clay
Number of Laterals: 3

Installation Process Information
Steam Generator/Boiler Size: 4.2 million BTU
Steam Temperature (Inlet): 245 Deg. F

Figure 4: Site 1 Stack Setup

Emission Details
Stack Configuration: Horizontal
Stack Height Above Ground: 20.51 inches
Stack Diameter: 2.15 inches
Rogue Emissions: From Manhole

WEATHER DETAILS

Temperature
Outside Temp Before Installation: 53 Deg. F.
Outside Temp After Installation: 60 Deg. F.
Average Temp: 57 Deg. F.

Wind Speed & Direction:
Wind Speed Range: 0 – 8 mph
Average Wind Speed: 3 mph
Wind Direction: Primarily South
S (67% of Readings)
SW (22% of Readings)

Other Data:
Average Humidity: 40.5%
Atmospheric Pressure: 30.31 in
Precipitation Y/N: N
Solar Radiation: 419 W/m^2

Figure 5: Site 1 Emissions Observed

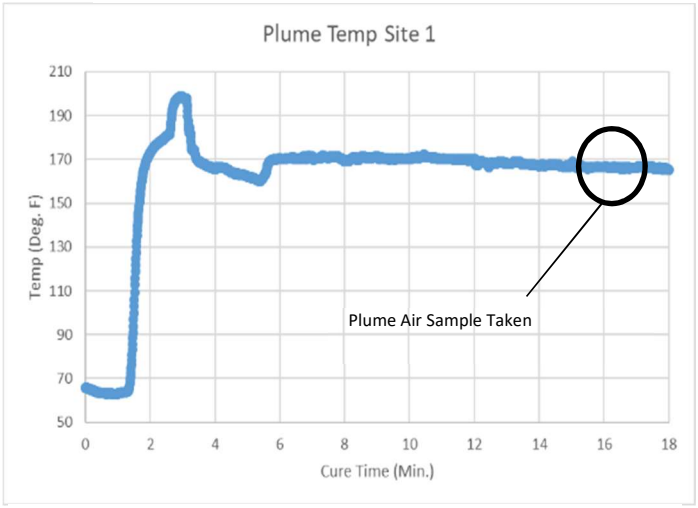

Figure 6: Site 1 Stack Emissions Temperature Profile

JOB SAFETY OBSERVATIONS

At site 1, general safety measures were for the most part carried out, however there were some deficiencies in safety measures concerned with personal protective equipment, confined space entry and the construction process. The following deficiencies were noted:

- Safety glasses were not worn by all workers at all times
- No hearing protection was worn
- No atmosphere monitoring was done prior to or during entry in manholes
- Forced-air ventilation was not used during confined entry
- Channeling device (stack) for emissions plume was less than 6 feet above ground level and was blown horizontally instead of vertically
- No temporary protective buffers between work zone and general public (e.g. cones, fencing) were used

3.1.2 Site 2

Site Address: *412 Delaware St. Shreveport, LA*

Date of Site Visit: *December 11, 2018*

Description: *Near Intersection of Delaware Street & Gilbert Drive*

Development Type: *Residential*

Land Use Category: *Suburban Area, grassy*

Figure 7: Site 2 Map

CIPP INSTALLATION DETAILS

Pipe Details
Length of Pipe Run: 147 feet
Pipe Diameter: 10 inches
Host Pipe Type: Vitrified Clay
Number of Laterals: None

Figure 8: Site 2 Emissions Observed

Installation Process Information
Steam Generator/Boiler Size: 4.2 million BTU
Steam Temperature (Inlet): 245 Deg. F

Emission Details
Stack Configuration: Horizontal
Stack Height Above Ground: 20.51 inches (1.7 feet)
Stack Diameter: 1.78 inches
Rogue Emissions: From Manhole

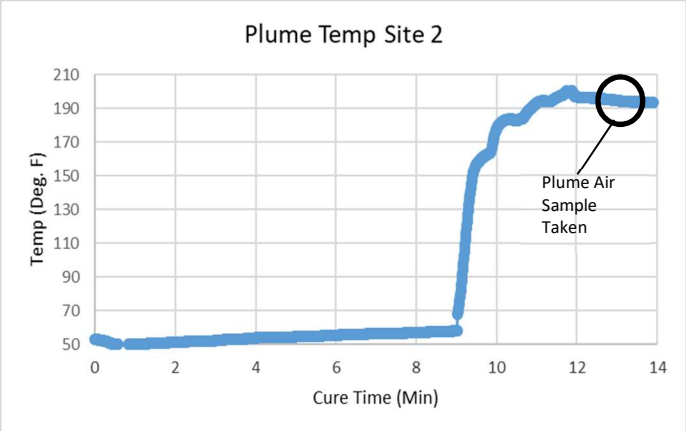

Figure 9: Site 2 Stack Emissions Temperature Profile

WEATHER DETAILS

Temperature
Outside Temp Before Installation: 68 Deg. F.
Outside Temp After Installation: 54 Deg. F.
Average Temp: 57 Deg. F.

Wind Speed & Direction:
Wind Speed Range: 0 – 2 mph
Average Wind Speed: 0.5 mph
Wind Direction: Primarily No Direction
No Direction (0mph) (37% of Readings)
S (15% of Readings)
SSW (10% of Readings)
W (10% of Readings)

Other Data:
Average Humidity: 43.5%
Atmospheric Pressure: 30.32 in
Precipitation Y/N: N
Solar Radiation: 42.7 W/m^2

JOB SAFETY OBSERVATIONS

At site 2, general safety measures were for the most part carried out, however there were some deficiencies in safety measures concerned with personal protective equipment, confined space entry and the construction process. The following deficiencies were noted:

- Safety glasses were not worn by all workers at all times
- No hearing protection was worn
- No guardrails or barricade used around open manhole entrances
- No atmosphere monitoring was done prior to or during entry in manholes
- Forced-air ventilation was not used during confined entry
- Channeling device (stack) for emissions plume was less than 6 feet above ground level and was blown horizontally instead of vertically
- Workers walked within 5 feet of emissions plume during curing for extended periods of time
- Workers sat directly downstream of plume during curing

3.1.3 Site 3

Site Address: *3734 Dilg League Dr., Shreveport, LA*

Date of Site Visit: *December 12, 2018*

Description: *Dilg League Drive near Jewella Avenue*

Development Type: *Residential*

Land Use Category: *Suburban Area, grassy*

Figure 10: Site 3 Map

CIPP INSTALLATION DETAILS

Pipe Details
Length of Pipe Run: 608 feet
Pipe Diameter: 8 inches
Host Pipe Type: Vitrified Clay
Number of Laterals: 15

Installation Process Information
Steam Generator/Boiler Size: 80 HP
Steam Temperature (Inlet): 240 Deg. F

Figure 11: Site 3 Stack Setup

Emission Details
Stack Configuration: Vertical
Stack Height Above Ground: 70 inches (5.83 feet)
Stack Diameter: 2.19 inches
Rogue Emissions: From Manhole and Liner Seam at End (Considerable emissions)

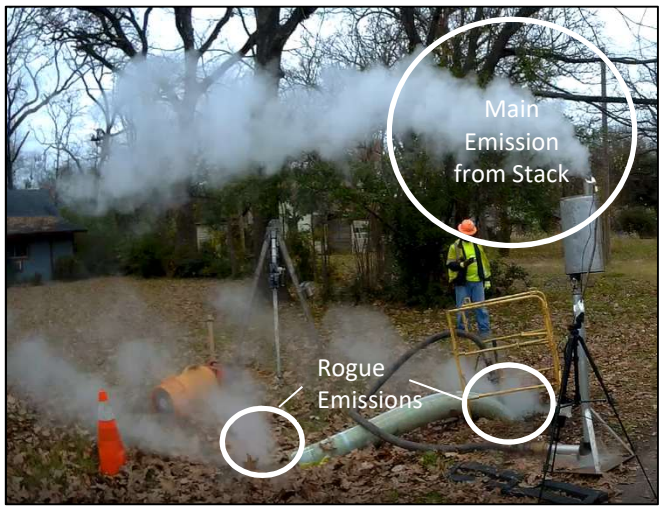

Figure 12: Site 3 Emissions Observed

WEATHER DETAILS

Temperature
Outside Temp Before Installation: 60 Deg. F.
Outside Temp After Installation: 60 Deg. F.
Average Temp: 59 Deg. F

Wind Speed & Direction:
Wind Speed Range: 3 – 11 mph
Average Wind Speed: 6.5 mph
Wind Direction: Primarily South
S (85% of Readings)
SSE (12% of Readings)

Other Data:
Average Humidity: 68%
Atmospheric Pressure: 30.1 in
Precipitation Y/N: N
Solar Radiation: 89 W/m^2

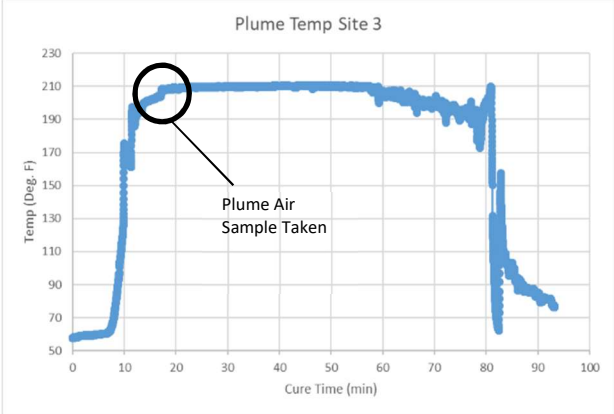

Figure 13: Site 3 Stack Emissions Temperature Profile

JOB SAFETY OBSERVATIONS

At site 3, most safety measures were carried out. There was only one deficiency in safety measures with the construction process. The following deficiency was noted:

- Channeling device (stack) for emissions plume was less than 6 feet above ground level

3.1.4 Site 3A

Site Address: *3015 Samford Ave., Shreveport, LA*

Date of Site Visit: *August 21, 2019*

Description: *Intersection of Samford Avenue & Glen Oak Place, Shreveport, Louisiana*

Development Type: *Residential*

Land Use Category: *Suburban Area, grassy*

CIPP INSTALLATION DETAILS

Pipe Details
Length of Pipe Run: 275 feet
Pipe Diameter: 6 inches
Host Pipe Type: Vitrified Clay
Number of Laterals: 3

Installation Process Information
Steam Generator/Boiler Size: 4.2 million BTU
Steam Temperature (Inlet): 245 Deg. F

Emission Details
Stack Configuration: Horizontal
Rogue Emissions: From Manhole

3.1.5 Site 3B

Site Address: *2491 Texas Ave., Shreveport, LA*

Date of Site Visit: *August 22, 2019*

Description: *Intersection of Texas Ave. & Mansfield Rd., Shreveport, Louisiana*

Development Type: *Mixed Commercial and Residential*

Land Use Category: *Suburban Area, grassy*

CIPP INSTALLATION DETAILS

Pipe Details
Length of Pipe Run: 270 feet
Pipe Diameter: 6 inches
Host Pipe Type: PVC
Number of Laterals: 9

Installation Process Information
Steam Generator/Boiler Size: 4.2 million BTU
Steam Temperature (Inlet): 245 Deg. F

Emission Details
Stack Configuration: Horizontal
Rogue Emissions: From Manhole

3.1.6 Site 4

Site Address: *10080 Squire Meadows Dr., St. Louis, MO*

Date of Site Visit: *February 26, 2019*

Description: *Neighborhood Adjacent to Affton Athletic Field*

Development Type: *Residential*

Land Use Category: *Suburban Area, grassy*

Figure 14: Site 4 Map

Figure 15: Site 4 Stack Setup

CIPP INSTALLATION DETAILS

Pipe Details
Length of Pipe Run: 500 feet
Pipe Diameter: 8 inches
Host Pipe Type: Vitrified Clay
Number of Laterals: 2

Installation Process Information
Steam Generator/Boiler Size: 150 HP
Steam Temperature (Inlet): 210 Deg. F.

Emission Details*
Stack Configuration: Vertical
Stack Height above Ground: 90 in. (7.5 ft.)
Stack Diameter: 2.28 inches
Rogue Emissions: From Manhole and End of Liner

WEATHER DETAILS

Temperature
Outside Temp Before Installation: 41 Deg. F.
Outside Temp After Installation: 52 Deg. F.
Average Temp: 47 Deg. F.

Wind Speed & Direction:
Wind Speed Range: 0 – 9 mph
Average Wind Speed: 2 mph
Wind Direction: Variable
E (20% of Readings)
ENE (9% of Readings)
ESE (16% of Readings)
NE (10% of Readings)
S (9% of Readings)
SE (9% of Readings)
SSW (9 % of Readings)

Other Data:
Average Humidity: 48.7%
Atmospheric Pressure: 30.59 in
Precipitation Y/N: N
Solar Radiation: 489 W/m^2

Figure 16: Site 4 Emissions Observed

* Temperature profile was collected on stack emissions, however temperature probe placement and movement of stack end by workers was such that temperature data was not consistently in the main stream.

JOB SAFETY OBSERVATIONS

At site 4, no safety measure deficiencies were observed.

3.1.7 Site 4A

Site Address: *10080 Squire Meadows Dr., St. Louis, MO*

Date of Site Visit: *February 26, 2019*

Description: *Neighborhood Adjacent to Affton Athletic Field*

Development Type: *Residential*

Land Use Category: *Suburban Area, grassy*

CIPP INSTALLATION DETAILS

Pipe Details
Length of Pipe Run: 270 feet
Pipe Diameter: 8 inches
Host Pipe Type: Vitrified Clay Pipe

Installation Process Information
Steam Generator/Boiler Size: 150 HP
Steam Temperature (Inlet): 210 Deg. F.

3.1.8 Site 5

Site Address: *5467 Highland Park Dr.*

Date of Site Visit: *February 27, 2019*

Description: *Commercial Area Adjacent to St. Louis Community College-Forest Park Campus*

Development Type: *Commercial*

Land Use Category: *Urban*

Figure 17: Site 5 Map

CIPP INSTALLATION DETALS

Pipe Details
Length of Pipe Run: 535 feet
Pipe Diameter: 24 inches
Host Pipe Type: Reinforced Concrete Pipe
Number of Laterals: 1

Installation Process Information
Steam Generator/Boiler Size: 150 HP
Steam Temperature (Inlet): 210 Deg. F.

Figure 18: Site 5 Stack Setup

Emission Details
Stack Configuration: Vertical
Stack Height above Ground: 80 in. (6.7 ft.)
Stack Diameter: 1.81 inches
Rogue Emissions: From Manhole

Figure 19: Site 5 Emissions Observed

WEATHER DETAILS

Temperature
Outside Temp Before Installation: 42 Deg. F.
Outside Temp After Installation: 37 Deg. F.
Average Temp: 39 Deg. F.

Wind Speed & Direction:
Wind Speed Range: 0 – 8 mph
Average Wind Speed: 3.8 mph
Wind Direction: Primarily N/NNE
NNE (33% of Readings)
N (22% of Readings)
NW (17% of Readings)
WNW (14% of Readings)
NNW (12% of Readings)

Other Data:
Average Humidity: 67.5%
Atmospheric Pressure: 30.2 in
Precipitation Y/N: N
Solar Radiation: 149 W/m^2

JOB SAFETY OBSERVATIONS

At site 5, no safety measure deficiencies were observed.

3.1.9 Site 6

Site Address: North Airport Rd, Aurora, CO*

Date of Site Visit: *May 14, 2019*

Description: *Rural Field, Latitude (39.748600), Longitude (-104.798146)*

Development Type: *Rural*

Land Use Category: *Agricultural Land*

** Unlike previous sites, three stacks were used at the site in Aurora*

Figure 20: Site 6 Map

CIPP INSTALLATION DETAILS

Pipe Details
Length of Pipe Run: 348 feet
Pipe Diameter: 36 inches
Host Pipe Type: Reinforced Concrete Pipe
Number of Laterals: None

Installation Process Information
Steam Generator/Boiler Size: 150 HP
Steam Temperature (Inlet): 210 Deg. F.

Emission Details
Stack Configuration: Three Vertical Stacks
Stack 1 Height Above Ground: 70.5 in (5.9 ft.)
Stack 2 Height Above Ground: 75.9 in (6.3 ft.)
Stack 3 Height Above Ground: 50.8 in (4.2 ft.)
Stack 1 Diameter: 2.1 in
Stack 2 Diameter: 2.1 in
Stack 3 Diameter: 1.9 in

Rogue Emissions: From Manhole

Figure 21: Site 6 Emissions Observed

WEATHER DETAILS

Temperature
Outside Temp Before of Installation: 65 Deg. F.
Outside Temp After Installation: 72 Deg. F.
Average Temp: 75.8 Deg. F.

Wind Speed & Direction:
Wind Speed Range: 0 – 22 mph
Average Wind Speed: 4.9 mph
Wind Direction: Variable
E (10% of Readings)
ENE (12% of Readings)
NE (18% of Readings)
NNE (7% of Readings)
S (9% of Readings)
W (7% of Readings)
WSW (9% of Readings)

Other Data:
Average Humidity: 48.7%
Atmospheric Pressure: 29.69 in
Precipitation Y/N: N
Solar Radiation: 524.5 W/m^2

Figure 22: Site 6 Stack Setup

JOB SAFETY OBSERVATIONS

At site 6, most safety measures were carried out. There was only one deficiency in safety measures with the construction process. The following deficiency was noted:

Channeling device (stack) for emissions plume was less than 6 feet above ground level (for two of the stacks).

3.2. CIPP FIELD MEASURED STYRENE EMISSIONS

The following tables present the styrene emission concentration results for all sites for the sorbent tubes, canisters and Hapsite unit. GC/MS emissions results for the remaining TO-15 compounds for the sorbent tubes and canisters can be found in the laboratory reports in *Appendix A*. This section only focuses on reporting styrene emissions since the laboratory results indicate of all the compounds detected, styrene was the only VOC with high enough concentrations to pose a potential health hazard (meet or exceed EPA, NIOSH and OSHA guidelines as outlined in Section 2.4). Below *Table 4* outlines all the blank results for the sorbent tubes, canisters and Hapsite measurements. *Tables 5* and *6* show the results for the liner truck and liner preparation, respectively. *Tables 7* and *8* reports the stack plume and termination manhole emissions concentrations, respectively. *Tables 9* and *10* outline the results for areas around the termination manhole. *Table 11* summarizes the worker sampling results. Table 12 reports measurements taken inside and near buildings. See *Appendix A*.

Table 4: Blank Results (Styrene Only)

Site #	Sorbent Tubes Blanks[1]		Canister Blanks[4]	Hapsite Blanks[4]
	Sampling Time (Hours)[2]	Concentration (PPM)	Concentration (PPM)	Concentration (PPM)
Site 1 Shreveport	4.9	0.0133 0.0097	0.00770	0
Site 2 Shreveport	3.4	0.0295 0.0680	0.0238	0
Site 3 Shreveport			0.0103	
Site 2b Shreveport				0
Site 4 St. Louis	6.9	0.0331		
Site 5 St. Louis	7.8	0.0187		
Site 6 Aurora	8.8	< 0.0122[3] <0.0012[3]	<0.00167	0

1 Blanks kept in vehicle typically parked more than 100 feet from termination manhole.
2 Sampling time varied with each site due to the total length of lining install. For shorter installations, sorbent tubes were removed unless workers were moving to other nearby install locations. Tubes were removed prior to the 8 hour mark when trying to prevent loss of sample or cross contamination with other environments off site.
3 Two samples collected and analyzed at different labs to compare results.
4 Samples/measurements taken before curing typically upwind.

Values denoted with an “E” are estimated values as denoted in the laboratory reports from the outside laboratories where samples were analyzed. The "E" values represent numbers that are above the calibration range, and so the error from the 'true' value is based on how far above that range and how linear the calibration range is out to that estimated value. In other words, if the measured concentration is say 10% above the high calibration standard, then the error in that estimated value is likely to be quite small, say 10% or less. If the estimated value is orders of magnitude above the high calibration standard, the estimated value could include significant error (e.g. +/-50%). Therefore, estimated values closer to the calibration standard are more reliable.

The blank measurements were at or near 0 ppm for all the samples and measurements. The liner truck results show a range of concentrations with 4 of the 6 sites with concentrations between 95 ppm and 176 ppm. The lower concentration for Site 1 could be the result of the liner truck being opened for several minutes before sample was taken. Once the truck is open it would be expected dispersion of VOCs would occur quickly. Hapsite measurements also indicate elevated concentrations of styrene at the liner truck. While the Hapsite show relatively small concentrations, the sensitivity of the equipment does not allow for the equipment to capture higher concentrations accurately since the detector can be saturated.

Table 5: Opening of Liner Truck Results (Styrene Only)

Site #	Pipe Characteristics		Canister Concentrations	Hapsite Concentrations
	Diam. (in.)	Length (ft.)	(PPM)	(PPM)
Site 1 Shreveport	6	315	2.31 E[1]	
Site 2 Shreveport	10	147	176 E	
Site 3 Shreveport	8	608	116 E	
Site 4 St. Louis	8	500	157 E	34.1[3]
Site 4a St. Louis	8	270		16.8[3,4]
Site 5 St. Louis	24	535	95.5 E	
Site 6 Aurora	36	348	1,820 E[2] 316[2]	29.3[3]

1 Sample was collected several minutes after opening during feeding of liner, so some dispersion of VOCs took place.
2 Duplicate results from separate labs. Both samples were taken in same location at same time.
3 Equipment detector saturated. These values represent minimum concentrations.
4 This was the second opening of the same liner truck used on Site 4.
E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in narrative.

For the duplicate liner truck results on Site 6, the results do not agree. One concentration is just over 300 ppm and the other is well over 1,000 ppm. These samples were taken at exactly the same time and same location. While concentrations of samples can vary depending on the collection location and time, the discrepancy between these duplicates could indicate error in the sample analysis or estimation concentration in the laboratory. The 1,820 ppm is well over the lab's highest calibration standard, and therefore, could include nearly 50% error.

The liner preparation results (*Table 6)* also show a range of concentrations across all sites. Liner preparation includes concentration measurements taken at the manhole before installation of liner, during feeding of liner and immediately after inversion before curing begins. These measurements were completed with the Hapsite. Four of the thirteen measurements indicate possible elevated concentrations of styrene since the detector was saturated, but it is not known how high the actual concentrations were. These four measurements were associated with feeding of the liner. The majority of the measurements taken were at or close to 0 ppm, which was associated with activity before installation of liner, downwind or crosswind measurements during feeding of liner or after liner installation. In one case, a downwind measurement was elevated at a distance of 10 feet.

Table 6: Liner Preparation Results (Styrene Only)

Site #	Notes	Hapsite Concentrations (PPM)
Site 3a Shreveport	Before installation at termination manhole	0
	Before installation at entry manhole	0
	Before installation 20 feet upwind of liner truck	0
	Feeding of liner 10 feet downwind	18.3[1]
Site 3b Shreveport	Before installation at entry manhole	0
	Feeding of liner 10 feet crosswind	0.0546
	Feeding of liner 10 feet downwind	2.06
Site 4 St. Louis	Feeding of liner	2.90
Site 4a St. Louis	Feeding of liner	0.0126
Site 5 St. Louis	Feeding of liner	25.5[1]
	End of inversion/before curing at termination manhole	0.0271
Site 6 Aurora	Feeding of liner (measurement 1)	7.01[1]
	Feeding of liner (measurement 2)	6.80[1]

1 Equipment detector saturated. These values represent minimum concentrations.

The stack emission plume concentration results range between 0 ppm and 293 ppm. The concentrations are shown in relation to pipe diameter and length and stack emission temperature. For all sites, an attempt was made to capture emissions as close to maximum curing temperature. To show some variation two samples were captured at Sites 5 and 6; one sample for the beginning of the curing process (lower temperature) and one close to maximum temperature. These concentrations were primarily collected to derive the emission rate parameter for the dispersion model at each of the six sites shown in *Table 7*.

Table 7: Stack Emission Plume Results (During Curing, Styrene Only)

Site #	Pipe Characteristics		Concentration [1] (PPM)	Temperature (°F)
	Diam. (in.)	Length (ft.)		
Site 1 Shreveport	6	315	1.21 E	170
Site 2 Shreveport	10	147	107 E	196
Site 3 Shreveport	8	608	0.0512	208
Site 4 St. Louis	8	500	8.45 E	155
Site 5 St. Louis	24	535	111 E 293 E	50 177
Site 6 Aurora	36	345	25.4 E <0.00157	78 248

1 Concentrations from canister samples
E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in narrative.

The results shown in *Table 8* for the termination manhole represent measurements or samples taken close to the termination manhole before, during or after curing. Two canisters were also taken at Site 6 inside the manhole during cutting and were analyzed at different laboratories. This sample was not

part of the original plan, but the team used an extra canister at Site 6 to get an instantaneous measurement from inside the manhole. The original plan only accounted for worker exposure inside the manhole as part of a time-weighted average. With time-weight averages the peak exposures would be difficult to determine without breaking up sampling according to specific tasks. Most of the measurements taken near the manhole were captured with the Hapsite unit. For 50% of the measurements (6 total) taken during the curing process, the equipment detector was saturated which could indicate elevated styrene concentrations. The remaining 50% the measurements taken during curing were between 0 and 5 ppm. Measurements taken before curing were between 0 and 2 ppm. Canisters samples taken inside the manhole during cutting were 1.3 and 8.7 ppm, with the later result being an estimate.

Table 8: Termination Manhole Results (Styrene)

Site #	Notes	Concentration (PPM)
Site 2 Shreveport	Next to exhaust during curing	24.3[1]
Site 4 St. Louis	Before curing at termination manhole	0.334
	During curing at termination manhole	0.276
	End of cure at termination manhole	0.0578
	Next to exhaust stack during curing	0.187[2]
Site 4a St. Louis	Beginning of cure at termination manhole	19.5[1]
Site 5 St. Louis	Before curing at termination manhole	1.71
	During curing near termination manhole	25.3[1]
	During curing near termination manhole	23.9[1]
	During curing near termination manhole	0.547
	During curing near termination manhole	3.40
Site 6 Aurora	Initial curing at termination manhole	0.0650
	During curing at termination manhole	20.5[1]
	During curing at termination manhole (immediately downwind)	8.89[1]
	During curing at termination manhole (immediately downwind)	4.06
	During cutting in termination manhole	8.74 E[2, 3]
	During cutting in termination manhole (duplicate)	1.31[3]

1 Equipment detector saturated. These values represent minimum concentrations.
2 Concentration from canister. Remaining measurements in table taken with Hapsite.
3 Two samples were collected and run in different labs to compare results.
E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in narrative.

A mixture of methodologies were used to capture surrounding area styrene concentrations. *Table 9* outlines the instantaneous (i.e. canisters) and real-time sampling results (i.e. Hapsite) for areas surrounding the termination manhole, while *Table 10* shows the time-weighted averages from sorbent tubes installed around the termination manhole. The measurement distances away from the manhole range from 6 to 100 feet. For the instantaneous and real-time readings, 78% are less than 1 PPM and 85% are less than 2 PPM. Only three readings were greater than 10 PPM, which represent three downwind measurements ranging from 6 to 20 feet. These high values represent estimates or minimum values and in the case of the Hapsite measurements it is possible these values could be higher.

Table 9: Surrounding Area Hapsite and Canister Results (Styrene Only)

Site #	Notes	Styrene (PPM)
Site 1 Shreveport	During curing 85 feet downwind of termination manhole	0.0223[1]
	During curing crosswind 20 feet to west of termination manhole	0[1]
	During curing crosswind 20 feet to east of termination manhole	0.0103[1]
Site 2 Shreveport	During cooling 75 feet downwind of termination manhole	0[1]
Site 3 Shreveport	During curing 6 feet downwind from termination manhole	36.1 E[2]
	During curing 60 feet downwind of terminations manhole	0.0156[2]
Site 3a Shreveport	During curing 10 feet downwind of termination manhole	18.1[1,3]
	During curing 100 feet downwind of termination manhole	0.0184[1]
	During cure 100 feet crosswind of termination manhole	0[1]
	After curing 50 feet crosswind of termination manhole	0[1]
	After curing 100 feet downwind of termination manhole	0[1]
Site 3b Shreveport	During curing 20 feet downwind of termination manhole	18.0[1,3]
	During curing 10 feet crosswind of termination manhole	0.0202[1]
	After curing 100 feet downwind of termination manhole	0[1]
	After curing10 feet crosswind of termination manhole	0.00510
Site 4 St. Louis	During curing 20 feet downwind of termination manhole	0.0562[1]
Site 4a St. Louis	End of cure 20 feet downwind of termination manhole	0.595[1]
	End of cure/cool down 100 feet downwind of termination manhole	0.0116[1]
	End of cure/cool down 100 feet downwind of termination manhole	0.00880[1]
Site 5 St. Louis	During curing 80 feet downwind of termination manhole	0.0413[1]
	During curing at entry manhole	0.0115[1]
	During curing 22 feet downwind of termination manhole	1.22[1]
	During curing 50 feet downwind of termination manhole	0.353[1]
Site 6 Aurora	During curing 20 feet crosswind of termination manhole	1.94[1]
	During curing 20 feet downwind of termination manhole	6.29[1,3]
	During curing 50 feet crosswind of termination manhole	0.0450[1]
	During curing 50 feet downwind of termination manhole	0.173[1]
	During curing 20 feet downwind of termination manhole	0.638[1]

1 Concentrations measured with Hapsite
2 Concentrations from canister sample
3 Equipment detector saturated. This value represents minimum concentration.
E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in narrative

For the sorbent tubes the results are averaged over the sampling time shown in *Table 10*. Sampling times ranged from 7.8 to 10.5 hours. It should be noted the values in *Table 10* are not directly comparable to the values in *Table 9*, since they represent the average exposure over the sample time while the concentrations in *Table 9* represent a concentration for a single snapshot in time. The values in *Table 9* give an idea of a person's average exposure if they were standing at the sorbent tube location for the total sampling time. All but one of the sorbent tube results have an average styrene concentration of less than 1 ppm. Only one result was greater than 1 ppm (< 2 ppm), which was a sorbent tube located 10 feet downwind from the termination manhole at Site 3.

Table 10: Surrounding Area Sorbent Tube Results (Styrene Only)

Site #	Sampling Time	Downwind		Upwind		Crosswind		
		10 feet	20 -25 feet	10 feet	20-25 feet	10 feet	20 - 25 feet	50 feet
	(Hours)	(PPM)		(PPM)		(PPM)		
Site 3 Shreveport	10.5	1.68 E					0.0100 0.00400	0.00800 0.0144
Site 5 St. Louis	8.1		0.00776 E[2] 0.0407 E[2]		< 0.00000300[2] 0.0000120[2]			
Site 6 Aurora	7.8	0.592 E[1] 0.058[1]	0.0599[1] 0.0130[1]	0.4401[1,3] 0.023[1,3] 0.7165[1] 0.260[1]		0.545[1,3] 0.150[1,3]	< 0.0137[1] 0.0220[1]	

1 Two samples were collected and run in different labs to compare results
2 Two sorbent tubes were used to compare single and double diffusion cap configuration results.
3 Sample taken with respect to entry manhole. All other measurements with respect to termination manhole.
E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in narrative

Table 11: Worker Results (Styrene Only)

Site #	Worker 1		Worker 2		Worker 3	
	Sampling Time (Hours)[1]	Concentration (PPM)	Sampling Time (Hours)	Concentration (PPM)	Sampling Time (Hours)	Concentration (PPM)
Site 1 Shreveport	4.9	4.37 E	4.9	2.11 E		
Site 2 Shreveport	3.4	8.82 E	3.4	*		
Site 3 Shreveport	10.5	0.0268	10.5	0.201 E		
Site 4 St. Louis	6.9	2.66 E 2.42 E	6.9	1.86 E		
Site 5 St. Louis	8.8	16.3 E[2] 16.9 E[2]	7.8	0.493[2] 0.930[2]		
Site 6 Aurora	8.9	0.0737[3] 1.60[3]	8.9	0.429 *	8.87	1.45 E[3] 0.0440[3]

1 Sampling time varied with each site due to the total length of lining install. For shorter installs sorbent tubes were removed unless workers were moving to other nearby install locations. Tubes were removed prior to the 8 hour mark when trying to prevent loss of sample or cross contamination with other environments off site.
2 Two sorbent tubes were used to compare single and double diffusion cap configuration results
3 Two samples were collected and run in different labs to compare results.
E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in narrative
* Sample lost by worker in field

Similar to *Table 10*, the worker results (*Table 11*) represent time-weighted averages derived from sorbent tubes worn by workers. The styrene concentrations are averaged over the sample time shown in *Table 11*. Sampling times ranged from 3.4 to 10.5 hours. While the aim was to collect time-weighted averages around 8 hours in some cases the lining process was shorter or longer. For shorter installs sorbent tubes were removed unless workers could easily be followed to nearby locations. In two instances sorbent tubes were lost in the field and could not be located. For the results in *Table 11*, 14 of 17 (82%)

of samples collected and analyzed, show concentrations less than 5 PPM. Only two samples (collected from a single worker at Site 5) were greater than 15 PPM.

Finally, *Table 12* shows the interior building results for the samples taken with either a canister or the Hapsite. The team's goal was to capture samples before curing and after lateral opening inside nearby buildings, however there was some difficulty gaining access to buildings at the sites. In some cases, there were no buildings accessible or access that was available at the beginning of the process was not possible after lateral opening because the building owner had left. On several sites cutting was delayed due to mechanical malfunctioning of cutting robots, which made it difficult to capture post-opening samples. At best, when samples that could not be collected post opening were collected post cure. Of all the samples taken concentrations were considerably low (less than 1 PPM).

Table 12: Interior Building Results (Styrene Only)

Site #	Notes	Concentration (PPM)
Site 3 Shreveport	Inside abandoned residential building after lateral opening	0.00420[2]
Site 3a Shreveport	Before curing inside residential bathroom	0.0101[1]
	After lateral opening on porch of residential building	0.00[1]
Site 3b Shreveport	Before curing inside commercial bathroom	0.00280[1]
	After curing inside of commercial bathroom	0.00[1]
	After curing clean out drain (dry trap)	0.00230[1]
Site 5 St. Louis	Inside nearby building after cure	0.00880[1]

1 Concentrations measured with Hapsite
2 Concentrations from canister sample

3.3. DEGREE OF CURE AND CONDENSATE ANALYSES

The results of the degree of cure testing, which used FTIR analysis, showed no detectable amount of styrene monomer in any of the samples tested. Monomers are compounds that have the potential to react with other molecules to form polymers (very large molecules). Styrene monomers that are still remaining in the liner have not yet bonded and can volatilize (evaporate into a vapor) and disperse into the air. Since no monomers were detected and typically there is 1-3% residual styrene monomer after a complete cure (Herzog, 2007), this indicates that the remaining styrene monomer volatilized. Samples were stored in coolers and kept in cold storage to minimize volatilization of any remaining styrene, however volatilization of remaining monomer most likely occurred before the liner was collected in the field and also during storage of these samples. Some time did pass between sample collection and analysis, so it is possible most of the volatilization occurred during storage.

The results of the GC/MS analysis of the condensate are shown in *Table 13*. Of all the samples collected, compounds detected included styrene and acetone. In one sample two additional compounds were detected, carbon disulfide and 2-butanone (MEK). When comparing the first vial taken at every site (Vial 1) to the average stack emission concentrations (*Table 7*), there appears to be a potential correlation between the styrene concentrations in the condensate and stack emissions, however more data points would need to be collected to confirm this relationship. For subsequent vials taken on some of the sites, there does not appear to be a correlation to stack emission concentrations. It would be expected that later condensate sample would exhibit lower concentrations of styrene, which is supported by the data shown in *Table 13* at Sites 3, 5 and 6 where multiple vials were successfully collected. Condensate analysis laboratory reports can be found in *Appendix A*.

Table 13: Condensate Analysis Results

Site #	Sample	Compounds Detected			
		Styrene (ug/L)	Acetone (ug/L)	Carbon Disulfide (ug/L)	2-butanone (MEK) (ug/L)
Site 3 Shreveport	Vial 1	170,000	U	U	U
	Vial 2	33,000	700 E	U	U
	Vial 3	29,000	600 E	U	U
Site 4 St. Louis	Vial 1	14,000	1,000 E	U	U
Site 4a St. Louis	Vial 1	94,000	2,000 E	U	U
Site 5 St. Louis	Vial 1	3,900,000	4,000 E	U	U
	Vial 2	13,000	8,000	220	300 E
Site 6 Aurora	Vial 1	100,000	2,400	U	U
	Vial 2	41,000	1,100	U	U

E = Estimated value
U = Not detected

REFERENCES

Herzog, D., Bennett, A., Rahaim, K. and Schiro, J. (2007). A Comparison of Cured-In-Place-Pipe (CIPP) Mechanical Properties-Laboratory vs. Field. American Composites Manufacturers Association (ACMA)'s *Composites & Polycon 2007*, (pp. 1-9), Tampa, FL, USA, October 17-19, 2007.

CHAPTER 4: DISPERSION MODEL ANALYSIS

For the modeling styrene emissions, field measurements that were taken at each of the primary sites. These parameters are required by the model to calculate emission concentrations around the stack at defined distances. *Table 14* outlines these measurements. The concentration (PPM) used to calculate the estimated emission rate parameter, the calculated emission rate (g/s) and the adjust emission rate (g/s) used to calibrate the model are shown *Table 14*. Of all the sites, Site 6 was the only site that had three stacks. It should be noted that only the main stack was modeled at Site 6 since the team only had enough canisters to collect from one stack. The main stack is where most of the emissions appeared to be visibly emitted. Other sources of emissions on site (rogue and liner truck emissions) were not included in the model due to the complexity of modeling these sources.

Table 14: AERMOD Model Parameters Measured in Field

Site #	Model Stack Parameters						
	Velocity (mph)	Height (ft)	Diameter (in)	Temp. (°F)	Styrene Concentration (PPM)	Calculated Emission Rate (g/sec)	Adjusted Emission Rate (g/sec)
Site 1 Shreveport	55.59	1.71	2.36	170.6	1.21 E	0.00033	0.01
Site 2 Shreveport	55.59	1.71	1.57	195.8	107	0.01886	0.01
Site 3 Shreveport	47.49	5.84	2.36	208.4	0.0500	0.00001	0.01
Site 4 St. Louis	68.18[1]	7.51	2.36	154.5	8.45	0.00316	0.02
Site 5 St. Louis	68.18[1]	6.69	1.97	177.0	293	0.06881	0.05
Site 6 Aurora	52.57	5.91	1.97	78.35	25.4	0.00621	0.18

1 Anemometer's upper threshold was exceeded. These values represent the upper limit maximum velocities measurable by the equipment. It was noted that in previous study (Ajdari, 2016) a stack velocity of 78.29 mph was measured, so these values could be slightly higher.

Figures 23-28 present the results of the model output from AERMOD shown in Google Earth. Each figure shows a series of receptor points and lines that represent the modeled styrene concentrations in parts-per-million at that location. Emissions were modeled at distances of 2, 3, 4, 6, 8, 15, 20 and 45 meters, which equate to distances of 6.6, 9.8, 13.1, 19.7, 26.2, 49.2, 65.6 and 147.6 feet, respectively. The modeled values are associated with highest 1-hr results averaged across 1-year of meteorological data. The highest 1-hr values represent the maximum values calculated over the smallest possible averaging period in AERMOD. The figures also depict the field measured values from the surrounding area measurements.

The correlation between field data and model data was better for Sites 1, 3 and 4 when compared to Sites 2, 5 and 6. Sites 1, 3, and 4 were smaller diameter pipes which are more likely to be associated with lower-concentration emissions. This might explain why it was easier to correlate the model to the field data. Site 2 was difficult to correlate due to limited field data, so a similar emission rate to Site 1 was used (Sites 1 and 2 had similar stack characteristics). For Site 5 and 6, it was difficult to correlate the model results with both the higher-concentrations near the stack and lower-concentrations farther away. Since these are much larger diameter pipes, its possible rogue emissions and some stack emissions (e.g. Site 6) are contributing significantly to the higher concentrations near the stack. Since these emissions were not included in the model, it might explain the underestimation of emissions near the stack. To better match the model to all the field data, future models should account for the other forms of emissions around the stack especially for larger diameter pipes.

Figure 23: Site 1 Modeled Styrene Emissions with Field Data (Highest 1-hour Values Across 1-YR)

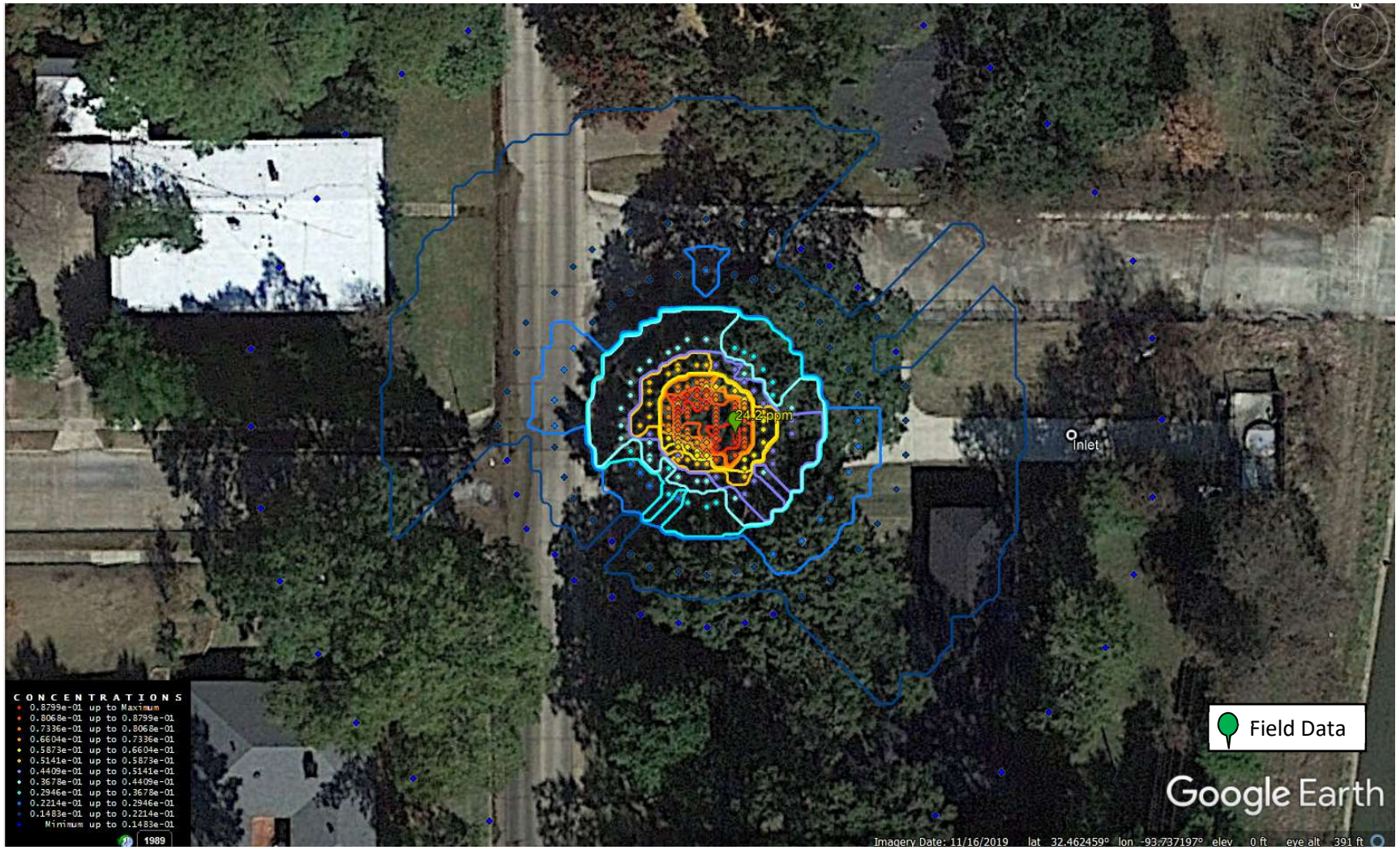

Figure 24: Site 2 Modeled Styrene Emissions with Field Data (Highest 1-hour Values Across 1-YR)

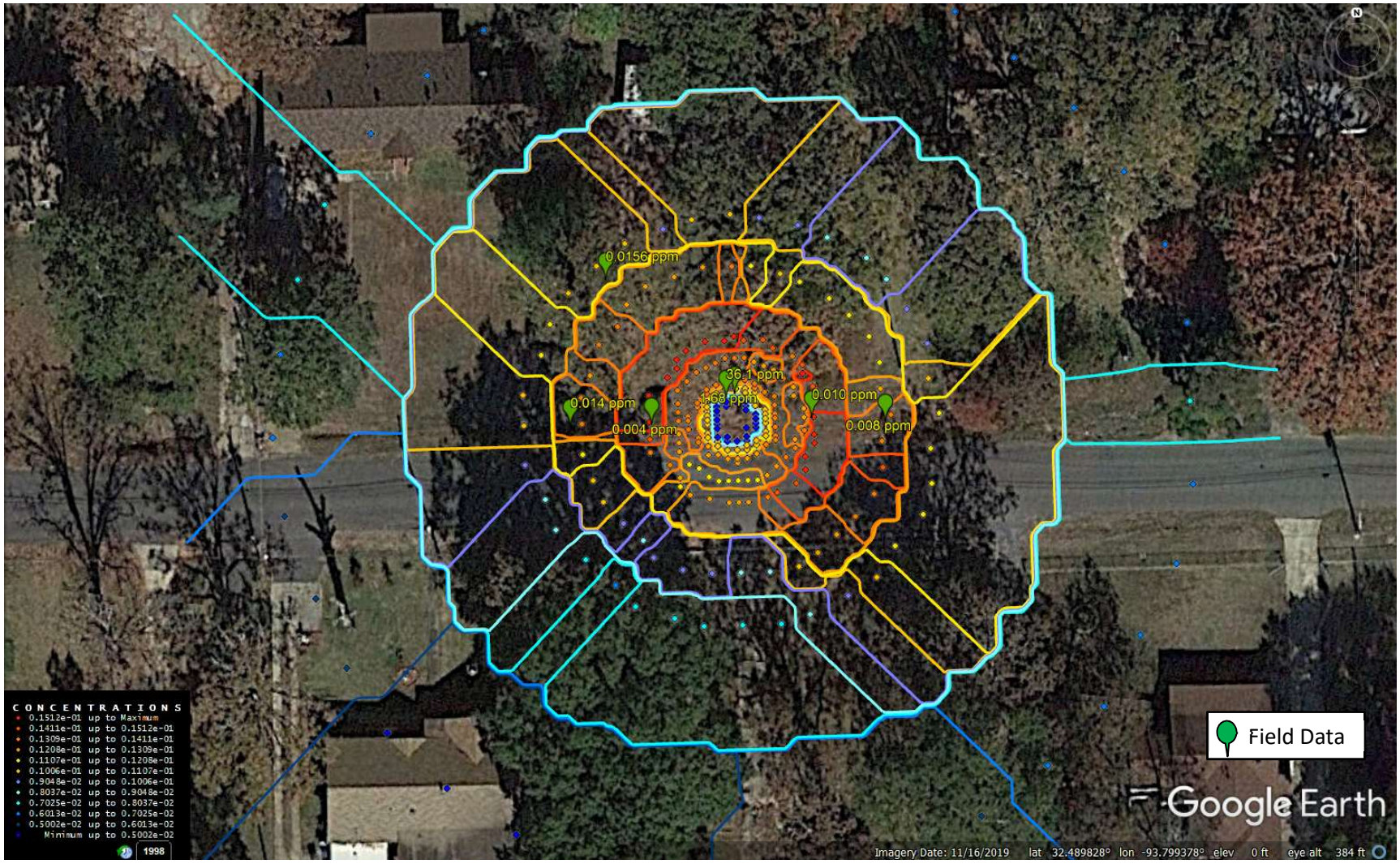

Figure 25: Site 3 Modeled Styrene Emissions with Field Data (Highest 1-hour Values Across 1-YR)

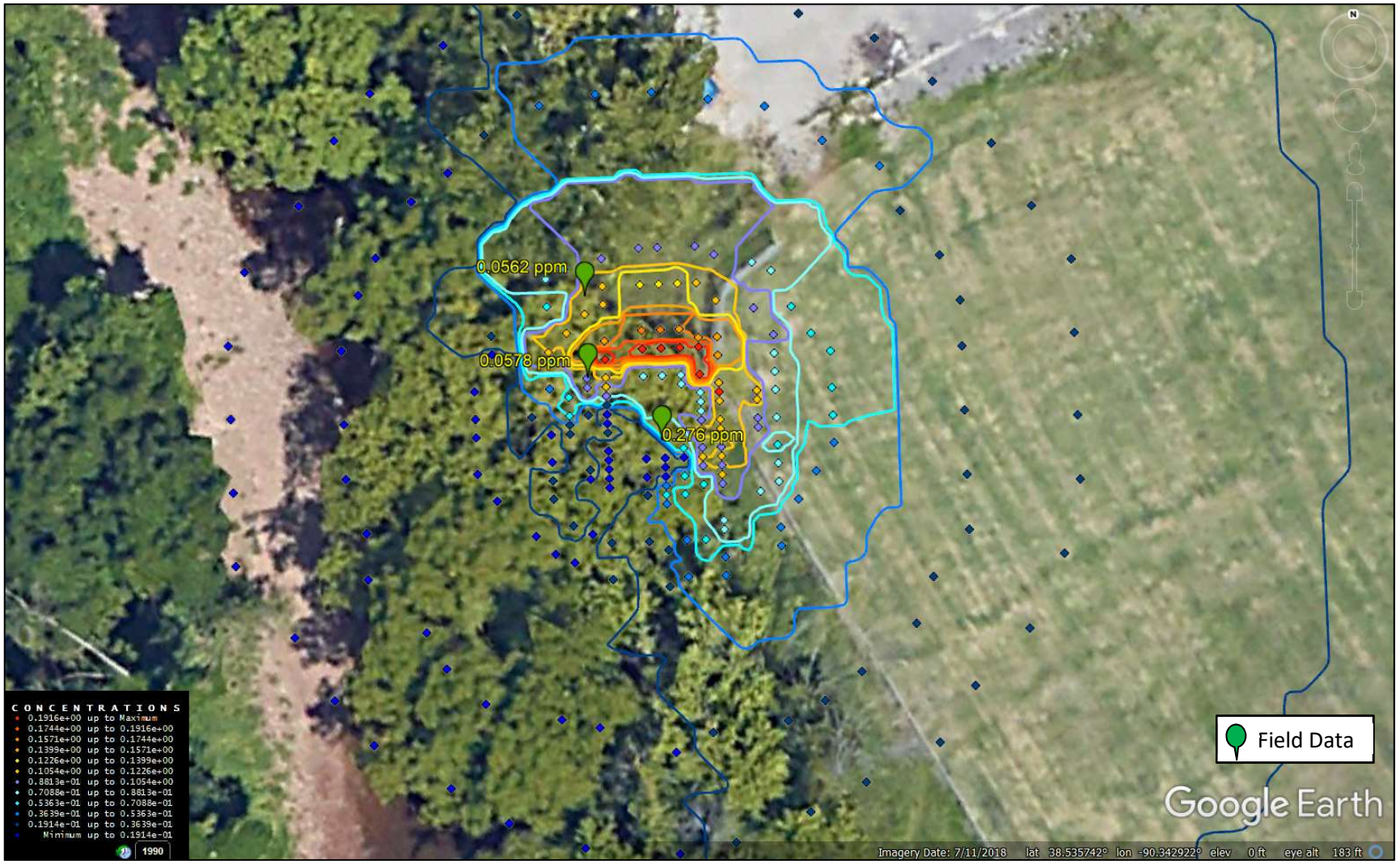

Figure 26: Site 4 Modeled Styrene Emissions with Field Data (Highest 1-hour Values Across 1-YR)

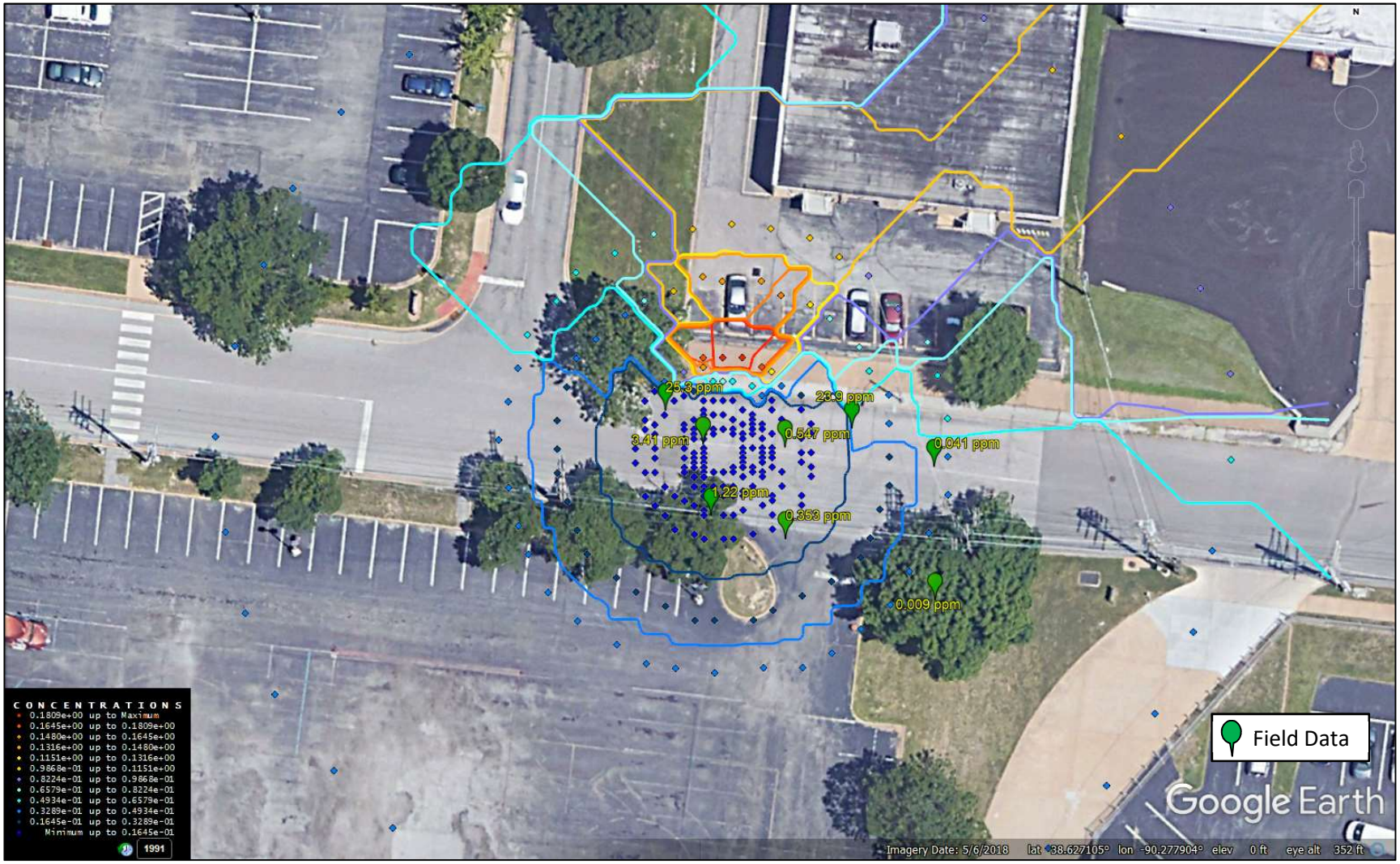

Figure 27: Site 5 Modeled Styrene Emissions with Field Data (Highest 1-hour Values Across 1-YR)

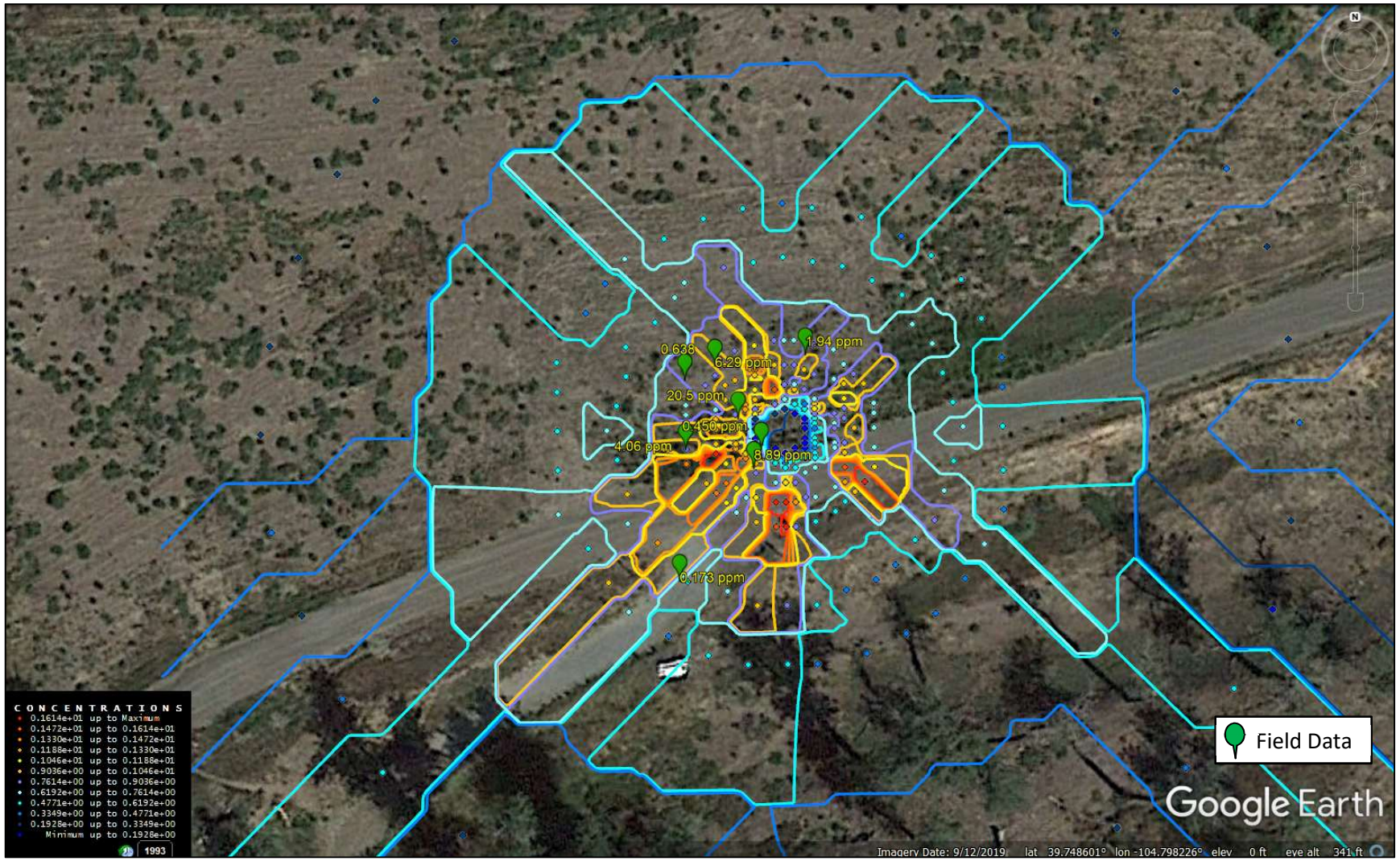

Figure 28: Site 6 Modeled Styrene Emissions with Field Data (Highest 1-hour Values Across 1-YR)

REFERENCES

Ajdari, E. (2016). "Volatile organic compound (VOC) emission during cured-in-place-pipe (CIPP) sewer pipe rehabilitation," PhD Dissertation, University of New Orleans, LA.

CHAPTER 5: ANALYSIS OF HEALTH RISKS

The comparative analysis of the field results from (1) common locations across sites and (2) at each site to OSHA, NIOSH and EPA/CDC guidelines are presented in this chapter. The analysis focuses on styrene, since of all the TO-15 chemicals measured it was the only VOC to exceed regulatory thresholds for a portion of the measurements taken. Both the comparative analysis for common locations (Sections 5.1-5.6) and the site-by-site analysis (Section 5.7) are presented in this chapter.

5.1. LINER TRUCK DOOR AT INITIAL OPENING

Data collected at the liner transport truck cargo door after opening is summarized for all six sites in the *Figure 29* below. All Canister and Hapsite measurement are included with the exception of the duplicate canister from Site 6, which came back from the lab with a concentration of 1,820 ppm. This concentration is well above the OSHA's PEL-C limit (200 ppm) and the NIOSH's STEL (100 ppm), both shown in *Figure 29*. This concentration also exceeds the OSHA acceptable peak exposure of 600 ppm (for durations of 5 minutes or less) and the NIOSH IDLH guideline of 700 ppm (neither shown in *Figure 29*). Furthermore, this concentration exceeds all AEGL-2 guidelines (as shown in *Figure 29*) and approaches the AEGL-3 threshold at durations 10 minutes (not shown in Figure). However, as stated in Chapter 3 (Section 3.2), the 1,820 ppm result on Site 6 does not agree with the duplicate result of 316 ppm (shown in *Figure 29*). Liner truck results for previous sites have concentrations ranging from 95 ppm to 176 ppm. Considering the discrepancy between the duplicates (1820 ppm and 316 ppm) and the possibility of significant error in the estimation of the concentration in the laboratory, the 1,820 ppm measurement is not included in *Figure 29*.

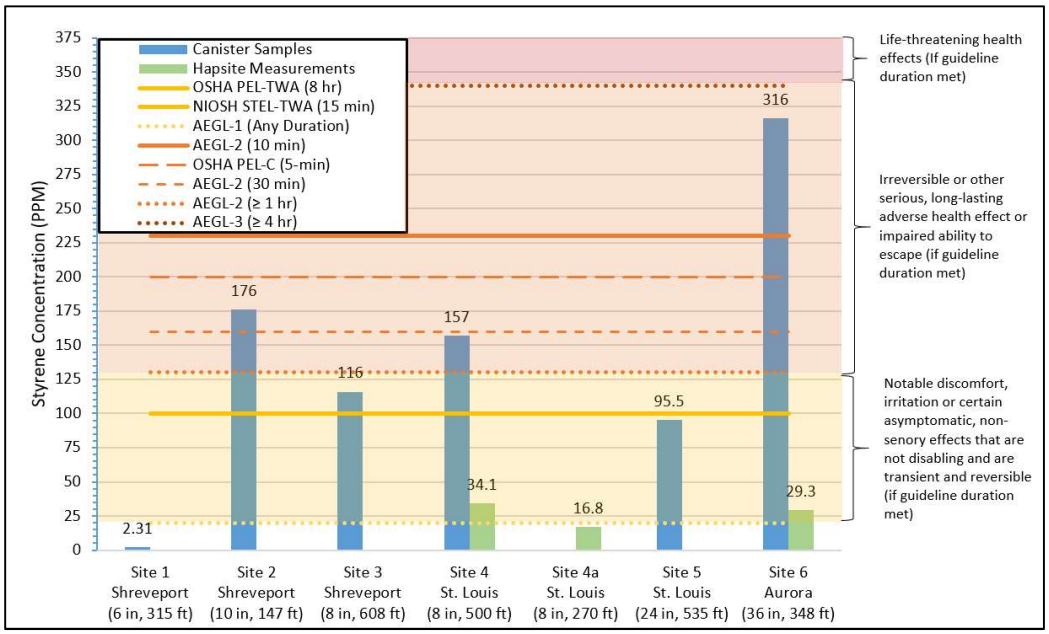

Figure 29: Styrene Concentrations at the Opening of the Liner Transport Truck

The lower concentration for Site 1 should also be questioned, since the liner truck had been opened for several minutes before the sample was taken. The value might provide some indication though that VOCs do disperse after the truck is left open for some time. In *Figure 29*, the 316 ppm measurement of the cargo truck exceeds the OSHA PEL-C, 10-min AEGL-2 and the 15-min STEL guidelines. In the case of OSHA's PEL-C limit, as long as exposure is limited to 5 minutes or less within any 3-hour window during an 8-hour shift, the exposure falls within OSHA guidelines. Four of nine measurements shown in *Figure 29*

exceed the NIOSH recommended 15-min STEL of 100 ppm. All measurements except two exceed the AEGL-1 guideline for any duration (20 ppm).

The opening of the liner transport truck door represents a point in the CIPP installation process where there is potential exposure to elevated levels of styrene vapors for short periods of time. It is assumed that styrene levels begin to dissipate the moment the liner transport truck is opened and could drop to acceptable short-term exposure levels soon after the door is opened. If the VOCs trapped in the cargo truck dissipate very quickly once the truck is opened (less than 5 minutes), the concentrations measured might not suggest serious health risks if proper precautions are made. The exposure dangers may be mitigated by allowing the trapped chemical vapors to dissipate and drop to acceptable levels before approaching the truck, but this would need to be monitored to ensure they have dropped below dangerous levels. Personal protective equipment would likely be needed at this location if concentrations are not allow to dissipate adequately. Additional measurements taken at the liner transport truck over a 5-minute period after opening the cargo door would be useful in making any final definitive conclusions related to PPE or dissipation time. **The results presented in this section greatly influenced the recommendations provided in Chapter 6.**

5.2. EXHAUST STACK AND/OR TERMINATION MANHOLE

The results for the air samples collected from the emissions released from the exhaust stack are shown in *Figure 30*. The max concentrations during curing that were measured from areas nearby (within 20 ft) of the termination manhole/exhaust stack are shown in *Figure 31*.

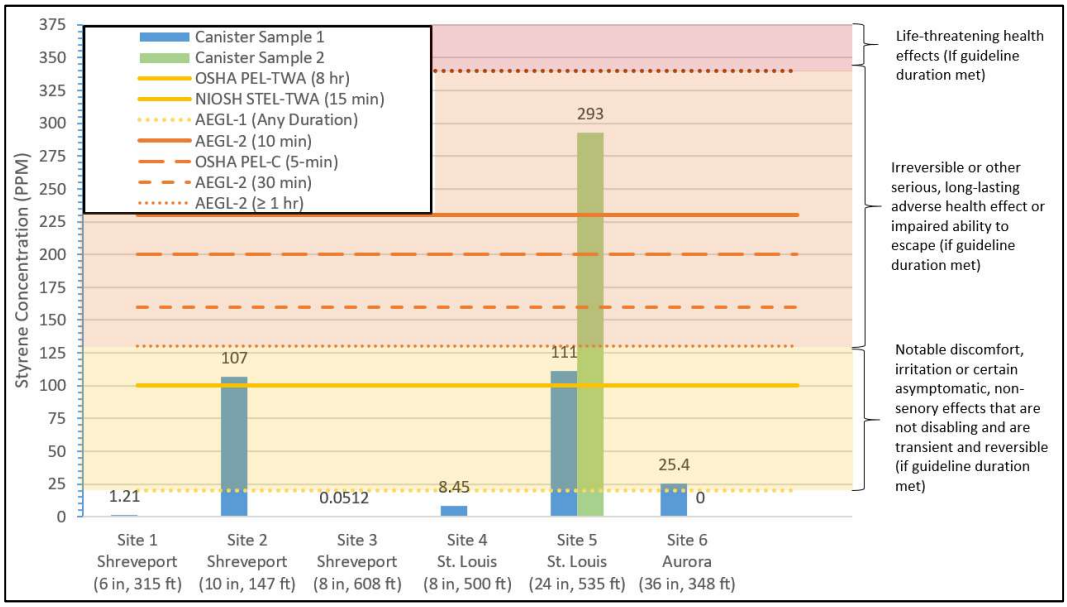

Figure 30: Styrene Concentrations at the Exhaust Stack

The area contained within the visible white plume of exhaust points appear to be the location on the jobsite where there is the greatest potential for exposure to airborne styrene above the limits set by OSHA, NIOSH and the EPA. Unlike the styrene concentrations at the opening of the liner transport truck that are reasonably assumed to be trapped in the cargo area and to quickly dissipate once the cargo area is opened, the styrene measurements taken at the exhaust points could represent styrene levels that endure for portions of the curing process that exceed 5, 15 or 30 minutes. For this reason, both the NIOSH IDLH and OSHA acceptable peak guidelines, and the PEL-C and STEL guideline limits should be examined against the data collected onsite. One of the styrene measurements taken at an exhaust stack was 293 ppm, which exceeds the OSHA PEL-C limit of 200 ppm but is less than the acceptable peak of 600 ppm.

The OSHA permitted exposure limit ceiling is more than a recommendation. That limit is the enforceable exposure limit for styrene exposure lasting for a period longer than 5 minutes within a 3-hour window in the construction setting. Provided a worker is exposed to this concentration for 5 minutes or less within any 3-hour window during an 8-hour shift, the exposure falls within OSHA limits. However, it should be noted that OSHA recommends the use of more stringent guidelines (OSHA, 2019) and at one time proposed adopting limits similar NIOSH's 8-hr TWA (50 ppm) and 15-min STEL (100 ppm) (CDC, 2020).

The 293 ppm measurement exceeds the 15-min STEL. This concentration also exceeds the 10-min and 30-min AEGL-2 guideline at which point long-lasting health effects could occur. Four measurements exceed the AEGL-1 guideline for any duration. As discussed in other portions of this report and reflected in the exhaust point measurements that range from 0 to 293 ppm, several variables like wind, barriers, temperature, and distance from the exhaust point affect the styrene levels near the exhaust. The styrene level at any given point will likely vary over time under the influence of those variables. However, it is reasonable to conclude that styrene levels within the plume on the CIPP installation site could reach levels that exceed regulatory limits if the exposure durations are met. This identifies the exhaust stack at a CIPP installation site as one the locations where there is reasonable concern for both worker and public exposure to styrene emissions.

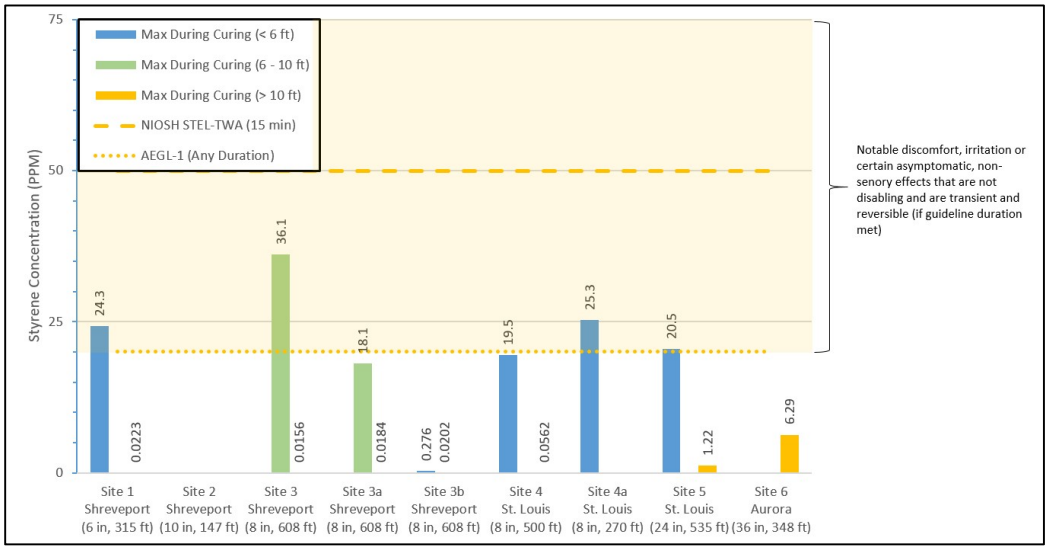

Figure 31: Styrene Concentrations near Termination Manhole/Exhaust Stack

In areas immediately surrounding the manhole and stack (within 10 feet), concentrations are at levels not high enough to be immediately dangerous or inescapable or cause long-lasting health effects. The levels are significantly less than the OSHA PEL-C of 200 ppm. Three concentration measurements within six feet and one measurement at distance of 6 feet (see Table 9) exceed AEGL-1. Any worker or member of the public entering and exiting an area with styrene concentrations at the levels recorded in this study should not experience any negative health effects provided the total exposure time is less than 5 minutes and they avoid entering the exhaust plume. No measurements outside of 10-feet exceed AEGL-1. This indicates a decreasing styrene concentration even at relatively short distances from the emission source. **Results presented in this section influenced the recommendations provided in Chapter 6.**

5.3. AREAS SURROUNDING STACK/TERMINATION MANHOLE

At the six sites a total of 34 samples were taken at various defined distances from the exhaust points. No measurement taken at a distance of 10-ft or more from the termination manhole and/or exhaust stack exceeded exposure limits. In fact, those levels were far below guideline levels. The highest

measurements were a TWA of 1.6809 ppm averaged over 10.50 hours, 1.2186 at 22-ft downwind of a termination manhole, 1.941 ppm 20-ft crosswind and 6.292 ppm downwind from a termination manhole. This data suggests that styrene dissipates rapidly and that exposure to styrene above regulatory guideline limits is unlikely outside of a 10-ft radius around emissions points. Research conducted by the German research group, IKT (Institute for Underground Research) resulted in the adoption of a 5-meter (16-ft) perimeter around CIPP exhaust points into which the public is not allowed as report in the Phase 1 NASSCO study (Najafi et al., 2018). The IKT conclusion validates the results supported by the data collected in this study, in that dissipation is rapid enough that the only areas of concern are very near to the exhaust point. The data further suggests that styrene concentrations are typically higher downwind from the exhaust point than concentrations upwind or crosswind at equal distances. Measurements taken at increasing distances from a single exhaust point seem to decrease and support the conclusions drawn in the modeling section of this report (Chapter 4). For instance, at Site 5 in St. Louis a measurement of 1.2186 ppm was taken 22-ft downwind from the exhaust point. At 50-ft the level dropped to 0.3529 ppm. At 80-ft the level was 0.0413 ppm.

The model results do not suggest any significant increases in emissions when modelled over a year's worth of meteorological data. For areas farther away from the stack, the risk associate with emissions outside of a 10 foot perimeter seem to be minimal when compare to health guidelines. Field data close to the stack was more conservative that what the model predicted. This is most like because the field data is capturing both rogue and stack emissions. The conservative values, rather than the predicted model values were used to formulate the recommendations in Chapter 6.

5.4. INVERSION MANHOLE AND LINER INSERTION

The highest level measured at the inversion manhole was 25.5 ppm. While some temporary respiration or eye irritation could occur at this level (as it is above AEGL-1), the concentration is below all OSHA and NIOSH exposure guideline limits.

5.5. WORKER TWA EXPOSURE

Data collected by sorbent tubes mounted on CIPP workers or at stationary points designed to approximate worker exposure revealed no episode in any of the six sites where the exposures averaged over the duration of the installation exceeded NIOSH, OSHA or EPA limits. This would suggest that CIPP workers experience safe long-term exposures to styrene. However, this does not allow us to conclude that there are no instances where short-term exposure limits were exceeded. Thirty-five of the 37 sorbent tubes collected across the 6 sites yielded TWA exposure measurements for the duration of the installation that were below 4.4 ppm. Two of the 37 sorbent tubes collected resulted in TWA exposures over 16 ppm. While 16 ppm is well within the long-term exposure limits, it is reasonable to conclude that the installer represented by this sorbent tube experienced short-term exposures lower than 16 ppm as well as exposures higher than 16 ppm and potentially beyond short-term exposure limits. To better understand the exposure of a CIPP installer to styrene, STEL-TWA guidelines could be compared to measurements calculated by placing sorbent tubes on a worker at the beginning of a task and collecting those sorbent tubes at the end of the task, thereby targeting specific CIPP installation tasks and shorter TWA exposures.

5.6. NEARBY BUILDINGS

Measurements taken in homes near CIPP installation exhaust points yielded calculated styrene concentrations of 0.00420 ppm and 0.00880 ppm. These results suggest that there is little potential danger of styrene emissions collecting in homes and rising to levels above exposure limits or even to the AEGL-1 threshold. Styrene has an odor threshold at very low concentrations (see Section 2.4). While the styrene smell could become noticeable in a home, the data from this study does not suggest that styrene

levels would rise to a level that presents any danger to residents. The highest styrene emissions occur during the CIPP curing process when steam is blasted through the uncured liner. At that point lateral connections from the pipe being lined would be sealed by the new liner. Once the lateral connections are cut and reinstated, the data suggests styrene levels in the pipe will have dropped to levels much lower than the levels reached during the curing process.

5.7. ANALYSIS BY SITE

The following sections discuss the analysis of the same data presented in previous sections, however with a site-by-site approach. In the site-by-site data summary tables that follow, any styrene measurement exceeding 20 ppm (AEGL-1), the lowest concentration defined by the guidelines previously discussed (see Chapter 2), are in bold in the table and discussed in the subsequent analysis.

SITE 1, SHREVEPORT, LA

Sorbent tubes were used to measure the approximate exposure to workers averaged over the time spent at Site 1. Instantaneous air samples were taken and measured for styrene using canisters and a portable HAPSITE Gas Chromatograph/Mass Spectrometry device. The time-weighted averages and instantaneous air samples are shown in *Tables 15* and *16*, respectively.

Table 15: Site 1 Time-weighted Average Exposure to Styrene

Sample Description	Sampling Time (Hours)	Styrene (ppm)
Worker 1	4.9	4.3701
Worker 2	4.9	2.1147 E
Blank	4.9	0.0133
Blank	4.9	0.0097

Table 16: Site 1 Instantaneous Styrene Measurements

Sample Description	Styrene (ppm)
Blank	0.01
At liner truck (while liner was fed into pipe)	2.31 E
Stack emission plume (170 Deg. F.)	1.21 E
Blank	0
Downwind 85 feet during curing	0.0223
Crosswind 20 feet west during curing	0
Crosswind 20 feet east during curing	0.0103

E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in lab narrative.

No measurements from Site 1 in Shreveport, LA exceeded regulatory guidelines and are, in fact, well within the bounds of safe exposure levels. Styrene emissions do appear to dissipate as distance from the emissions source increases.

SITE 2, SHREVEPORT, LA

Sorbent tubes were used to measure the approximate exposure to workers averaged over the time spent at Site 2. Instantaneous air samples were taken and measured for styrene using canisters and a portable HAPSITE Gas Chromatograph/Mass Spectrometry device. The time-weighted averages and instantaneous results are shown in *Tables 17* and *18*, respectively.

Table 17: Site 2 Time-weighted Average Exposure to Styrene

Sample Description	Sampling Time (Hours)	Styrene (ppm)
Worker 1	3.42	8.8208 E
Blank	3.42	0.0295
Blank	3.42	0.068

E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in lab narrative.

Table 18: Site 2 Instantaneous Styrene Measurements

Sample Description	Styrene (ppm)	Relevant Guideline
Blank	0.0238	N/A
Opening of truck	**176 E**	If duration approaches 10 mins – AEGL 1 (20 ppm): EPA If duration approaches 15 mins - STEL-TWA (100 ppm): NIOSH If duration approaches 30 mins - AEGL 2 (160 ppm): EPA
Stack emission plume (196 Deg. F.)	**107 E**	If duration approaches 10 mins - AEGL 1 (20 ppm): EPA If duration approaches 10 mins - STEL-TWA (100 ppm): NIOSH
Blank	0	N/A
Next to exhaust during cure	**24.2***	If duration approaches 5 mins - AEGL 1 (20 ppm): EPA
Downwind during cooling 75 ft	0	

E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in lab narrative.
* Hapsite equipment detector saturated. This value represent minimum concentration.

The time-weighed worker exposures fall within the recommended safe levels. Some of the instantaneous measurements have concentrations that could exceed recommended levels if the durations noted are met. The measurement taken at the opening of the liner transport truck exceeds NIOSH STEL exposure limits if the indicated exposure duration of 15 minutes is met. If the duration of the 176 ppm measurement taken at the opening of the truck was longer than 10 minutes, the concentration would also exceed the EPA AEGL-1 boundary. If the exposure duration was 30 minutes then AEGL-2 limit would be exceeded at which long-lasting adverse health effects could occur. It is assumed, however, that styrene levels begin to dissipate at the moment the liner transport truck is opened and could drop to acceptable short-term exposure levels quickly after the door is opened. It is important to note that the styrene level measured here does not exceed OSHA's ceiling limit of 200 ppm. If the VOCs trapped in the cargo truck dissipate very quickly once the truck is opened, it would be expected that this exposure point would not present serious health risks. The 24.2 ppm measurement taken next to the exhaust during cure exceeds the AEGL-1 boundary. While no lasting adverse health effects should be experienced, short duration discomfort could be experienced by some individuals. This measurement is below all OSHA and NIOSH exposure limits. The 107 ppm canister measurement at the exhaust pipe could be indicative of

styrene concentration levels in and around the exhaust for the duration of the curing process. This measurement is below the EPA's AEGL-2 limit where lasting health impacts could occur. However, a styrene concentration of 107 ppm does exceed the suggested short-term exposure limit set by NIOSH.

SITE 3, SHREVEPORT, LA

Sorbent tubes were used to measure the approximate exposure to workers averaged over the time spent at Site 3. Sorbent tubes were attached to workers and to stationary points using stakes. The time-weighted averages and instantaneous air sample results are shown in *Tables 19* and *20*, respectively.

Table 19: Site 3 Time-weighted Average Exposure to Styrene

Sample Description	Sampling Time (Hours)	Styrene (ppm)
West cross wind 50 ft from manhole	10.5	0.0144
West cross wind 25 ft from manhole	10.5	0.004
East cross wind 50 ft from manhole	10.5	0.008
East cross wind 25 ft from manhole	10.5	0.0099
Downwind 10 ft from manhole	10.5	1.6809 E
Worker 1	10.5	0.0268
Worker 2	10.5	0.2008 E

E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in lab narrative.

Table 20: Site 3 Instantaneous Styrene Measurements

Sample Description	Styrene (ppm)	Relevant Guideline
Downwind 60 ft during curing	0.0156	N/A
Downwind 6 ft from manhole during curing	**36.1 E**	If duration approaches 10 mins - AEGL 1 (20 ppm): EPA
Inside abandoned house	0.00420	N/A
Opening of truck	**116 E**	If duration approaches 10 mins - AEGL 1: EPA If duration approaches 15 mins - STEL-TWA: NIOSH
Blank 2400 Jewel and Stonewall	0.0103	N/A
Exhaust emissions at max temperature	0.0512	N/A

E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in lab narrative.

No time-weighted worker exposure measurements exceeded the workday exposure thresholds. However, two instantaneous measurements warrant analysis. The styrene concentration of 116 ppm measured at the liner transport truck shortly after opening the truck cargo door exceeds NIOSH guideline for short-term exposures. It also exceeds the AEGL-1 guideline for a duration of 10 minutes. As noted before, if this concentration dissipates quickly once the cargo door is opened, the elevated styrene levels

could fall within the acceptable limits. The measurement of 36.1 ppm taken 6 feet from the termination manhole during curing does not exceed the threshold for potential lasting adverse health effects or impaired abilities, but it does exceed AEGL-1 levels for a 10-minute exposure duration which could cause short-term discomfort. This measurement is below all OSHA and NIOSH exposure limit thresholds.

SITE 3A AND SITE 3B, SHREVEPORT, LA

Data was collected by Hapsite mass spectrometer at two CIPP installation sites in Shreveport, LA at the intersections of Texas Street and Mansfield Street and at Glen Oak Place and Samford Avenue. That data is summarized in *Tables 21* and *22* below.

Table 21: Sites 3A Hapsite Styrene Measurements

Sample Description	Styrene (ppm)
Before installation at termination manhole	0
Before installation at entry manhole	0
Before installation 20 ft upwind of liner truck	0
Downwind 10 ft during feeding of liner	18.3*
Before curing in residential bathroom	0.0101
Downwind 10 ft during curing	18.1*
Downwind 100 ft during curing	0.0184
Crosswind 100 ft during curing	0
Crosswind 50 feet after curing	0
Downwind 100 feet after curing	0
After lateral opening on porch of residential home	0

* Hapsite equipment detector saturated. This value represent minimum concentration.

Table 22: Site 3B Hapsite Styrene Measurements

Sample Description	Styrene (ppm)
Blank – background upwind 100 ft of entry manhole	0
Before installation at entry manhole	0
Crosswind 10 ft during installation of liner	0.0546
Downwind 10 ft during installation of liner	2.06
Inside commercial bathroom before curing	0.00278
Downwind 20 ft during curing	18.0*
Crosswind 10 ft during curing	0.0202
Crosswind 10 ft after curing	0.00514
Downwind 100 ft after curing	0
Inside commercial bathroom after curing	0
Clean out drain (dry trap) after curing	0.00232

* Hapsite equipment detector saturated. This value represent minimum concentration.

No measurements from Sites 3A and 3B in Shreveport, LA exceeded regulatory guidelines. It should be noted though that concentrations around 18 ppm are close to AEGL-1 guidelines for exposures approaching 10 minutes. Since the Hapsite detector was saturated and these values represent minimum values it is conceivable that the actual concentrations, if higher, could exceed AEGL-1 and cause minor discomfort.

SITE 4 AND 4A, ST. LOUIS, MO

Sorbent tubes were used to measure the approximate exposure to workers averaged over the time spent at Site 4. In this case, the total time for the installation at Site 4 was 6.9 hours. The time-weighted averages and instantaneous air samples at Site 4 (canisters and Hapsite measurements) are shown in

Tables 23 and *24*, respectively. Additional Hapsite measurements were taken at another lining operation for a pipe run perpendicular to the one at Site 4. Measurements taken at the additional site (Site 4A) are shown in *Table 25*.

Table 23: Site 4 Time-weighted Average Exposure to Styrene

Sample Description	Sampling Time (Hours)	Styrene (ppm)
Worker 1	6.9	2.6607 E
Worker 1	6.9	2.4196 E
Worker 2	6.9	1.8555 E
Blank	6.9	0.0331

E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in lab narrative.

Table 24: Site 4 Instantaneous Styrene Measurements

Sample Description	Styrene (ppm)	Relevant Guideline
Opening of liner truck	**157 E**	If duration approaches 10 mins - AEGL 1 (20 ppm): EPA If duration approaches 15 mins - STEL-TWA (100 ppm): NIOSH If duration approach 1 hr – AEGL 2 (130 ppm): EPA
Near stack during initial curing	0.187	N/A
Emissions from stack during curing	8.45 E	N/A
First opening of truck	**34.1***	If duration approaches 10 mins - AEGL 1 (20 ppm): EPA
Feeding of liner	2.90	N/A
Before curing at termination manhole	0.333	N/A
During curing at termination manhole	0.276	N/A
Termination manhole at the end of cure	0.0578	N/A
Downwind 20 ft of termination manhole during cure	0.0562	N/A

E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in lab narrative.
* Hapsite equipment detector saturated. This value represents the minimum concentration.

At Site 4, no time-weighted worker exposure measurements exceeded the workday exposure thresholds. However, the instantaneous measurement of 157 ppm taken at the liner transport truck shortly after opening the truck cargo door exceeds regulatory guidelines for short term exposure set by the EPA and NIOSH. If exposure times approach 10 minutes and 15 minutes, EPA AEGL-1 and NIOSH STEL guidelines are met, respectively. For exposure times approaching 1 hour the AEGL-2 guideline is met. The Hapsite device also recorded styrene levels above the AEGL-1, 10-minute exposure guideline at the first opening of the liner transport truck. However, it should be noted that it would be expected the liner truck VOCs

after opening would dissipate relatively quickly, so meeting some of the longer exposure times is unlikely. At Site 4A, the Hapsite recorded styrene levels near the AEGL-1 limit of 20 ppm at the termination manhole at the beginning of the curing process on Site 4A. These styrene levels may produce temporary discomfort but do not approach levels associated with lasting health effects.

Table 25: Site 4A Instantaneous Styrene Measurements

Sample Description	Styrene (ppm)
Second opening of the truck	16.84*
Feeding of liner	0.0126
Beginning of cure at termination manhole – part 2	19.50*
Downwind 20 ft of termination manhole at end of cure	0.5954
Downwind 100 ft of termination manhole at end of cure	0.0116
Downwind 100 ft of termination manhole at end of cure	0.0088

* Hapsite equipment detector saturated. This value represent minimum concentration.

SITE 5, ST. LOUIS, MO

Sorbent tubes were used to measure the approximate exposure to workers averaged over the time spent at Site 5. Sorbent tubes were attached to workers and to stationary locations near the inlet and outlet manholes. Instantaneous air samples were taken using canisters and the Hapsite unit. The time-weighted averages and instantaneous results are shown in *Tables 26* and *27*, respectively.

Table 26: Site 5 Time-weighted Average Exposure to Styrene

Sample Description	Sampling Time (Hours)	Styrene (ppm)
Downwind 20 ft of inlet	8.1	0.00776 E
Downwind 20 ft of inlet	8.1	0.0407 E
Upwind 20 ft of outlet	8.1	< 0.00000300
Upwind 20 ft of outlet	8.1	0.0000120
Worker 1	8.8	16.3 E
Worker 1	8.8	16.9 E
Worker 2	7.8	0.493
Worker 2	7.8	0.930
Blank	7.8	0.0187

E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in lab narrative.

Table 27: Site 5 Instantaneous Styrene Measurements

Sample Description	Styrene (ppm)	Relevant Guideline
Opening of truck	**95.5 E**	If duration approaches 10 mins - AEGL 1 (20 ppm): EPA
Emissions from stack during initial curing	**111 E**	If duration approaches 10 mins - AEGL 1 (20 ppm): EPA If duration approaches 15 mins – STEL-TWA (100 ppm): NIOSH
Emissions from stack during curing	**293 E**	If duration approaches 10 mins - AEGL 2 (230 ppm): EPA If duration approaches 15 mins – STEL-TWA (100 ppm): NIOSH If duration exceeds 5 mins –PEL-C (200 ppm): OSHA
Insertion of liner	**25.5***	If duration approaches 10 mins - AEGL 1 (20 ppm): EPA
Termination manhole at end of inversion	0.0271	N/A
Termination manhole before curing	1.71	N/A
Downwind 80 ft during curing	0.0413	N/A
Near termination manhole during curing	**25.3***	If duration approaches 10 mins - AEGL 1 (20 ppm): EPA
Downwind 22 ft of termination manhole during curing	1.22	N/A
Near termination manhole during curing	**23.9***	If duration approaches 10 mins - AEGL 1 (20 ppm): EPA
Insertion manhole during curing	0.0115	N/A
Near termination manhole during curing	0.547	N/A
Downwind 50 ft of termination manhole during curing	0.353	N/A
Near termination manhole during curing	3.40	N/A
Inside nearby building during curing	0.00880	N/A

E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in lab narrative.
* Hapsite equipment detector saturated. This value represents the minimum concentration.

The exposure of Worker 1 to styrene averaged over the 8 hour project was at a level of 16 ppm. That is much higher than any worker monitored in this study. However, 16 ppm is still below the AEGL-1 threshold of 20 ppm at duration approaching 8-hours. This concentration is also below the NIOSH and OSHA time-weighted average guidelines. The worker could have conceivably been exposed to concentrations that exceeded short-term exposure guidelines for specific tasks that were completed.

The Hapsite device recorded levels at the termination manhole of 25.3 ppm and 23.9 ppm. These levels could produce discomfort but not lasting health effects. The Hapsite also recorded a reading of 25.5 ppm at the inversion manhole during liner inversion. Again, this level is noteworthy as it does meet the AEGL-1, 10-minute guideline. However, at 25.5 ppm this concentration does not exceed NIOSH and OSHA guidelines at which lasting health effects occur. At the opening of the truck a concentration of 95.542 ppm was measured and like other sites, identifies the initial opening of the liner transport truck as one of the most consistently higher styrene exposure points. The canister samples taken at or very near the exhaust

stack captured air concentrations of 111 ppm and 293 ppm during curing, respectively. The 111 ppm measurement has the potential to exceed NIOSH guidelines if the duration time is met, while the 293 ppm concentration could potentially exceed OSHA and NIOSH short-term exposure guidelines if exposure durations approach 5 and 10 minutes, respectively. The higher 293 ppm measurement also exceeds EPA's AEGL-2, 10-minute threshold which identifies the levels at which irreversible or long-lasting damage can be done to someone's health.

SITE 6, AURORA, CO

Sorbent tubes were used to measure the approximate exposure to workers averaged over the time spent at Site 6. Sorbent tubes were attached to workers and to stationary locations using stakes. At this site, duplicate sorbent tubes were collected and analyzed by two different labs, Prism Lab and Enthalpy Lab. In *Table 28*, duplicate styrene concentration results from two separate labs are shown separated by a comma. Instantaneous air samples were taken using canisters and the Hapsite unit. Some duplicate canisters were also collected. The results of instantaneous measurements are shown in *Table 29*.

Table 28: Site 6 Time-weighted Average Exposure to Styrene

Sample Description	Sampling Time (Hours)	Styrene (ppm)
Worker 1	8.9	0.0737, 1.60
Worker 2 (one sample lost on site)	8.9	0.429, n/a
Worker 3	8.8	1.45 E, 0.0440
Blank	8.8	<0.0122, <0.00120
Crosswind 10 ft from inversion manhole	7.8	0.545, 0.150
Upwind 10 ft from inversion manhole	7.8	0.440, 0.0230
Downwind 10 ft from exhaust manhole	7.8	0.592 E, 0.058
Downwind 25 ft from exhaust manhole	7.8	0.0599, 0.013
Crosswind 25 ft from exhaust manhole	7.8	<0.0137, 0.022
Upwind 10 ft from exhaust manhole	7.8	0.717, 0.260

E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in lab narrative.

All time-weighted average exposures for individual workers and for the stationary sorbent tubes are well within the exposure guideline limits.

Table 29: Site 6 Instantaneous Styrene Measurements

Sample Description	Styrene (ppm)	Relevant Guideline
Stack emission plume during curing	<0.00157	N/A
Stack emission plume during curing	**25.4**	If duration approaches 10 mins - AEGL 1 (20 ppm): EPA
Blank	<0.00167	N/A
In termination manhole during cutting	8.74 E, 1.31	N/A
Opening of liner truck	1820 E, **316**	If duration approaches 10 mins - AEGL 2 (230 ppm): EPA If duration approaches 15 mins - STEL-TWA (100 ppm): NIOSH If duration exceeds 5 mins – PEL-C (200 ppm): OSHA
Upwind blank before curing	0	N/A
Opening of liner truck	**29.3***	If duration approaches 10 mins - AEGL 1 (20 ppm): EPA
Feeding of liner – measurement 1	7.02*	N/A
Feeding of liner – measurement 2	6.80*	N/A
At termination manhole during curing	0.0650	N/A
At termination manhole during curing	**20.5***	If duration approaches 10 mins - AEGL 1 (20 ppm): EPA
Crosswind 20 ft from termination manhole during curing	1.94	N/A
Downwind 20 ft of termination manhole during curing	6.29*	N/A
Crosswind 50 ft from termination manhole during curing	0.0450	N/A
Downwind 50 ft of termination manhole during curing	0.173	N/A
At termination manhole (downwind side) during curing	8.89*	N/A
At termination manhole (downwind side) during curing	4.06	N/A
Downwind 20 ft of termination manhole during curing	0.638	N/A

E Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in lab narrative.
* Hapsite equipment detector saturated. This value represent minimum concentration.

The canister data collected at the initial opening of the transport truck are extremely high. The measurements at the cargo truck of 1820 ppm and 316 ppm exceed NIOSH and OSHA guidelines. Both concentrations also exceed AEGL-2 thresholds for an exposure duration approaching 10 minutes at which point lasting serious health effects can be experienced. The higher 1,820 ppm measurement approaches

some of the guidelines with more serious health impacts (e.g. AEGL-3) and exceeds OSHA's acceptable peak of 600 ppm and NIOSH's IDLH limit (700 ppm); however, there is some concern with the accuracy of this measurement. The 1,820 ppm concentration far exceeds all of the concentrations measured at the truck opening for all sites. Also, the 316 ppm duplicate canister which was run at a different lab does not line up with the 1,820 ppm canister. Since the value is estimated in the lab, it is possible it may contain some significant error.

For the Hapsite data recorded, some readings are above the AEGL-1 level. It is important to note that the Hapsite measurement taken at the opening of the liner transport truck is only 29.3 ppm. This does not agree with the levels calculated based upon the canister samples. This is, likely, due to that fact that the Hapsite detector became saturated during the measurement. The Hapsite measurements of styrene levels near the termination manhole exceed EPA's AEGL-1, 10-minute guideline. These measurements also are qualified as minimum concentrations since the Hapsite detector was saturated during the measurement process. The canister taken in the exhaust plume was 25.4. This measurement is within NIOSH and OSHA guideline bounds but is high enough to produce minor eye and respiratory irritation in some, more susceptible, people.

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CHAPTER 6: RECOMMENDATIONS

6.1. BEST PRACTICE RECOMMENDATIONS

Based on the data collected in this study, it is recommended that PPE be worn at the time of the initial opening of the liner transport truck door or storage unit by those entering the truck. It is likely that the air quality will improve once the door is open, but active air monitoring for VOCs is recommended to ensure a safe work environment in the transport truck or any storage unit. It is also recommended that active air monitoring be performed when entering manholes, which is an industry practice already. Data indicates distances within 10 feet could be a cause for concern. To provide an extra factor of safety it is recommended that a perimeter of 15-ft be implemented around exhaust manholes and emission stacks during curing. This is a conservative distance based on the data collected in this study. This perimeter could be entered for short amounts of time not exceeding 5 minutes. If this area must be entered for longer than 5 minutes, suitable PPE should be used. The emissions stacks should be a minimum of six feet in height to enhance the dispersion of emissions and lessen the likelihood of workers entering the perimeter from having to cross into the plume even when wearing PPE. Our team noted that for the taller stacks, when standing in upwind directions it was much easier to avoid the plume. With the horizontal stacks closer to the ground, it was very difficult to avoid emissions when approaching the stack. Workers would have to approach stacks periodically to adjust valves. The data in this study does not suggest additional PPE for the workers around steam cured CIPP emissions sites beyond the recommendations above and what is already standard practice. Standard practice typically includes eye and ear protection, gloves, steel toe boots, safety vests and hard hats.

6.2. RECOMMENDATIONS FOR FUTURE STUDIES

While this study represents an extensive collection of data beyond what previous studies have accomplished, there is still the potential for further data collection efforts. Future studies that focus on task-oriented worker exposure to emissions would be helpful in identifying certain tasks within the typical 8-hour shift window that could pose potential health risks. This could be accomplished through comparing health risk guidelines to measurements calculated by placing sorbent tubes on a worker at the beginning of a task and collecting those sorbent tubes at the end of the task, thereby targeting specific installation tasks at shorter time-weighted average exposures. Additional study is also needed to understand the dispersion of styrene from the liner truck after opening. Additional measurements taken at the liner transport truck over a 5-minute period after opening the cargo door would be useful in making any final definitive conclusions related to PPE or dissipation time. Also, factors such as the size and number of liners on the truck as well the duration each liner is on the truck could be evaluated. Modeling rogue emission concentrations was not part of the scope of this project, so work should be done to try and capture concentrations from rogue sources (see Section 3.1) and model them to further evaluate health risks associated with these emissions.

APPENDIX A: LABORATORY REPORTS

Note: The lab made an error in labelling some of the data results sheets. According to the field notes for Shreveport Sites 1-3, Canister 1076 (175.77ppm) and 1096 (107.45ppm) is the liner truck and emissions stack exhaust from Site 2 (Delaware St.), respectively.

Sites 1-3 (Shreveport, LA)

Laboratory Narrative

Supplement to Test Report GSL_181184:

The laboratory analysis report number GSL_181184 has been revised; TO-17 results are calculated correctly.

Accreditation:

LDEQ does not currently offer accreditation for TO-15 analysis of acetone, carbon disulfide, ethanol, ethyl acetate and isopropanol.

LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

TO-17 Sorbent Tubes:

TO-17 sorbent tube samples were thermally desorbed for analysis into 500ml deactivated glass vacuum bottles, and raw data from sample analyses represent the analyzed concentration present in the glass vacuum bottles. TO-17 final results are calculated based on the total mass of analyte, the total volume of air sampled in each tube, the total length of time each tube was open for sampling, and the uptake rate of the target analyte.

Respectfully,

James Haynes
Operations Manager

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_181184-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Gilbert Dr + Delaware St**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1116**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/13/2018 at 02:52 PM
QC Batch ID:	QC_09524	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone*	0.50	3.32	1.66	12.28	67-64-1
Benzene	0.50	3.32	1.66	< 1.66	71-43-2
1,3-Butadiene	0.50	3.32	1.66	< 1.66	106-99-0
Carbon disulfide*	0.50	3.32	1.66	< 1.66	75-15-0
Carbon tetrachloride	0.50	3.32	1.66	< 1.66	56-23-5
Chloroform	0.50	3.32	1.66	< 1.66	67-66-3
Cyclohexane	0.50	3.32	1.66	< 1.66	110-82-7
1,4-Dioxane	0.50	3.32	1.66	< 1.66	123-91-1
Ethanol*	0.50	3.32	1.66	< 1.66	64-17-5
Ethyl Acetate*	0.50	3.32	1.66	< 1.66	141-78-6
Ethylbenzene	0.50	3.32	1.66	< 1.66	100-41-4
Hexane**	0.50	3.32	1.66	< 1.66	110-54-3
Isopropanol*	0.50	3.32	1.66	< 1.66	67-63-0
MEK	0.50	3.32	1.66	< 1.66	78-93-3
Methylene Chloride	0.50	3.32	1.66	< 1.66	75-09-2
Styrene	0.50	33.20	16.60	1,211.14 E	100-42-5
Toluene	0.50	3.32	1.66	< 1.66	108-88-3
1,2,4-Trimethylbenzene	0.50	3.32	1.66	< 1.66	95-63-6
1,3,5-Trimethylbenzene	0.50	3.32	1.66	< 1.66	108-67-8
m,p-Xylenes	1.00	3.32	3.32	< 3.32	108-38-3, 106-42-3
o-Xylene	0.50	3.32	1.66	< 1.66	95-47-6

*LDEQ does not currently offer accreditation for TO-15 analysis of acetone, carbon disulfide, ethanol, ethyl acetate and isopropanol.
**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181184-001**		
Analytical SOP:	GSL_TM007	**Source Sampled:**	**Gilbert Dr + Delaware St**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1116**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/13/2018 at 02:52 PM
QC Batch ID:	QC_09524	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.10	3.32	0.33	ND	76-13-1
2-methyl-2-butanol*	0.10	3.32	0.33	ND	75-85-4
2-methylbutane*	0.10	3.32	0.33	ND	78-78-4
2-methylnaphthalene*	0.10	3.32	0.33	ND	91-57-6
Benzaldehyde*	0.10	3.32	0.33	ND	100-52-7
Benzoic acid*	0.10	3.32	0.33	ND	65-85-0
Ethylene glycol*	0.10	3.32	0.33	ND	107-21-1
Isopropylbenzene*	0.10	3.32	0.33	ND	98-82-8
Naphthalene*	0.10	3.32	0.33	ND	91-20-3
n-propyl benzene*	0.10	3.32	0.33	ND	103-65-1
p-isopropyltoluene*	0.10	3.32	0.33	ND	99-87-6
Propionitrile*	0.10	3.32	0.33	ND	107-12-0
Trans-1,3-dichloropropene*	0.10	3.32	0.33	ND	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_181184-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Gilbert Dr + Delaware St**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**6306**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/13/2018 at 03:47 PM
QC Batch ID:	QC_09524	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone*	0.50	3.28	1.64	19.58	67-64-1
Benzene	0.50	3.28	1.64	< 1.64	71-43-2
1,3-Butadiene	0.50	3.28	1.64	< 1.64	106-99-0
Carbon disulfide*	0.50	3.28	1.64	< 1.64	75-15-0
Carbon tetrachloride	0.50	3.28	1.64	< 1.64	56-23-5
Chloroform	0.50	3.28	1.64	< 1.64	67-66-3
Cyclohexane	0.50	3.28	1.64	< 1.64	110-82-7
1,4-Dioxane	0.50	3.28	1.64	< 1.64	123-91-1
Ethanol*	0.50	3.28	1.64	< 1.64	64-17-5
Ethyl Acetate*	0.50	3.28	1.64	< 1.64	141-78-6
Ethylbenzene	0.50	3.28	1.64	< 1.64	100-41-4
Hexane**	0.50	3.28	1.64	< 1.64	110-54-3
Isopropanol*	0.50	3.28	1.64	< 1.64	67-63-0
MEK	0.50	3.28	1.64	< 1.64	78-93-3
Methylene Chloride	0.50	3.28	1.64	< 1.64	75-09-2
Styrene	0.50	32.80	16.40	2,312.07 E	100-42-5
Toluene	0.50	3.28	1.64	< 1.64	108-88-3
1,2,4-Trimethylbenzene	0.50	3.28	1.64	< 1.64	95-63-6
1,3,5-Trimethylbenzene	0.50	3.28	1.64	< 1.64	108-67-8
m,p-Xylenes	1.00	3.28	3.28	< 3.28	108-38-3, 106-42-3
o-Xylene	0.50	3.28	1.64	< 1.64	95-47-6

*LDEQ does not currently offer accreditation for TO-15 analysis of acetone, carbon disulfide, ethanol, ethyl acetate and isopropanol.
**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181184-002**		
Analytical SOP:	GSL_TM007	**Source Sampled:**	**Gilbert Dr + Delaware St**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**6306**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/13/2018 at 03:47 PM
QC Batch ID:	QC_09524	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.10	3.28	0.33	ND	76-13-1
2-methyl-2-butanol*	0.10	3.28	0.33	ND	75-85-4
2-methylbutane*	0.10	3.28	0.33	ND	78-78-4
2-methylnaphthalene*	0.10	3.28	0.33	ND	91-57-6
Benzaldehyde*	0.10	3.28	0.33	ND	100-52-7
Benzoic acid*	0.10	3.28	0.33	ND	65-85-0
Ethylene glycol*	0.10	3.28	0.33	ND	107-21-1
Isopropylbenzene*	0.10	3.28	0.33	ND	98-82-8
Naphthalene*	0.10	3.28	0.33	ND	91-20-3
n-propyl benzene*	0.10	3.28	0.33	ND	103-65-1
p-isopropyltoluene*	0.10	3.28	0.33	ND	99-87-6
Propionitrile*	0.10	3.28	0.33	ND	107-12-0
Trans-1,3-dichloropropene*	0.10	3.28	0.33	ND	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_181184-003**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Gilbert Dr + Delaware St**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118226**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 03:40 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/18/2018 at 02:45 PM
QC Batch ID:	QC_09540	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone**	0.0131	2.00	0.0263	0.4791	0.1951	67-64-1
Benzene**	0.0132	2.00	0.0264	0.0406	0.0123	71-43-2
1,3-Butadiene**	0.0100	2.00	0.0201	< 0.0201	< 0.0088	106-99-0
Carbon Disulfide**	0.0172	2.00	0.0344	< 0.0344	< 0.0107	75-15-0
Carbon tetrachloride**	0.0341	2.00	0.0682	< 0.0682	< 0.0105	56-23-5
Chloroform**	0.0270	2.00	0.0540	< 0.0540	< 0.0107	67-66-3
Cyclohexane**	0.0190	2.00	0.0381	< 0.0381	< 0.0107	110-82-7
1,4-Dioxane**	0.0199	2.00	0.0399	< 0.0399	< 0.0107	123-91-1
Ethanol**	0.0104	2.00	0.0208	< 0.0208	< 0.0107	64-17-5
Ethyl acetate**	0.0199	2.00	0.0399	< 0.0399	< 0.0107	141-78-6
Ethylbenzene**	0.0261	2.00	0.0522	< 0.0522	< 0.0116	100-41-4
Hexane**	0.0195	2.00	0.0390	< 0.0390	< 0.0107	110-54-3
Isopropanol**	0.0136	2.00	0.0272	< 0.0272	< 0.0107	67-63-0
MEK**	0.0163	2.00	0.0326	< 0.0326	< 0.0107	78-93-3
Methylene chloride**	0.0192	2.00	0.0384	< 0.0384	< 0.0107	75-09-2
Styrene**	0.0236	20.00	0.4710	38.8522 E	8.8208 E	100-42-5
Toluene**	0.0200	2.00	0.0401	< 0.0401	< 0.0103	108-88-3
1,2,4-Trimethylbenzene**	0.0272	2.00	0.0544	< 0.0544	< 0.0107	95-63-6
1,3,5-Trimethylbenzene**	0.0331	2.00	0.0663	< 0.0663	< 0.0130	108-67-8
m,p-Xylenes**	0.0522	2.00	0.1044	< 0.1044	< 0.0232	108-38-3, 106-42-3
o-Xylene**	0.0261	2.00	0.0522	< 0.0522	< 0.0116	95-47-6

**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181184-003**		
Analytical SOP:	GSL_TM007	**Source Sampled:**	**Gilbert Dr + Delaware St**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118226**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 03:40 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/18/2018 at 02:45 PM
QC Batch ID:	QC_09540	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.0461	2.00	0.0921	< 0.0921	< 0.0116	76-13-1
2-methyl-2-butanol*	0.0199	2.00	0.0399	< 0.0399	< 0.0107	75-85-4
2-methylbutane*	0.0163	2.00	0.0326	< 0.0326	< 0.0107	78-78-4
2-methylnaphthalene*	0.0322	2.00	0.0643	< 0.0643	< 0.0107	91-57-6
Benzaldehyde*	0.0240	2.00	0.0480	< 0.0480	< 0.0107	100-52-7
Benzoic acid*	0.0276	2.00	0.0552	< 0.0552	< 0.0107	65-85-0
Ethylene glycol*	0.0140	2.00	0.0281	< 0.0281	< 0.0107	107-21-1
Isopropylbenzene*	0.0272	2.00	0.0544	< 0.0544	< 0.0107	98-82-8
Naphthalene*	0.0290	2.00	0.0580	< 0.0580	< 0.0107	91-20-3
n-propyl benzene*	0.0272	2.00	0.0544	< 0.0544	< 0.0107	103-65-1
p-isopropyltoluene*	0.0304	2.00	0.0607	< 0.0607	< 0.0107	99-87-6
Propionitrile*	0.0125	2.00	0.0249	< 0.0249	< 0.0107	107-12-0
Trans-1,3-dichloropropene*	0.0251	2.00	0.0502	< 0.0502	< 0.0107	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_181184-004**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Gilbert Dr + Delaware St**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi119219**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 03:40 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/18/2018 at 03:41 PM
QC Batch ID:	QC_09540	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone**	0.0131	2.00	0.0263	0.2007	0.0817	67-64-1
Benzene**	0.0132	2.00	0.0264	< 0.0264	< 0.0080	71-43-2
1,3-Butadiene**	0.0100	2.00	0.0201	< 0.0201	< 0.0088	106-99-0
Carbon Disulfide**	0.0172	2.00	0.0344	< 0.0344	< 0.0107	75-15-0
Carbon tetrachloride**	0.0341	2.00	0.0682	< 0.0682	< 0.0105	56-23-5
Chloroform**	0.0270	2.00	0.0540	< 0.0540	< 0.0107	67-66-3
Cyclohexane**	0.0190	2.00	0.0381	< 0.0381	< 0.0107	110-82-7
1,4-Dioxane**	0.0199	2.00	0.0399	< 0.0399	< 0.0107	123-91-1
Ethanol**	0.0104	2.00	0.0208	< 0.0208	< 0.0107	64-17-5
Ethyl acetate**	0.0199	2.00	0.0399	< 0.0399	< 0.0107	141-78-6
Ethylbenzene**	0.0261	2.00	0.0522	< 0.0522	< 0.0116	100-41-4
Hexane**	0.0195	2.00	0.0390	< 0.0390	< 0.0107	110-54-3
Isopropanol**	0.0136	2.00	0.0272	< 0.0272	< 0.0107	67-63-0
MEK**	0.0163	2.00	0.0326	< 0.0326	< 0.0107	78-93-3
Methylene chloride**	0.0192	2.00	0.0384	< 0.0384	< 0.0107	75-09-2
Styrene**	0.0236	2.00	0.0471	0.2996	0.0680	100-42-5
Toluene**	0.0200	2.00	0.0401	< 0.0401	< 0.0103	108-88-3
1,2,4-Trimethylbenzene**	0.0272	2.00	0.0544	< 0.0544	< 0.0107	95-63-6
1,3,5-Trimethylbenzene**	0.0331	2.00	0.0663	< 0.0663	< 0.0130	108-67-8
m,p-Xylenes**	0.0522	2.00	0.1044	< 0.1044	< 0.0232	108-38-3, 106-42-3
o-Xylene**	0.0261	2.00	0.0522	< 0.0522	< 0.0116	95-47-6

**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181184-004**		
Analytical SOP:	GSL_TM007	**Source Sampled:**	**Gilbert Dr + Delaware St**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi119219**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 03:40 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/18/2018 at 03:41 PM
QC Batch ID:	QC_09540	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.0461	2.00	0.0921	< 0.0921	< 0.0116	76-13-1
2-methyl-2-butanol*	0.0199	2.00	0.0399	< 0.0399	< 0.0107	75-85-4
2-methylbutane*	0.0163	2.00	0.0326	< 0.0326	< 0.0107	78-78-4
2-methylnaphthalene*	0.0322	2.00	0.0643	< 0.0643	< 0.0107	91-57-6
Benzaldehyde*	0.0240	2.00	0.0480	< 0.0480	< 0.0107	100-52-7
Benzoic acid*	0.0276	2.00	0.0552	< 0.0552	< 0.0107	65-85-0
Ethylene glycol*	0.0140	2.00	0.0281	< 0.0281	< 0.0107	107-21-1
Isopropylbenzene*	0.0272	2.00	0.0544	< 0.0544	< 0.0107	98-82-8
Naphthalene*	0.0290	2.00	0.0580	< 0.0580	< 0.0107	91-20-3
n-propyl benzene*	0.0272	2.00	0.0544	< 0.0544	< 0.0107	103-65-1
p-isopropyltoluene*	0.0304	2.00	0.0607	< 0.0607	< 0.0107	99-87-6
Propionitrile*	0.0125	2.00	0.0249	< 0.0249	< 0.0107	107-12-0
Trans-1,3-dichloropropene*	0.0251	2.00	0.0502	< 0.0502	< 0.0107	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_181184-005**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Gilbert Dr + Delaware St**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118236**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 03:40 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/18/2018 at 04:36 PM
QC Batch ID:	QC_09540	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone**	0.0131	2.00	0.0263	0.1623	0.0661	67-64-1
Benzene**	0.0132	2.00	0.0264	< 0.0264	< 0.0080	71-43-2
1,3-Butadiene**	0.0100	2.00	0.0201	< 0.0201	< 0.0088	106-99-0
Carbon Disulfide**	0.0172	2.00	0.0344	< 0.0344	< 0.0107	75-15-0
Carbon tetrachloride**	0.0341	2.00	0.0682	< 0.0682	< 0.0105	56-23-5
Chloroform**	0.0270	2.00	0.0540	< 0.0540	< 0.0107	67-66-3
Cyclohexane**	0.0190	2.00	0.0381	< 0.0381	< 0.0107	110-82-7
1,4-Dioxane**	0.0199	2.00	0.0399	< 0.0399	< 0.0107	123-91-1
Ethanol**	0.0104	2.00	0.0208	< 0.0208	< 0.0107	64-17-5
Ethyl acetate**	0.0199	2.00	0.0399	< 0.0399	< 0.0107	141-78-6
Ethylbenzene**	0.0261	2.00	0.0522	< 0.0522	< 0.0116	100-41-4
Hexane**	0.0195	2.00	0.0390	< 0.0390	< 0.0107	110-54-3
Isopropanol**	0.0136	2.00	0.0272	< 0.0272	< 0.0107	67-63-0
MEK**	0.0163	2.00	0.0326	< 0.0326	< 0.0107	78-93-3
Methylene chloride**	0.0192	2.00	0.0384	< 0.0384	< 0.0107	75-09-2
Styrene**	0.0236	2.00	0.0471	0.1300	0.0295	100-42-5
Toluene**	0.0200	2.00	0.0401	< 0.0401	< 0.0103	108-88-3
1,2,4-Trimethylbenzene**	0.0272	2.00	0.0544	< 0.0544	< 0.0107	95-63-6
1,3,5-Trimethylbenzene**	0.0331	2.00	0.0663	< 0.0663	< 0.0130	108-67-8
m,p-Xylenes**	0.0522	2.00	0.1044	< 0.1044	< 0.0232	108-38-3, 106-42-3
o-Xylene**	0.0261	2.00	0.0522	< 0.0522	< 0.0116	95-47-6

**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181184-005**		
Analytical SOP:	GSL_TM007	**Source Sampled:**	**Gilbert Dr + Delaware St**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118236**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 03:40 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/18/2018 at 04:36 PM
QC Batch ID:	QC_09540	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.0461	2.00	0.0921	< 0.0921	< 0.0116	76-13-1
2-methyl-2-butanol*	0.0199	2.00	0.0399	< 0.0399	< 0.0107	75-85-4
2-methylbutane*	0.0163	2.00	0.0326	< 0.0326	< 0.0107	78-78-4
2-methylnaphthalene*	0.0322	2.00	0.0643	< 0.0643	< 0.0107	91-57-6
Benzaldehyde*	0.0240	2.00	0.0480	< 0.0480	< 0.0107	100-52-7
Benzoic acid*	0.0276	2.00	0.0552	< 0.0552	< 0.0107	65-85-0
Ethylene glycol*	0.0140	2.00	0.0281	< 0.0281	< 0.0107	107-21-1
Isopropylbenzene*	0.0272	2.00	0.0544	< 0.0544	< 0.0107	98-82-8
Naphthalene*	0.0290	2.00	0.0580	< 0.0580	< 0.0107	91-20-3
n-propyl benzene*	0.0272	2.00	0.0544	< 0.0544	< 0.0107	103-65-1
p-isopropyltoluene*	0.0304	2.00	0.0607	< 0.0607	< 0.0107	99-87-6
Propionitrile*	0.0125	2.00	0.0249	< 0.0249	< 0.0107	107-12-0
Trans-1,3-dichloropropene*	0.0251	2.00	0.0502	< 0.0502	< 0.0107	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1081**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/14/2018 at 05:40 PM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone*	0.50	4.36	2.18	45.04	67-64-1
Benzene	0.50	4.36	2.18	4.84	71-43-2
1,3-Butadiene	0.50	4.36	2.18	< 2.18	106-99-0
Carbon disulfide*	0.50	4.36	2.18	< 2.18	75-15-0
Carbon tetrachloride	0.50	4.36	2.18	< 2.18	56-23-5
Chloroform	0.50	4.36	2.18	< 2.18	67-66-3
Cyclohexane	0.50	4.36	2.18	< 2.18	110-82-7
1,4-Dioxane	0.50	4.36	2.18	< 2.18	123-91-1
Ethanol*	0.50	4.36	2.18	< 2.18	64-17-5
Ethyl Acetate*	0.50	4.36	2.18	< 2.18	141-78-6
Ethylbenzene	0.50	4.36	2.18	3.84	100-41-4
Hexane**	0.50	4.36	2.18	2.31	110-54-3
Isopropanol*	0.50	4.36	2.18	< 2.18	67-63-0
MEK	0.50	4.36	2.18	< 2.18	78-93-3
Methylene Chloride	0.50	4.36	2.18	2.35	75-09-2
Styrene	0.50	43.60	21.80	36,122.60 E	100-42-5
Toluene	0.50	4.36	2.18	5.41	108-88-3
1,2,4-Trimethylbenzene	0.50	4.36	2.18	2.44	95-63-6
1,3,5-Trimethylbenzene	0.50	4.36	2.18	< 2.18	108-67-8
m,p-Xylenes	1.00	4.36	4.36	< 4.36	108-38-3, 106-42-3
o-Xylene	0.50	4.36	2.18	< 2.18	95-47-6

*LDEQ does not currently offer accreditation for TO-15 analysis of acetone, carbon disulfide, ethanol, ethyl acetate and isopropanol.
**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1081**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/14/2018 at 05:40 PM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.10	4.36	0.44	ND	76-13-1
2-methyl-2-butanol*	0.10	4.36	0.44	ND	75-85-4
2-methylbutane*	0.10	4.36	0.44	ND	78-78-4
2-methylnaphthalene*	0.10	4.36	0.44	ND	91-57-6
Benzaldehyde*	0.10	4.36	0.44	ND	100-52-7
Benzoic acid*	0.10	4.36	0.44	ND	65-85-0
Ethylene glycol*	0.10	4.36	0.44	ND	107-21-1
Isopropylbenzene*	0.10	4.36	0.44	ND	98-82-8
Naphthalene*	0.10	4.36	0.44	ND	91-20-3
n-propyl benzene*	0.10	4.36	0.44	ND	103-65-1
p-isopropyltoluene*	0.10	4.36	0.44	ND	99-87-6
Propionitrile*	0.10	4.36	0.44	ND	107-12-0
Trans-1,3-dichloropropene*	0.10	4.36	0.44	ND	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1077**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/17/2018 at 05:32 PM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone*	0.50	3.26	1.63	43.23	67-64-1
Benzene	0.50	3.26	1.63	21.39	71-43-2
1,3-Butadiene	0.50	3.26	1.63	< 1.63	106-99-0
Carbon disulfide*	0.50	3.26	1.63	4.96	75-15-0
Carbon tetrachloride	0.50	3.26	1.63	< 1.63	56-23-5
Chloroform	0.50	3.26	1.63	< 1.63	67-66-3
Cyclohexane	0.50	3.26	1.63	< 1.63	110-82-7
1,4-Dioxane	0.50	3.26	1.63	< 1.63	123-91-1
Ethanol*	0.50	3.26	1.63	< 1.63	64-17-5
Ethyl Acetate*	0.50	3.26	1.63	< 1.63	141-78-6
Ethylbenzene	0.50	3.26	1.63	< 1.63	100-41-4
Hexane**	0.50	3.26	1.63	2.93	110-54-3
Isopropanol*	0.50	3.26	1.63	< 1.63	67-63-0
MEK	0.50	3.26	1.63	< 1.63	78-93-3
Methylene Chloride	0.50	3.26	1.63	< 1.63	75-09-2
Styrene	0.50	3.26	1.63	51.18 B	100-42-5
Toluene	0.50	3.26	1.63	8.05	108-88-3
1,2,4-Trimethylbenzene	0.50	3.26	1.63	< 1.63	95-63-6
1,3,5-Trimethylbenzene	0.50	3.26	1.63	< 1.63	108-67-8
m,p-Xylenes	1.00	3.26	3.26	< 3.26	108-38-3, 106-42-3
o-Xylene	0.50	3.26	1.63	< 1.63	95-47-6

*LDEQ does not currently offer accreditation for TO-15 analysis of acetone, carbon disulfide, ethanol, ethyl acetate and isopropanol.
**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1077**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/17/2018 at 05:32 PM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.10	3.26	0.33	ND	76-13-1
2-methyl-2-butanol*	0.10	3.26	0.33	ND	75-85-4
2-methylbutane*	0.10	3.26	0.33	ND	78-78-4
2-methylnaphthalene*	0.10	3.26	0.33	ND	91-57-6
Benzaldehyde*	0.10	3.26	0.33	ND	100-52-7
Benzoic acid*	0.10	3.26	0.33	ND	65-85-0
Ethylene glycol*	0.10	3.26	0.33	ND	107-21-1
Isopropylbenzene*	0.10	3.26	0.33	ND	98-82-8
Naphthalene*	0.10	3.26	0.33	ND	91-20-3
n-propyl benzene*	0.10	3.26	0.33	ND	103-65-1
p-isopropyltoluene*	0.10	3.26	0.33	ND	99-87-6
Propionitrile*	0.10	3.26	0.33	ND	107-12-0
Trans-1,3-dichloropropene*	0.10	3.26	0.33	ND	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-003**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1098**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/14/2018 at 07:30 PM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone*	0.50	3.36	1.68	65.72	67-64-1
Benzene	0.50	3.36	1.68	< 1.68	71-43-2
1,3-Butadiene	0.50	3.36	1.68	< 1.68	106-99-0
Carbon disulfide*	0.50	3.36	1.68	10.85	75-15-0
Carbon tetrachloride	0.50	3.36	1.68	< 1.68	56-23-5
Chloroform	0.50	3.36	1.68	< 1.68	67-66-3
Cyclohexane	0.50	3.36	1.68	< 1.68	110-82-7
1,4-Dioxane	0.50	3.36	1.68	4.67	123-91-1
Ethanol*	0.50	3.36	1.68	52.01	64-17-5
Ethyl Acetate*	0.50	3.36	1.68	< 1.68	141-78-6
Ethylbenzene	0.50	3.36	1.68	< 1.68	100-41-4
Hexane**	0.50	3.36	1.68	< 1.68	110-54-3
Isopropanol*	0.50	3.36	1.68	< 1.68	67-63-0
MEK	0.50	3.36	1.68	4.70	78-93-3
Methylene Chloride	0.50	3.36	1.68	1.92	75-09-2
Styrene	0.50	3.36	1.68	4.20	100-42-5
Toluene	0.50	3.36	1.68	1.78	108-88-3
1,2,4-Trimethylbenzene	0.50	3.36	1.68	< 1.68	95-63-6
1,3,5-Trimethylbenzene	0.50	3.36	1.68	< 1.68	108-67-8
m,p-Xylenes	1.00	3.36	3.36	< 3.36	108-38-3, 106-42-3
o-Xylene	0.50	3.36	1.68	< 1.68	95-47-6

*LDEQ does not currently offer accreditation for TO-15 analysis of acetone, carbon disulfide, ethanol, ethyl acetate and isopropanol.
**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-003**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1098**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/14/2018 at 07:30 PM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.10	3.36	0.34	ND	76-13-1
2-methyl-2-butanol*	0.10	3.36	0.34	ND	75-85-4
2-methylbutane*	0.10	3.36	0.34	ND	78-78-4
2-methylnaphthalene*	0.10	3.36	0.34	ND	91-57-6
Benzaldehyde*	0.10	3.36	0.34	ND	100-52-7
Benzoic acid*	0.10	3.36	0.34	ND	65-85-0
Ethylene glycol*	0.10	3.36	0.34	ND	107-21-1
Isopropylbenzene*	0.10	3.36	0.34	ND	98-82-8
Naphthalene*	0.10	3.36	0.34	ND	91-20-3
n-propyl benzene*	0.10	3.36	0.34	ND	103-65-1
p-isopropyltoluene*	0.10	3.36	0.34	ND	99-87-6
Propionitrile*	0.10	3.36	0.34	ND	107-12-0
Trans-1,3-dichloropropene*	0.10	3.36	0.34	ND	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-004**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1075**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/14/2018 at 08:25 PM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone*	0.50	3.22	1.61	7.99	67-64-1
Benzene	0.50	3.22	1.61	< 1.61	71-43-2
1,3-Butadiene	0.50	3.22	1.61	< 1.61	106-99-0
Carbon disulfide*	0.50	3.22	1.61	4.57	75-15-0
Carbon tetrachloride	0.50	3.22	1.61	< 1.61	56-23-5
Chloroform	0.50	3.22	1.61	< 1.61	67-66-3
Cyclohexane	0.50	3.22	1.61	< 1.61	110-82-7
1,4-Dioxane	0.50	3.22	1.61	< 1.61	123-91-1
Ethanol*	0.50	3.22	1.61	< 1.61	64-17-5
Ethyl Acetate*	0.50	3.22	1.61	< 1.61	141-78-6
Ethylbenzene	0.50	3.22	1.61	< 1.61	100-41-4
Hexane**	0.50	3.22	1.61	2.13	110-54-3
Isopropanol*	0.50	3.22	1.61	< 1.61	67-63-0
MEK	0.50	3.22	1.61	< 1.61	78-93-3
Methylene Chloride	0.50	3.22	1.61	< 1.61	75-09-2
Styrene	0.50	3.22	1.61	15.58	100-42-5
Toluene	0.50	3.22	1.61	< 1.61	108-88-3
1,2,4-Trimethylbenzene	0.50	3.22	1.61	< 1.61	95-63-6
1,3,5-Trimethylbenzene	0.50	3.22	1.61	< 1.61	108-67-8
m,p-Xylenes	1.00	3.22	3.22	< 3.22	108-38-3, 106-42-3
o-Xylene	0.50	3.22	1.61	< 1.61	95-47-6

*LDEQ does not currently offer accreditation for TO-15 analysis of acetone, carbon disulfide, ethanol, ethyl acetate and isopropanol.
**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-004**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1075**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/14/2018 at 08:25 PM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.10	3.22	0.32	ND	76-13-1
2-methyl-2-butanol*	0.10	3.22	0.32	ND	75-85-4
2-methylbutane*	0.10	3.22	0.32	ND	78-78-4
2-methylnaphthalene*	0.10	3.22	0.32	ND	91-57-6
Benzaldehyde*	0.10	3.22	0.32	ND	100-52-7
Benzoic acid*	0.10	3.22	0.32	ND	65-85-0
Ethylene glycol*	0.10	3.22	0.32	ND	107-21-1
Isopropylbenzene*	0.10	3.22	0.32	ND	98-82-8
Naphthalene*	0.10	3.22	0.32	ND	91-20-3
n-propyl benzene*	0.10	3.22	0.32	ND	103-65-1
p-isopropyltoluene*	0.10	3.22	0.32	ND	99-87-6
Propionitrile*	0.10	3.22	0.32	ND	107-12-0
Trans-1,3-dichloropropene*	0.10	3.22	0.32	ND	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-005**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1083**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/14/2018 at 09:20 PM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone*	0.50	32.60	16.30	856.40 E	67-64-1
Benzene	0.50	3.26	1.63	< 1.63	71-43-2
1,3-Butadiene	0.50	3.26	1.63	< 1.63	106-99-0
Carbon disulfide*	0.50	3.26	1.63	< 1.63	75-15-0
Carbon tetrachloride	0.50	3.26	1.63	< 1.63	56-23-5
Chloroform	0.50	3.26	1.63	< 1.63	67-66-3
Cyclohexane	0.50	3.26	1.63	< 1.63	110-82-7
1,4-Dioxane	0.50	3.26	1.63	9.98	123-91-1
Ethanol*	0.50	3.26	1.63	< 1.63	64-17-5
Ethyl Acetate*	0.50	3.26	1.63	< 1.63	141-78-6
Ethylbenzene	0.50	3.26	1.63	13.11	100-41-4
Hexane**	0.50	3.26	1.63	1.63	110-54-3
Isopropanol*	0.50	3.26	1.63	< 1.63	67-63-0
MEK	0.50	3.26	1.63	< 1.63	78-93-3
Methylene Chloride	0.50	3.26	1.63	< 1.63	75-09-2
Styrene	0.50	32.60	16.30	115,799.11 E	100-42-5
Toluene	0.50	3.26	1.63	< 1.63	108-88-3
1,2,4-Trimethylbenzene	0.50	3.26	1.63	< 1.63	95-63-6
1,3,5-Trimethylbenzene	0.50	3.26	1.63	< 1.63	108-67-8
m,p-Xylenes	1.00	3.26	3.26	< 3.26	108-38-3, 106-42-3
o-Xylene	0.50	3.26	1.63	< 1.63	95-47-6

*LDEQ does not currently offer accreditation for TO-15 analysis of acetone, carbon disulfide, ethanol, ethyl acetate and isopropanol.
**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-005**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1083**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/14/2018 at 09:20 PM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.10	3.26	0.33	ND	76-13-1
2-methyl-2-butanol*	0.10	3.26	0.33	ND	75-85-4
2-methylbutane*	0.10	3.26	0.33	ND	78-78-4
2-methylnaphthalene*	0.10	3.26	0.33	ND	91-57-6
Benzaldehyde*	0.10	3.26	0.33	ND	100-52-7
Benzoic acid*	0.10	3.26	0.33	ND	65-85-0
Ethylene glycol*	0.10	3.26	0.33	ND	107-21-1
Isopropylbenzene*	0.10	3.26	0.33	ND	98-82-8
Naphthalene*	0.10	3.26	0.33	ND	91-20-3
n-propyl benzene*	0.10	3.26	0.33	ND	103-65-1
p-isopropyltoluene*	0.10	3.26	0.33	ND	99-87-6
Propionitrile*	0.10	3.26	0.33	ND	107-12-0
Trans-1,3-dichloropropene*	0.10	3.26	0.33	ND	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-006**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**10993**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/17/2018 at 07:22 PM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone*	0.50	3.26	1.63	20.64	67-64-1
Benzene	0.50	3.26	1.63	< 1.63	71-43-2
1,3-Butadiene	0.50	3.26	1.63	< 1.63	106-99-0
Carbon disulfide*	0.50	3.26	1.63	< 1.63	75-15-0
Carbon tetrachloride	0.50	3.26	1.63	< 1.63	56-23-5
Chloroform	0.50	3.26	1.63	< 1.63	67-66-3
Cyclohexane	0.50	3.26	1.63	< 1.63	110-82-7
1,4-Dioxane	0.50	3.26	1.63	< 1.63	123-91-1
Ethanol*	0.50	3.26	1.63	< 1.63	64-17-5
Ethyl Acetate*	0.50	3.26	1.63	< 1.63	141-78-6
Ethylbenzene	0.50	3.26	1.63	< 1.63	100-41-4
Hexane**	0.50	3.26	1.63	2.31	110-54-3
Isopropanol*	0.50	3.26	1.63	< 1.63	67-63-0
MEK	0.50	3.26	1.63	< 1.63	78-93-3
Methylene Chloride	0.50	3.26	1.63	< 1.63	75-09-2
Styrene	0.50	3.26	1.63	10.27 B	100-42-5
Toluene	0.50	3.26	1.63	2.09	108-88-3
1,2,4-Trimethylbenzene	0.50	3.26	1.63	< 1.63	95-63-6
1,3,5-Trimethylbenzene	0.50	3.26	1.63	< 1.63	108-67-8
m,p-Xylenes	1.00	3.26	3.26	< 3.26	108-38-3, 106-42-3
o-Xylene	0.50	3.26	1.63	< 1.63	95-47-6

*LDEQ does not currently offer accreditation for TO-15 analysis of acetone, carbon disulfide, ethanol, ethyl acetate and isopropanol.
**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-006**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**10993**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/17/2018 at 07:22 PM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.10	3.26	0.33	ND	76-13-1
2-methyl-2-butanol*	0.10	3.26	0.33	ND	75-85-4
2-methylbutane*	0.10	3.26	0.33	ND	78-78-4
2-methylnaphthalene*	0.10	3.26	0.33	ND	91-57-6
Benzaldehyde*	0.10	3.26	0.33	ND	100-52-7
Benzoic acid*	0.10	3.26	0.33	ND	65-85-0
Ethylene glycol*	0.10	3.26	0.33	ND	107-21-1
Isopropylbenzene*	0.10	3.26	0.33	ND	98-82-8
Naphthalene*	0.10	3.26	0.33	2.74	91-20-3
n-propyl benzene*	0.10	3.26	0.33	ND	103-65-1
p-isopropyltoluene*	0.10	3.26	0.33	ND	99-87-6
Propionitrile*	0.10	3.26	0.33	ND	107-12-0
Trans-1,3-dichloropropene*	0.10	3.26	0.33	ND	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-007**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118232**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018 at 10:00 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/18/2018 at 05:31 PM
QC Batch ID:	QC_09540	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone**	0.0042	2.00	0.0084	0.1025	0.0417	67-64-1
Benzene**	0.0042	2.00	0.0084	< 0.0084	< 0.0026	71-43-2
1,3-Butadiene**	0.0032	2.00	0.0064	< 0.0064	< 0.0028	106-99-0
Carbon Disulfide**	0.0055	2.00	0.0110	< 0.0110	< 0.0034	75-15-0
Carbon tetrachloride**	0.0109	2.00	0.0219	< 0.0219	< 0.0034	56-23-5
Chloroform**	0.0087	2.00	0.0173	< 0.0173	< 0.0034	67-66-3
Cyclohexane**	0.0061	2.00	0.0122	< 0.0122	< 0.0034	110-82-7
1,4-Dioxane**	0.0064	2.00	0.0128	< 0.0128	< 0.0034	123-91-1
Ethanol**	0.0033	2.00	0.0067	0.0743	0.0381	64-17-5
Ethyl acetate**	0.0064	2.00	0.0128	< 0.0128	< 0.0034	141-78-6
Ethylbenzene**	0.0084	2.00	0.0167	< 0.0167	< 0.0037	100-41-4
Hexane**	0.0062	2.00	0.0125	< 0.0125	< 0.0034	110-54-3
Isopropanol**	0.0044	2.00	0.0087	< 0.0087	< 0.0034	67-63-0
MEK**	0.0052	2.00	0.0105	< 0.0105	< 0.0034	78-93-3
Methylene chloride**	0.0062	2.00	0.0123	< 0.0123	< 0.0034	75-09-2
Styrene**	0.0075	2.00	0.0151	0.1181	0.0268	100-42-5
Toluene**	0.0064	2.00	0.0128	< 0.0128	< 0.0033	108-88-3
1,2,4-Trimethylbenzene**	0.0087	2.00	0.0174	< 0.0174	< 0.0034	95-63-6
1,3,5-Trimethylbenzene**	0.0106	2.00	0.0212	< 0.0212	< 0.0042	108-67-8
m,p-Xylenes**	0.0167	2.00	0.0335	< 0.0335	< 0.0075	108-38-3, 106-42-3
o-Xylene**	0.0084	2.00	0.0167	< 0.0167	< 0.0037	95-47-6

**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-007**		
Analytical SOP:	GSL_TM007	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118232**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018 at 10:00 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/18/2018 at 05:31 PM
QC Batch ID:	QC_09540	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.0148	2.00	0.0295	< 0.0295	< 0.0037	76-13-1
2-methyl-2-butanol*	0.0064	2.00	0.0128	< 0.0128	< 0.0034	75-85-4
2-methylbutane*	0.0052	2.00	0.0105	< 0.0105	< 0.0034	78-78-4
2-methylnaphthalene*	0.0103	2.00	0.0206	< 0.0206	< 0.0034	91-57-6
Benzaldehyde*	0.0077	2.00	0.0154	< 0.0154	< 0.0034	100-52-7
Benzoic acid*	0.0089	2.00	0.0177	< 0.0177	< 0.0034	65-85-0
Ethylene glycol*	0.0045	2.00	0.0090	< 0.0090	< 0.0034	107-21-1
Isopropylbenzene*	0.0087	2.00	0.0174	< 0.0174	< 0.0034	98-82-8
Naphthalene*	0.0093	2.00	0.0186	< 0.0186	< 0.0034	91-20-3
n-propyl benzene*	0.0087	2.00	0.0174	< 0.0174	< 0.0034	103-65-1
p-isopropyltoluene*	0.0097	2.00	0.0195	< 0.0195	< 0.0034	99-87-6
Propionitrile*	0.0040	2.00	0.0080	< 0.0080	< 0.0034	107-12-0
Trans-1,3-dichloropropene*	0.0080	2.00	0.0161	< 0.0161	< 0.0034	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-008**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118231**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018 at 10:00 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/18/2018 at 06:27 PM
QC Batch ID:	QC_09540	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone**	0.0042	2.00	0.0084	0.0834	0.0339	67-64-1
Benzene**	0.0042	2.00	0.0084	< 0.0084	< 0.0026	71-43-2
1,3-Butadiene**	0.0032	2.00	0.0064	< 0.0064	< 0.0028	106-99-0
Carbon Disulfide**	0.0055	2.00	0.0110	< 0.0110	< 0.0034	75-15-0
Carbon tetrachloride**	0.0109	2.00	0.0219	< 0.0219	< 0.0034	56-23-5
Chloroform**	0.0087	2.00	0.0173	< 0.0173	< 0.0034	67-66-3
Cyclohexane**	0.0061	2.00	0.0122	< 0.0122	< 0.0034	110-82-7
1,4-Dioxane**	0.0064	2.00	0.0128	< 0.0128	< 0.0034	123-91-1
Ethanol**	0.0033	20.00	0.0668	2.8063 E	1.4403 E	64-17-5
Ethyl acetate**	0.0064	2.00	0.0128	< 0.0128	< 0.0034	141-78-6
Ethylbenzene**	0.0084	2.00	0.0167	< 0.0167	< 0.0037	100-41-4
Hexane**	0.0062	2.00	0.0125	< 0.0125	< 0.0034	110-54-3
Isopropanol**	0.0044	2.00	0.0087	< 0.0087	< 0.0034	67-63-0
MEK**	0.0052	2.00	0.0105	< 0.0105	< 0.0034	78-93-3
Methylene chloride**	0.0062	2.00	0.0123	< 0.0123	< 0.0034	75-09-2
Styrene**	0.0075	2.00	0.0151	0.8844 E	0.2008 E	100-42-5
Toluene**	0.0064	2.00	0.0128	< 0.0128	< 0.0033	108-88-3
1,2,4-Trimethylbenzene**	0.0087	2.00	0.0174	< 0.0174	< 0.0034	95-63-6
1,3,5-Trimethylbenzene**	0.0106	2.00	0.0212	< 0.0212	< 0.0042	108-67-8
m,p-Xylenes**	0.0167	2.00	0.0335	< 0.0335	< 0.0075	108-38-3, 106-42-3
o-Xylene**	0.0084	2.00	0.0167	< 0.0167	< 0.0037	95-47-6

**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-008**		
Analytical SOP:	GSL_TM007	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118231**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018 at 10:00 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/18/2018 at 06:27 PM
QC Batch ID:	QC_09540	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.0148	2.00	0.0295	< 0.0295	< 0.0037	76-13-1
2-methyl-2-butanol*	0.0064	2.00	0.0128	< 0.0128	< 0.0034	75-85-4
2-methylbutane*	0.0052	2.00	0.0105	< 0.0105	< 0.0034	78-78-4
2-methylnaphthalene*	0.0103	2.00	0.0206	< 0.0206	< 0.0034	91-57-6
Benzaldehyde*	0.0077	2.00	0.0154	< 0.0154	< 0.0034	100-52-7
Benzoic acid*	0.0089	2.00	0.0177	< 0.0177	< 0.0034	65-85-0
Ethylene glycol*	0.0045	2.00	0.0090	< 0.0090	< 0.0034	107-21-1
Isopropylbenzene*	0.0087	2.00	0.0174	< 0.0174	< 0.0034	98-82-8
Naphthalene*	0.0093	2.00	0.0186	< 0.0186	< 0.0034	91-20-3
n-propyl benzene*	0.0087	2.00	0.0174	< 0.0174	< 0.0034	103-65-1
p-isopropyltoluene*	0.0097	2.00	0.0195	< 0.0195	< 0.0034	99-87-6
Propionitrile*	0.0040	2.00	0.0080	< 0.0080	< 0.0034	107-12-0
Trans-1,3-dichloropropene*	0.0080	2.00	0.0161	< 0.0161	< 0.0034	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-009**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118221**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018 at 10:00 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/18/2018 at 07:22 PM
QC Batch ID:	QC_09540	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone**	0.0042	2.00	0.0084	0.0406	0.0165	67-64-1
Benzene**	0.0042	2.00	0.0084	< 0.0084	< 0.0026	71-43-2
1,3-Butadiene**	0.0032	2.00	0.0064	< 0.0064	< 0.0028	106-99-0
Carbon Disulfide**	0.0055	2.00	0.0110	< 0.0110	< 0.0034	75-15-0
Carbon tetrachloride**	0.0109	2.00	0.0219	< 0.0219	< 0.0034	56-23-5
Chloroform**	0.0087	2.00	0.0173	< 0.0173	< 0.0034	67-66-3
Cyclohexane**	0.0061	2.00	0.0122	< 0.0122	< 0.0034	110-82-7
1,4-Dioxane**	0.0064	2.00	0.0128	< 0.0128	< 0.0034	123-91-1
Ethanol**	0.0033	2.00	0.0067	0.0321	0.0165	64-17-5
Ethyl acetate**	0.0064	2.00	0.0128	< 0.0128	< 0.0034	141-78-6
Ethylbenzene**	0.0084	2.00	0.0167	< 0.0167	< 0.0037	100-41-4
Hexane**	0.0062	2.00	0.0125	< 0.0125	< 0.0034	110-54-3
Isopropanol**	0.0044	2.00	0.0087	< 0.0087	< 0.0034	67-63-0
MEK**	0.0052	2.00	0.0105	< 0.0105	< 0.0034	78-93-3
Methylene chloride**	0.0062	2.00	0.0123	< 0.0123	< 0.0034	75-09-2
Styrene**	0.0075	2.00	0.0151	0.0634	0.0144	100-42-5
Toluene**	0.0064	2.00	0.0128	< 0.0128	< 0.0033	108-88-3
1,2,4-Trimethylbenzene**	0.0087	2.00	0.0174	< 0.0174	< 0.0034	95-63-6
1,3,5-Trimethylbenzene**	0.0106	2.00	0.0212	< 0.0212	< 0.0042	108-67-8
m,p-Xylenes**	0.0167	2.00	0.0335	< 0.0335	< 0.0075	108-38-3, 106-42-3
o-Xylene**	0.0084	2.00	0.0167	< 0.0167	< 0.0037	95-47-6

**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-009**		
Analytical SOP:	GSL_TM007	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118221**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018 at 10:00 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/18/2018 at 07:22 PM
QC Batch ID:	QC_09540	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.0148	2.00	0.0295	< 0.0295	< 0.0037	76-13-1
2-methyl-2-butanol*	0.0064	2.00	0.0128	< 0.0128	< 0.0034	75-85-4
2-methylbutane*	0.0052	2.00	0.0105	< 0.0105	< 0.0034	78-78-4
2-methylnaphthalene*	0.0103	2.00	0.0206	< 0.0206	< 0.0034	91-57-6
Benzaldehyde*	0.0077	2.00	0.0154	< 0.0154	< 0.0034	100-52-7
Benzoic acid*	0.0089	2.00	0.0177	< 0.0177	< 0.0034	65-85-0
Ethylene glycol*	0.0045	2.00	0.0090	< 0.0090	< 0.0034	107-21-1
Isopropylbenzene*	0.0087	2.00	0.0174	< 0.0174	< 0.0034	98-82-8
Naphthalene*	0.0093	2.00	0.0186	< 0.0186	< 0.0034	91-20-3
n-propyl benzene*	0.0087	2.00	0.0174	< 0.0174	< 0.0034	103-65-1
p-isopropyltoluene*	0.0097	2.00	0.0195	< 0.0195	< 0.0034	99-87-6
Propionitrile*	0.0040	2.00	0.0080	< 0.0080	< 0.0034	107-12-0
Trans-1,3-dichloropropene*	0.0080	2.00	0.0161	< 0.0161	< 0.0034	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-010**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi107667**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018 at 10:00 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/18/2018 at 08:17 PM
QC Batch ID:	QC_09540	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone**	0.0042	2.00	0.0084	0.0591	0.0241	67-64-1
Benzene**	0.0042	2.00	0.0084	< 0.0084	< 0.0026	71-43-2
1,3-Butadiene**	0.0032	2.00	0.0064	< 0.0064	< 0.0028	106-99-0
Carbon Disulfide**	0.0055	2.00	0.0110	< 0.0110	< 0.0034	75-15-0
Carbon tetrachloride**	0.0109	2.00	0.0219	< 0.0219	< 0.0034	56-23-5
Chloroform**	0.0087	2.00	0.0173	< 0.0173	< 0.0034	67-66-3
Cyclohexane**	0.0061	2.00	0.0122	< 0.0122	< 0.0034	110-82-7
1,4-Dioxane**	0.0064	2.00	0.0128	< 0.0128	< 0.0034	123-91-1
Ethanol**	0.0033	20.00	0.0668	0.4822	0.2475	64-17-5
Ethyl acetate**	0.0064	2.00	0.0128	< 0.0128	< 0.0034	141-78-6
Ethylbenzene**	0.0084	2.00	0.0167	< 0.0167	< 0.0037	100-41-4
Hexane**	0.0062	2.00	0.0125	< 0.0125	< 0.0034	110-54-3
Isopropanol**	0.0044	2.00	0.0087	< 0.0087	< 0.0034	67-63-0
MEK**	0.0052	2.00	0.0105	< 0.0105	< 0.0034	78-93-3
Methylene chloride**	0.0062	2.00	0.0123	< 0.0123	< 0.0034	75-09-2
Styrene**	0.0075	2.00	0.0151	0.0438	0.0099	100-42-5
Toluene**	0.0064	2.00	0.0128	< 0.0128	< 0.0033	108-88-3
1,2,4-Trimethylbenzene**	0.0087	2.00	0.0174	< 0.0174	< 0.0034	95-63-6
1,3,5-Trimethylbenzene**	0.0106	2.00	0.0212	< 0.0212	< 0.0042	108-67-8
m,p-Xylenes**	0.0167	2.00	0.0335	< 0.0335	< 0.0075	108-38-3, 106-42-3
o-Xylene**	0.0084	2.00	0.0167	< 0.0167	< 0.0037	95-47-6

**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181191-010**		
Analytical SOP:	GSL_TM007	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi107667**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/12/2018 at 10:00 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/18/2018 at 08:17 PM
QC Batch ID:	QC_09540	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.0148	2.00	0.0295	< 0.0295	< 0.0037	76-13-1
2-methyl-2-butanol*	0.0064	2.00	0.0128	< 0.0128	< 0.0034	75-85-4
2-methylbutane*	0.0052	2.00	0.0105	< 0.0105	< 0.0034	78-78-4
2-methylnaphthalene*	0.0103	2.00	0.0206	< 0.0206	< 0.0034	91-57-6
Benzaldehyde*	0.0077	2.00	0.0154	< 0.0154	< 0.0034	100-52-7
Benzoic acid*	0.0089	2.00	0.0177	< 0.0177	< 0.0034	65-85-0
Ethylene glycol*	0.0045	2.00	0.0090	< 0.0090	< 0.0034	107-21-1
Isopropylbenzene*	0.0087	2.00	0.0174	< 0.0174	< 0.0034	98-82-8
Naphthalene*	0.0093	2.00	0.0186	< 0.0186	< 0.0034	91-20-3
n-propyl benzene*	0.0087	2.00	0.0174	< 0.0174	< 0.0034	103-65-1
p-isopropyltoluene*	0.0097	2.00	0.0195	< 0.0195	< 0.0034	99-87-6
Propionitrile*	0.0040	2.00	0.0080	< 0.0080	< 0.0034	107-12-0
Trans-1,3-dichloropropene*	0.0080	2.00	0.0161	< 0.0161	< 0.0034	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_181192-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**EN058**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/14/2018 at 11:10 PM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone*	0.50	3.16	1.58	18.42	67-64-1
Benzene	0.50	3.16	1.58	< 1.58	71-43-2
1,3-Butadiene	0.50	3.16	1.58	< 1.58	106-99-0
Carbon disulfide*	0.50	3.16	1.58	< 1.58	75-15-0
Carbon tetrachloride	0.50	3.16	1.58	< 1.58	56-23-5
Chloroform	0.50	3.16	1.58	< 1.58	67-66-3
Cyclohexane	0.50	3.16	1.58	< 1.58	110-82-7
1,4-Dioxane	0.50	3.16	1.58	< 1.58	123-91-1
Ethanol*	0.50	3.16	1.58	< 1.58	64-17-5
Ethyl Acetate*	0.50	3.16	1.58	< 1.58	141-78-6
Ethylbenzene	0.50	3.16	1.58	< 1.58	100-41-4
Hexane**	0.50	3.16	1.58	< 1.58	110-54-3
Isopropanol*	0.50	3.16	1.58	< 1.58	67-63-0
MEK	0.50	3.16	1.58	< 1.58	78-93-3
Methylene Chloride	0.50	3.16	1.58	< 1.58	75-09-2
Styrene	0.50	3.16	1.58	23.76	100-42-5
Toluene	0.50	3.16	1.58	< 1.58	108-88-3
1,2,4-Trimethylbenzene	0.50	3.16	1.58	< 1.58	95-63-6
1,3,5-Trimethylbenzene	0.50	3.16	1.58	< 1.58	108-67-8
m,p-Xylenes	1.00	3.16	3.16	< 3.16	108-38-3, 106-42-3
o-Xylene	0.50	3.16	1.58	< 1.58	95-47-6

*LDEQ does not currently offer accreditation for TO-15 analysis of acetone, carbon disulfide, ethanol, ethyl acetate and isopropanol.
**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181192-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**EN058**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/14/2018 at 11:10 PM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.10	3.16	0.32	ND	76-13-1
2-methyl-2-butanol*	0.10	3.16	0.32	ND	75-85-4
2-methylbutane*	0.10	3.16	0.32	ND	78-78-4
2-methylnaphthalene*	0.10	3.16	0.32	ND	91-57-6
Benzaldehyde*	0.10	3.16	0.32	ND	100-52-7
Benzoic acid*	0.10	3.16	0.32	ND	65-85-0
Ethylene glycol*	0.10	3.16	0.32	ND	107-21-1
Isopropylbenzene*	0.10	3.16	0.32	ND	98-82-8
Naphthalene*	0.10	3.16	0.32	ND	91-20-3
n-propyl benzene*	0.10	3.16	0.32	ND	103-65-1
p-isopropyltoluene*	0.10	3.16	0.32	ND	99-87-6
Propionitrile*	0.10	3.16	0.32	ND	107-12-0
Trans-1,3-dichloropropene*	0.10	3.16	0.32	ND	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_181192-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1076**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/15/2018 at 12:05 AM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone*	0.50	32.40	16.20	2,376.22 E	67-64-1
Benzene	0.50	3.24	1.62	< 1.62	71-43-2
1,3-Butadiene	0.50	3.24	1.62	< 1.62	106-99-0
Carbon disulfide*	0.50	3.24	1.62	< 1.62	75-15-0
Carbon tetrachloride	0.50	3.24	1.62	< 1.62	56-23-5
Chloroform	0.50	3.24	1.62	< 1.62	67-66-3
Cyclohexane	0.50	3.24	1.62	< 1.62	110-82-7
1,4-Dioxane	0.50	3.24	1.62	< 1.62	123-91-1
Ethanol*	0.50	3.24	1.62	< 1.62	64-17-5
Ethyl Acetate*	0.50	3.24	1.62	3.27	141-78-6
Ethylbenzene	0.50	3.24	1.62	20.09	100-41-4
Hexane**	0.50	3.24	1.62	9.01	110-54-3
Isopropanol*	0.50	3.24	1.62	< 1.62	67-63-0
MEK	0.50	3.24	1.62	2.49	78-93-3
Methylene Chloride	0.50	3.24	1.62	1.78	75-09-2
Styrene	0.50	32.40	16.20	175,774.21 E	100-42-5
Toluene	0.50	3.24	1.62	3.79	108-88-3
1,2,4-Trimethylbenzene	0.50	3.24	1.62	< 1.62	95-63-6
1,3,5-Trimethylbenzene	0.50	3.24	1.62	< 1.62	108-67-8
m,p-Xylenes	1.00	3.24	3.24	< 3.24	108-38-3, 106-42-3
o-Xylene	0.50	3.24	1.62	< 1.62	95-47-6

*LDEQ does not currently offer accreditation for TO-15 analysis of acetone, carbon disulfide, ethanol, ethyl acetate and isopropanol.
**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181192-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1076**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/15/2018 at 12:05 AM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.10	3.24	0.32	ND	76-13-1
2-methyl-2-butanol*	0.10	3.24	0.32	ND	75-85-4
2-methylbutane*	0.10	3.24	0.32	ND	78-78-4
2-methylnaphthalene*	0.10	3.24	0.32	ND	91-57-6
Benzaldehyde*	0.10	3.24	0.32	ND	100-52-7
Benzoic acid*	0.10	3.24	0.32	ND	65-85-0
Ethylene glycol*	0.10	3.24	0.32	ND	107-21-1
Isopropylbenzene*	0.10	3.24	0.32	ND	98-82-8
Naphthalene*	0.10	3.24	0.32	ND	91-20-3
n-propyl benzene*	0.10	3.24	0.32	ND	103-65-1
p-isopropyltoluene*	0.10	3.24	0.32	ND	99-87-6
Propionitrile*	0.10	3.24	0.32	ND	107-12-0
Trans-1,3-dichloropropene*	0.10	3.24	0.32	ND	542-75-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_181192-003**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi107665**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 10:00 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/18/2018 at 09:12 PM
QC Batch ID:	QC_09540	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone**	0.0042	2.00	0.0084	0.0977	0.0398	67-64-1
Benzene**	0.0042	2.00	0.0084	< 0.0084	< 0.0026	71-43-2
1,3-Butadiene**	0.0032	2.00	0.0064	< 0.0064	< 0.0028	106-99-0
Carbon Disulfide**	0.0055	2.00	0.0110	< 0.0110	< 0.0034	75-15-0
Carbon tetrachloride**	0.0109	2.00	0.0219	< 0.0219	< 0.0034	56-23-5
Chloroform**	0.0087	2.00	0.0173	< 0.0173	< 0.0034	67-66-3
Cyclohexane**	0.0061	2.00	0.0122	< 0.0122	< 0.0034	110-82-7
1,4-Dioxane**	0.0064	2.00	0.0128	< 0.0128	< 0.0034	123-91-1
Ethanol**	0.0033	20.00	0.0668	0.4074	0.2091	64-17-5
Ethyl acetate**	0.0064	2.00	0.0128	< 0.0128	< 0.0034	141-78-6
Ethylbenzene**	0.0084	2.00	0.0167	< 0.0167	< 0.0037	100-41-4
Hexane**	0.0062	2.00	0.0125	< 0.0125	< 0.0034	110-54-3
Isopropanol**	0.0044	2.00	0.0087	0.0310	0.0122	67-63-0
MEK**	0.0052	2.00	0.0105	< 0.0105	< 0.0034	78-93-3
Methylene chloride**	0.0062	2.00	0.0123	< 0.0123	< 0.0034	75-09-2
Styrene**	0.0075	2.00	0.0151	0.0353	0.0080	100-42-5
Toluene**	0.0064	2.00	0.0128	< 0.0128	< 0.0033	108-88-3
1,2,4-Trimethylbenzene**	0.0087	2.00	0.0174	< 0.0174	< 0.0034	95-63-6
1,3,5-Trimethylbenzene**	0.0106	2.00	0.0212	< 0.0212	< 0.0042	108-67-8
m,p-Xylenes**	0.0167	2.00	0.0335	< 0.0335	< 0.0075	108-38-3, 106-42-3
o-Xylene**	0.0084	2.00	0.0167	< 0.0167	< 0.0037	95-47-6

**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181192-003**		
Analytical SOP:	GSL_TM007	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi107665**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 10:00 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/18/2018 at 09:12 PM
QC Batch ID:	QC_09540	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.0148	2.00	0.0295	< 0.0295	< 0.0037	76-13-1
2-methyl-2-butanol*	0.0064	2.00	0.0128	< 0.0128	< 0.0034	75-85-4
2-methylbutane*	0.0052	2.00	0.0105	< 0.0105	< 0.0034	78-78-4
2-methylnaphthalene*	0.0103	2.00	0.0206	< 0.0206	< 0.0034	91-57-6
Benzaldehyde*	0.0077	2.00	0.0154	< 0.0154	< 0.0034	100-52-7
Benzoic acid*	0.0089	2.00	0.0177	< 0.0177	< 0.0034	65-85-0
Ethylene glycol*	0.0045	2.00	0.0090	< 0.0090	< 0.0034	107-21-1
Isopropylbenzene*	0.0087	2.00	0.0174	< 0.0174	< 0.0034	98-82-8
Naphthalene*	0.0093	2.00	0.0186	< 0.0186	< 0.0034	91-20-3
n-propyl benzene*	0.0087	2.00	0.0174	< 0.0174	< 0.0034	103-65-1
p-isopropyltoluene*	0.0097	2.00	0.0195	< 0.0195	< 0.0034	99-87-6
Propionitrile*	0.0040	2.00	0.0080	< 0.0080	< 0.0034	107-12-0
Trans-1,3-dichloropropene*	0.0080	2.00	0.0161	< 0.0161	< 0.0034	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_181192-004**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118211**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 10:00 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/19/2018 at 12:27 PM
QC Batch ID:	QC_09542	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone**	0.0042	2.00	0.0084	0.0741	0.0302	67-64-1
Benzene**	0.0042	2.00	0.0084	< 0.0084	< 0.0026	71-43-2
1,3-Butadiene**	0.0032	2.00	0.0064	< 0.0064	< 0.0028	106-99-0
Carbon Disulfide**	0.0055	2.00	0.0110	< 0.0110	< 0.0034	75-15-0
Carbon tetrachloride**	0.0109	2.00	0.0219	< 0.0219	< 0.0034	56-23-5
Chloroform**	0.0087	2.00	0.0173	< 0.0173	< 0.0034	67-66-3
Cyclohexane**	0.0061	2.00	0.0122	0.0264	0.0074	110-82-7
1,4-Dioxane**	0.0064	2.00	0.0128	< 0.0128	< 0.0034	123-91-1
Ethanol**	0.0033	2.00	0.0067	0.0449	0.0230	64-17-5
Ethyl acetate**	0.0064	2.00	0.0128	< 0.0128	< 0.0034	141-78-6
Ethylbenzene**	0.0084	2.00	0.0167	< 0.0167	< 0.0037	100-41-4
Hexane**	0.0062	2.00	0.0125	< 0.0125	< 0.0034	110-54-3
Isopropanol**	0.0044	2.00	0.0087	< 0.0087	< 0.0034	67-63-0
MEK**	0.0052	2.00	0.0105	< 0.0105	< 0.0034	78-93-3
Methylene chloride**	0.0062	2.00	0.0123	< 0.0123	< 0.0034	75-09-2
Styrene**	0.0075	2.00	0.0151	0.0175	0.0040	100-42-5
Toluene**	0.0064	2.00	0.0128	< 0.0128	< 0.0033	108-88-3
1,2,4-Trimethylbenzene**	0.0087	2.00	0.0174	< 0.0174	< 0.0034	95-63-6
1,3,5-Trimethylbenzene**	0.0106	2.00	0.0212	< 0.0212	< 0.0042	108-67-8
m,p-Xylenes**	0.0167	2.00	0.0335	< 0.0335	< 0.0075	108-38-3, 106-42-3
o-Xylene**	0.0084	2.00	0.0167	< 0.0167	< 0.0037	95-47-6

**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181192-004**		
Analytical SOP:	GSL_TM007	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118211**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 10:00 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/19/2018 at 12:27 PM
QC Batch ID:	QC_09542	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.0148	2.00	0.0295	< 0.0295	< 0.0037	76-13-1
2-methyl-2-butanol*	0.0064	2.00	0.0128	< 0.0128	< 0.0034	75-85-4
2-methylbutane*	0.0052	2.00	0.0105	< 0.0105	< 0.0034	78-78-4
2-methylnaphthalene*	0.0103	2.00	0.0206	< 0.0206	< 0.0034	91-57-6
Benzaldehyde*	0.0077	2.00	0.0154	< 0.0154	< 0.0034	100-52-7
Benzoic acid*	0.0089	2.00	0.0177	< 0.0177	< 0.0034	65-85-0
Ethylene glycol*	0.0045	2.00	0.0090	< 0.0090	< 0.0034	107-21-1
Isopropylbenzene*	0.0087	2.00	0.0174	< 0.0174	< 0.0034	98-82-8
Naphthalene*	0.0093	2.00	0.0186	< 0.0186	< 0.0034	91-20-3
n-propyl benzene*	0.0087	2.00	0.0174	< 0.0174	< 0.0034	103-65-1
p-isopropyltoluene*	0.0097	2.00	0.0195	< 0.0195	< 0.0034	99-87-6
Propionitrile*	0.0040	2.00	0.0080	< 0.0080	< 0.0034	107-12-0
Trans-1,3-dichloropropene*	0.0080	2.00	0.0161	< 0.0161	< 0.0034	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_181192-005**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**282049**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 10:00 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/19/2018 at 01:22 PM
QC Batch ID:	QC_09542	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone**	0.0042	2.00	0.0084	0.0832	0.0339	67-64-1
Benzene**	0.0042	2.00	0.0084	< 0.0084	< 0.0026	71-43-2
1,3-Butadiene**	0.0032	2.00	0.0064	< 0.0064	< 0.0028	106-99-0
Carbon Disulfide**	0.0055	2.00	0.0110	< 0.0110	< 0.0034	75-15-0
Carbon tetrachloride**	0.0109	2.00	0.0219	< 0.0219	< 0.0034	56-23-5
Chloroform**	0.0087	2.00	0.0173	< 0.0173	< 0.0034	67-66-3
Cyclohexane**	0.0061	2.00	0.0122	< 0.0122	< 0.0034	110-82-7
1,4-Dioxane**	0.0064	2.00	0.0128	< 0.0128	< 0.0034	123-91-1
Ethanol**	0.0033	2.00	0.0067	< 0.0067	< 0.0034	64-17-5
Ethyl acetate**	0.0064	2.00	0.0128	< 0.0128	< 0.0034	141-78-6
Ethylbenzene**	0.0084	2.00	0.0167	< 0.0167	< 0.0037	100-41-4
Hexane**	0.0062	2.00	0.0125	< 0.0125	< 0.0034	110-54-3
Isopropanol**	0.0044	2.00	0.0087	< 0.0087	< 0.0034	67-63-0
MEK**	0.0052	2.00	0.0105	< 0.0105	< 0.0034	78-93-3
Methylene chloride**	0.0062	2.00	0.0123	< 0.0123	< 0.0034	75-09-2
Styrene**	0.0075	20.00	0.1510	7.4039 E	1.6809 E	100-42-5
Toluene**	0.0064	2.00	0.0128	< 0.0128	< 0.0033	108-88-3
1,2,4-Trimethylbenzene**	0.0087	2.00	0.0174	< 0.0174	< 0.0034	95-63-6
1,3,5-Trimethylbenzene**	0.0106	2.00	0.0212	< 0.0212	< 0.0042	108-67-8
m,p-Xylenes**	0.0167	2.00	0.0335	< 0.0335	< 0.0075	108-38-3, 106-42-3
o-Xylene**	0.0084	2.00	0.0167	< 0.0167	< 0.0037	95-47-6

**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181192-005**		
Analytical SOP:	GSL_TM007	**Source Sampled:**	**2230 Jewell Ave**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**282049**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 10:00 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/19/2018 at 01:22 PM
QC Batch ID:	QC_09542	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.0148	2.00	0.0295	< 0.0295	< 0.0037	76-13-1
2-methyl-2-butanol*	0.0064	2.00	0.0128	< 0.0128	< 0.0034	75-85-4
2-methylbutane*	0.0052	2.00	0.0105	< 0.0105	< 0.0034	78-78-4
2-methylnaphthalene*	0.0103	2.00	0.0206	< 0.0206	< 0.0034	91-57-6
Benzaldehyde*	0.0077	2.00	0.0154	< 0.0154	< 0.0034	100-52-7
Benzoic acid*	0.0089	2.00	0.0177	< 0.0177	< 0.0034	65-85-0
Ethylene glycol*	0.0045	2.00	0.0090	< 0.0090	< 0.0034	107-21-1
Isopropylbenzene*	0.0087	2.00	0.0174	< 0.0174	< 0.0034	98-82-8
Naphthalene*	0.0093	2.00	0.0186	< 0.0186	< 0.0034	91-20-3
n-propyl benzene*	0.0087	2.00	0.0174	< 0.0174	< 0.0034	103-65-1
p-isopropyltoluene*	0.0097	2.00	0.0195	< 0.0195	< 0.0034	99-87-6
Propionitrile*	0.0040	2.00	0.0080	< 0.0080	< 0.0034	107-12-0
Trans-1,3-dichloropropene*	0.0080	2.00	0.0161	< 0.0161	< 0.0034	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_181193-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Milam/Missouri**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1119**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/17/2018 at 08:18 PM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone*	0.50	3.42	1.71	38.10	67-64-1
Benzene	0.50	3.42	1.71	< 1.71	71-43-2
1,3-Butadiene	0.50	3.42	1.71	< 1.71	106-99-0
Carbon disulfide*	0.50	3.42	1.71	4.51	75-15-0
Carbon tetrachloride	0.50	3.42	1.71	< 1.71	56-23-5
Chloroform	0.50	3.42	1.71	< 1.71	67-66-3
Cyclohexane	0.50	3.42	1.71	< 1.71	110-82-7
1,4-Dioxane	0.50	3.42	1.71	< 1.71	123-91-1
Ethanol*	0.50	34.20	17.10	130.30	64-17-5
Ethyl Acetate*	0.50	3.42	1.71	< 1.71	141-78-6
Ethylbenzene	0.50	3.42	1.71	< 1.71	100-41-4
Hexane**	0.50	3.42	1.71	< 1.71	110-54-3
Isopropanol*	0.50	3.42	1.71	< 1.71	67-63-0
MEK	0.50	3.42	1.71	2.05	78-93-3
Methylene Chloride	0.50	3.42	1.71	< 1.71	75-09-2
Styrene	0.50	3.42	1.71	7.66 B	100-42-5
Toluene	0.50	3.42	1.71	< 1.71	108-88-3
1,2,4-Trimethylbenzene	0.50	3.42	1.71	< 1.71	95-63-6
1,3,5-Trimethylbenzene	0.50	3.42	1.71	< 1.71	108-67-8
m,p-Xylenes	1.00	3.42	3.42	< 3.42	108-38-3, 106-42-3
o-Xylene	0.50	3.42	1.71	< 1.71	95-47-6

*LDEQ does not currently offer accreditation for TO-15 analysis of acetone, carbon disulfide, ethanol, ethyl acetate and isopropanol.
**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181193-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Milam/Missouri**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1119**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/17/2018 at 08:18 PM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.10	3.42	0.34	ND	76-13-1
2-methyl-2-butanol*	0.10	3.42	0.34	ND	75-85-4
2-methylbutane*	0.10	3.42	0.34	ND	78-78-4
2-methylnaphthalene*	0.10	3.42	0.34	ND	91-57-6
Benzaldehyde*	0.10	3.42	0.34	ND	100-52-7
Benzoic acid*	0.10	3.42	0.34	ND	65-85-0
Ethylene glycol*	0.10	3.42	0.34	ND	107-21-1
Isopropylbenzene*	0.10	3.42	0.34	ND	98-82-8
Naphthalene*	0.10	3.42	0.34	2.87	91-20-3
n-propyl benzene*	0.10	3.42	0.34	ND	103-65-1
p-isopropyltoluene*	0.10	3.42	0.34	ND	99-87-6
Propionitrile*	0.10	3.42	0.34	ND	107-12-0
Trans-1,3-dichloropropene*	0.10	3.42	0.34	ND	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_181193-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Milam/Missouri**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1096**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/15/2018 at 01:55 AM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone*	0.50	32.20	16.10	257.92	67-64-1
Benzene	0.50	3.22	1.61	1.84	71-43-2
1,3-Butadiene	0.50	3.22	1.61	< 1.61	106-99-0
Carbon disulfide*	0.50	3.22	1.61	10.43	75-15-0
Carbon tetrachloride	0.50	3.22	1.61	< 1.61	56-23-5
Chloroform	0.50	3.22	1.61	< 1.61	67-66-3
Cyclohexane	0.50	3.22	1.61	< 1.61	110-82-7
1,4-Dioxane	0.50	3.22	1.61	< 1.61	123-91-1
Ethanol*	0.50	3.22	1.61	12.08	64-17-5
Ethyl Acetate*	0.50	3.22	1.61	< 1.61	141-78-6
Ethylbenzene	0.50	3.22	1.61	6.60	100-41-4
Hexane**	0.50	3.22	1.61	< 1.61	110-54-3
Isopropanol*	0.50	3.22	1.61	< 1.61	67-63-0
MEK	0.50	3.22	1.61	2.61	78-93-3
Methylene Chloride	0.50	3.22	1.61	< 1.61	75-09-2
Styrene	0.50	32.20	16.10	107,452.37 E	100-42-5
Toluene	0.50	3.22	1.61	6.73	108-88-3
1,2,4-Trimethylbenzene	0.50	3.22	1.61	57.19	95-63-6
1,3,5-Trimethylbenzene	0.50	3.22	1.61	10.75	108-67-8
m,p-Xylenes	1.00	3.22	3.22	< 3.22	108-38-3, 106-42-3
o-Xylene	0.50	3.22	1.61	< 1.61	95-47-6

*LDEQ does not currently offer accreditation for TO-15 analysis of acetone, carbon disulfide, ethanol, ethyl acetate and isopropanol.
**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181193-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Milam/Missouri**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1096**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/15/2018 at 01:55 AM
QC Batch ID:	QC_09530	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.10	3.22	0.32	ND	76-13-1
2-methyl-2-butanol*	0.10	3.22	0.32	ND	75-85-4
2-methylbutane*	0.10	3.22	0.32	ND	78-78-4
2-methylnaphthalene*	0.10	3.22	0.32	ND	91-57-6
Benzaldehyde*	0.10	3.22	0.32	ND	100-52-7
Benzoic acid*	0.10	3.22	0.32	ND	65-85-0
Ethylene glycol*	0.10	3.22	0.32	ND	107-21-1
Isopropylbenzene*	0.10	3.22	0.32	ND	98-82-8
Naphthalene*	0.10	3.22	0.32	ND	91-20-3
n-propyl benzene*	0.10	3.22	0.32	ND	103-65-1
p-isopropyltoluene*	0.10	3.22	0.32	ND	99-87-6
Propionitrile*	0.10	3.22	0.32	ND	107-12-0
Trans-1,3-dichloropropene*	0.10	3.22	0.32	ND	542-75-6

*LDEQ does not currently offer accreditation for the analysis of GC/MS tentatively identified compounds (TICs).

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_181193-003**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Milam/Missouri**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi107670**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 11:20 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/19/2018 at 05:05 PM
QC Batch ID:	QC_09542	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone**	0.0053	2.00	0.0106	0.2582	0.1051	67-64-1
Benzene**	0.0053	2.00	0.0106	< 0.0106	< 0.0032	71-43-2
1,3-Butadiene**	0.0040	2.00	0.0081	< 0.0081	< 0.0035	106-99-0
Carbon Disulfide**	0.0069	2.00	0.0139	< 0.0139	< 0.0043	75-15-0
Carbon tetrachloride**	0.0138	2.00	0.0275	< 0.0275	< 0.0042	56-23-5
Chloroform**	0.0109	2.00	0.0218	< 0.0218	< 0.0043	67-66-3
Cyclohexane**	0.0077	2.00	0.0153	< 0.0153	< 0.0043	110-82-7
1,4-Dioxane**	0.0080	2.00	0.0161	< 0.0161	< 0.0043	123-91-1
Ethanol**	0.0042	2.00	0.0084	0.0321	0.0165	64-17-5
Ethyl acetate**	0.0080	2.00	0.0161	0.0251	0.0067	141-78-6
Ethylbenzene**	0.0105	2.00	0.0210	< 0.0210	< 0.0047	100-41-4
Hexane**	0.0079	2.00	0.0157	0.0952	0.0261	110-54-3
Isopropanol**	0.0055	2.00	0.0110	< 0.0110	< 0.0043	67-63-0
MEK**	0.0066	2.00	0.0132	0.0134	0.0044	78-93-3
Methylene chloride**	0.0077	2.00	0.0155	0.0300	0.0084	75-09-2
Styrene**	0.0095	2.00	0.0190	0.0429	0.0097	100-42-5
Toluene**	0.0081	2.00	0.0162	0.0323	0.0083	108-88-3
1,2,4-Trimethylbenzene**	0.0110	2.00	0.0219	< 0.0219	< 0.0043	95-63-6
1,3,5-Trimethylbenzene**	0.0134	2.00	0.0267	< 0.0267	< 0.0053	108-67-8
m,p-Xylenes**	0.0210	2.00	0.0421	< 0.0421	< 0.0094	108-38-3, 106-42-3
o-Xylene**	0.0105	2.00	0.0210	< 0.0210	< 0.0047	95-47-6

**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

In accordance with LDEQ requirements, a data qualifier and statement of non-compliance must be present on the same page as the data being presented.

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181193-003**		
Analytical SOP:	GSL_TM007	**Source Sampled:**	**Milam/Missouri**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi107670**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 11:20 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/19/2018 at 05:05 PM
QC Batch ID:	QC_09542	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.0186	2.00	0.0371	< 0.0371	< 0.0047	76-13-1
2-methyl-2-butanol*	0.0080	2.00	0.0161	< 0.0161	< 0.0043	75-85-4
2-methylbutane*	0.0066	2.00	0.0132	< 0.0132	< 0.0043	78-78-4
2-methylnaphthalene*	0.0130	2.00	0.0259	< 0.0259	< 0.0043	91-57-6
Benzaldehyde*	0.0097	2.00	0.0194	< 0.0194	< 0.0043	100-52-7
Benzoic acid*	0.0111	2.00	0.0223	< 0.0223	< 0.0043	65-85-0
Ethylene glycol*	0.0057	2.00	0.0113	< 0.0113	< 0.0043	107-21-1
Isopropylbenzene*	0.0110	2.00	0.0219	< 0.0219	< 0.0043	98-82-8
Naphthalene*	0.0117	2.00	0.0234	< 0.0234	< 0.0043	91-20-3
n-propyl benzene*	0.0110	2.00	0.0219	< 0.0219	< 0.0043	103-65-1
p-isopropyltoluene*	0.0122	2.00	0.0245	< 0.0245	< 0.0043	99-87-6
Propionitrile*	0.0050	2.00	0.0100	< 0.0100	< 0.0043	107-12-0
Trans-1,3-dichloropropene*	0.0101	2.00	0.0202	< 0.0202	< 0.0043	542-75-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_181193-004**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Milam/Missouri**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi107674**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 11:20 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/19/2018 at 06:01 PM
QC Batch ID:	QC_09542	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone**	0.0053	2.00	0.0106	0.1597	0.0650	67-64-1
Benzene**	0.0053	2.00	0.0106	< 0.0106	< 0.0032	71-43-2
1,3-Butadiene**	0.0040	2.00	0.0081	< 0.0081	< 0.0035	106-99-0
Carbon Disulfide**	0.0069	2.00	0.0139	< 0.0139	< 0.0043	75-15-0
Carbon tetrachloride**	0.0138	2.00	0.0275	< 0.0275	< 0.0042	56-23-5
Chloroform**	0.0109	2.00	0.0218	< 0.0218	< 0.0043	67-66-3
Cyclohexane**	0.0077	2.00	0.0153	< 0.0153	< 0.0043	110-82-7
1,4-Dioxane**	0.0080	2.00	0.0161	< 0.0161	< 0.0043	123-91-1
Ethanol**	0.0042	2.00	0.0084	0.0938	0.0481	64-17-5
Ethyl acetate**	0.0080	2.00	0.0161	< 0.0161	< 0.0043	141-78-6
Ethylbenzene**	0.0105	2.00	0.0210	< 0.0210	< 0.0047	100-41-4
Hexane**	0.0079	2.00	0.0157	0.0163	0.0045	110-54-3
Isopropanol**	0.0055	2.00	0.0110	< 0.0110	< 0.0043	67-63-0
MEK**	0.0066	2.00	0.0132	< 0.0132	< 0.0043	78-93-3
Methylene chloride**	0.0077	2.00	0.0155	0.0235	0.0066	75-09-2
Styrene**	0.0095	2.00	0.0190	0.0585	0.0133	100-42-5
Toluene**	0.0081	2.00	0.0162	< 0.0162	< 0.0041	108-88-3
1,2,4-Trimethylbenzene**	0.0110	2.00	0.0219	< 0.0219	< 0.0043	95-63-6
1,3,5-Trimethylbenzene**	0.0134	2.00	0.0267	< 0.0267	< 0.0053	108-67-8
m,p-Xylenes**	0.0210	2.00	0.0421	< 0.0421	< 0.0094	108-38-3, 106-42-3
o-Xylene**	0.0105	2.00	0.0210	< 0.0210	< 0.0047	95-47-6

**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

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Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181193-004**		
Analytical SOP:	GSL_TM007	**Source Sampled:**	**Milam/Missouri**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi107674**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 11:20 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/19/2018 at 06:01 PM
QC Batch ID:	QC_09542	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.0186	2.00	0.0371	< 0.0371	< 0.0047	76-13-1
2-methyl-2-butanol*	0.0080	2.00	0.0161	< 0.0161	< 0.0043	75-85-4
2-methylbutane*	0.0066	2.00	0.0132	< 0.0132	< 0.0043	78-78-4
2-methylnaphthalene*	0.0130	2.00	0.0259	< 0.0259	< 0.0043	91-57-6
Benzaldehyde*	0.0097	2.00	0.0194	< 0.0194	< 0.0043	100-52-7
Benzoic acid*	0.0111	2.00	0.0223	< 0.0223	< 0.0043	65-85-0
Ethylene glycol*	0.0057	2.00	0.0113	< 0.0113	< 0.0043	107-21-1
Isopropylbenzene*	0.0110	2.00	0.0219	< 0.0219	< 0.0043	98-82-8
Naphthalene*	0.0117	2.00	0.0234	< 0.0234	< 0.0043	91-20-3
n-propyl benzene*	0.0110	2.00	0.0219	< 0.0219	< 0.0043	103-65-1
p-isopropyltoluene*	0.0122	2.00	0.0245	< 0.0245	< 0.0043	99-87-6
Propionitrile*	0.0050	2.00	0.0100	< 0.0100	< 0.0043	107-12-0
Trans-1,3-dichloropropene*	0.0101	2.00	0.0202	< 0.0202	< 0.0043	542-75-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_181193-005**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Milam/Missouri**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi119263**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 11:20 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/19/2018 at 06:57 PM
QC Batch ID:	QC_09542	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone**	0.0053	2.00	0.0106	0.1155	0.0470	67-64-1
Benzene**	0.0053	2.00	0.0106	< 0.0106	< 0.0032	71-43-2
1,3-Butadiene**	0.0040	2.00	0.0081	< 0.0081	< 0.0035	106-99-0
Carbon Disulfide**	0.0069	2.00	0.0139	< 0.0139	< 0.0043	75-15-0
Carbon tetrachloride**	0.0138	2.00	0.0275	< 0.0275	< 0.0042	56-23-5
Chloroform**	0.0109	2.00	0.0218	< 0.0218	< 0.0043	67-66-3
Cyclohexane**	0.0077	2.00	0.0153	< 0.0153	< 0.0043	110-82-7
1,4-Dioxane**	0.0080	2.00	0.0161	< 0.0161	< 0.0043	123-91-1
Ethanol**	0.0042	2.00	0.0084	0.1364	0.0700	64-17-5
Ethyl acetate**	0.0080	2.00	0.0161	< 0.0161	< 0.0043	141-78-6
Ethylbenzene**	0.0105	2.00	0.0210	< 0.0210	< 0.0047	100-41-4
Hexane**	0.0079	2.00	0.0157	< 0.0157	< 0.0043	110-54-3
Isopropanol**	0.0055	2.00	0.0110	0.0370	0.0146	67-63-0
MEK**	0.0066	2.00	0.0132	< 0.0132	< 0.0043	78-93-3
Methylene chloride**	0.0077	2.00	0.0155	< 0.0155	< 0.0043	75-09-2
Styrene**	0.0095	20.00	0.1899	9.3146 E	2.1147 E	100-42-5
Toluene**	0.0081	2.00	0.0162	< 0.0162	< 0.0041	108-88-3
1,2,4-Trimethylbenzene**	0.0110	2.00	0.0219	< 0.0219	< 0.0043	95-63-6
1,3,5-Trimethylbenzene**	0.0134	2.00	0.0267	< 0.0267	< 0.0053	108-67-8
m,p-Xylenes**	0.0210	2.00	0.0421	< 0.0421	< 0.0094	108-38-3, 106-42-3
o-Xylene**	0.0105	2.00	0.0210	< 0.0210	< 0.0047	95-47-6

**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

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Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181193-005**		
Analytical SOP:	GSL_TM007	**Source Sampled:**	**Milam/Missouri**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi119263**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 11:20 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/19/2018 at 06:57 PM
QC Batch ID:	QC_09542	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.0186	2.00	0.0371	< 0.0371	< 0.0047	76-13-1
2-methyl-2-butanol*	0.0080	2.00	0.0161	< 0.0161	< 0.0043	75-85-4
2-methylbutane*	0.0066	2.00	0.0132	< 0.0132	< 0.0043	78-78-4
2-methylnaphthalene*	0.0130	2.00	0.0259	< 0.0259	< 0.0043	91-57-6
Benzaldehyde*	0.0097	2.00	0.0194	< 0.0194	< 0.0043	100-52-7
Benzoic acid*	0.0111	2.00	0.0223	< 0.0223	< 0.0043	65-85-0
Ethylene glycol*	0.0057	2.00	0.0113	< 0.0113	< 0.0043	107-21-1
Isopropylbenzene*	0.0110	2.00	0.0219	< 0.0219	< 0.0043	98-82-8
Naphthalene*	0.0117	2.00	0.0234	< 0.0234	< 0.0043	91-20-3
n-propyl benzene*	0.0110	2.00	0.0219	< 0.0219	< 0.0043	103-65-1
p-isopropyltoluene*	0.0122	2.00	0.0245	< 0.0245	< 0.0043	99-87-6
Propionitrile*	0.0050	2.00	0.0100	< 0.0100	< 0.0043	107-12-0
Trans-1,3-dichloropropene*	0.0101	2.00	0.0202	< 0.0202	< 0.0043	542-75-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_181193-006**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Milam/Missouri**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118228**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 11:20 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/19/2018 at 07:52 PM
QC Batch ID:	QC_09542	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone**	0.0053	2.00	0.0106	0.0790	0.0322	67-64-1
Benzene**	0.0053	2.00	0.0106	< 0.0106	< 0.0032	71-43-2
1,3-Butadiene**	0.0040	2.00	0.0081	< 0.0081	< 0.0035	106-99-0
Carbon Disulfide**	0.0069	2.00	0.0139	< 0.0139	< 0.0043	75-15-0
Carbon tetrachloride**	0.0138	2.00	0.0275	< 0.0275	< 0.0042	56-23-5
Chloroform**	0.0109	2.00	0.0218	< 0.0218	< 0.0043	67-66-3
Cyclohexane**	0.0077	2.00	0.0153	< 0.0153	< 0.0043	110-82-7
1,4-Dioxane**	0.0080	2.00	0.0161	< 0.0161	< 0.0043	123-91-1
Ethanol**	0.0042	2.00	0.0084	< 0.0084	< 0.0043	64-17-5
Ethyl acetate**	0.0080	2.00	0.0161	< 0.0161	< 0.0043	141-78-6
Ethylbenzene**	0.0105	2.00	0.0210	< 0.0210	< 0.0047	100-41-4
Hexane**	0.0079	2.00	0.0157	< 0.0157	< 0.0043	110-54-3
Isopropanol**	0.0055	2.00	0.0110	< 0.0110	< 0.0043	67-63-0
MEK**	0.0066	2.00	0.0132	< 0.0132	< 0.0043	78-93-3
Methylene chloride**	0.0077	2.00	0.0155	< 0.0155	< 0.0043	75-09-2
Styrene**	0.0095	20.00	0.1899	19.2485 E	4.3701 E	100-42-5
Toluene**	0.0081	2.00	0.0162	< 0.0162	< 0.0041	108-88-3
1,2,4-Trimethylbenzene**	0.0110	2.00	0.0219	< 0.0219	< 0.0043	95-63-6
1,3,5-Trimethylbenzene**	0.0134	2.00	0.0267	< 0.0267	< 0.0053	108-67-8
m,p-Xylenes**	0.0210	2.00	0.0421	< 0.0421	< 0.0094	108-38-3, 106-42-3
o-Xylene**	0.0105	2.00	0.0210	< 0.0210	< 0.0047	95-47-6

**Golden Specialty is not currently accredited through LDEQ for TO-17 or for the TO-15 analysis of hexane.

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Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_181193-006**		
Analytical SOP:	GSL_TM007	**Source Sampled:**	**Milam/Missouri**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118228**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	12/11/2018 at 11:20 AM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	12/19/2018 at 07:52 PM
QC Batch ID:	QC_09542	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane*	0.0186	2.00	0.0371	< 0.0371	< 0.0047	76-13-1
2-methyl-2-butanol*	0.0080	2.00	0.0161	< 0.0161	< 0.0043	75-85-4
2-methylbutane*	0.0066	2.00	0.0132	< 0.0132	< 0.0043	78-78-4
2-methylnaphthalene*	0.0130	2.00	0.0259	< 0.0259	< 0.0043	91-57-6
Benzaldehyde*	0.0097	2.00	0.0194	< 0.0194	< 0.0043	100-52-7
Benzoic acid*	0.0111	2.00	0.0223	< 0.0223	< 0.0043	65-85-0
Ethylene glycol*	0.0057	2.00	0.0113	< 0.0113	< 0.0043	107-21-1
Isopropylbenzene*	0.0110	2.00	0.0219	< 0.0219	< 0.0043	98-82-8
Naphthalene*	0.0117	2.00	0.0234	< 0.0234	< 0.0043	91-20-3
n-propyl benzene*	0.0110	2.00	0.0219	< 0.0219	< 0.0043	103-65-1
p-isopropyltoluene*	0.0122	2.00	0.0245	< 0.0245	< 0.0043	99-87-6
Propionitrile*	0.0050	2.00	0.0100	< 0.0100	< 0.0043	107-12-0
Trans-1,3-dichloropropene*	0.0101	2.00	0.0202	< 0.0202	< 0.0043	542-75-6

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Laboratory Analysis Report

Quality Control Information

Surrogate Recovery

Test: Analysis by Method TO-15
Date Analyzed: 12/13/2018
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09524

Sample Number	Parameter	Analysis Time	Spike Amount (ppbv)	Surrogate Result (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
CCV	Bromofluorobenzene	9:22 AM	10.00	10.51	105	60 - 140	
LCS	Bromofluorobenzene	10:16 AM	10.00	11.16	112	60 - 140	
BLANK	Bromofluorobenzene	11:12 AM	10.00	8.04	80	60 - 140	
GSL_181178-001	Bromofluorobenzene	12:07 PM	10.00	12.27	123	60 - 140	
Duplicate	Bromofluorobenzene	1:02 PM	10.00	12.15	122	60 - 140	
GSL_181183-001	Bromofluorobenzene	1:57 PM	10.00	12.38	124	60 - 140	
GSL_181184-001	Bromofluorobenzene	2:52 PM	10.00	14.41	144	60 - 140	H
GSL_181184-002	Bromofluorobenzene	3:47 PM	10.00	13.23	132	60 - 140	
GSL_181184-001 (20x)	Bromofluorobenzene	4:41 PM	10.00	12.18	122	60 - 140	
GSL_181184-002 (20x)	Bromofluorobenzene	5:35 PM	10.00	12.68	127	60 - 140	

Laboratory Analysis Report

Quality Control Information

Surrogate Recovery

Test: Analysis by Method TO-15
Date Analyzed: 12/14/2018
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09530

Sample Number	Parameter	Analysis Time	Spike Amount (ppbv)	Surrogate Result (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
CCV	Bromofluorobenzene	1:04 PM	10.00	9.74	97	60 - 140	
LCS	Bromofluorobenzene	1:58 PM	10.00	10.85	108	60 - 140	
BLANK	Bromofluorobenzene	2:55 PM	10.00	9.10	91	60 - 140	
GSL_181189-001	Bromofluorobenzene	3:50 PM	10.00	12.77	128	60 - 140	
Duplicate	Bromofluorobenzene	4:45 PM	10.00	12.75	127	60 - 140	
GSL_181191-001	Bromofluorobenzene	5:40 PM	10.00	18.62	186	60 - 140	H
GSL_181191-003	Bromofluorobenzene	7:30 PM	10.00	11.90	119	60 - 140	
GSL_181191-004	Bromofluorobenzene	8:25 PM	10.00	10.69	107	60 - 140	
GSL_181191-005	Bromofluorobenzene	9:20 PM	10.00	12.20	122	60 - 140	
GSL_181192-001	Bromofluorobenzene	11:10 PM	10.00	11.40	114	60 - 140	

Laboratory Analysis Report

Quality Control Information

Surrogate Recovery

Test: Analysis by Method TO-15
Date Analyzed: 12/15/2018
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09530

Sample Number	Parameter	Analysis Time	Spike Amount (ppbv)	Surrogate Result (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
GSL_181192-002	Bromofluorobenzene	12:05 AM	10.00	7.00	70	60 - 140	
GSL_181193-002	Bromofluorobenzene	1:55 AM	10.00	14.58	146	60 - 140	H
GSL_181191-001 (20x)	Bromofluorobenzene	2:49 AM	10.00	12.39	124	60 - 140	
GSL_181191-005 (20x)	Bromofluorobenzene	4:38 AM	10.00	15.67	157	60 - 140	H
GSL_181192-002 (20x)	Bromofluorobenzene	7:22 AM	10.00	11.57	116	60 - 140	
GSL_181193-002 (20x)	Bromofluorobenzene	9:11 AM	10.00	12.68	127	60 - 140	

Laboratory Analysis Report

Quality Control Information

Surrogate Recovery

Test: Analysis by Method TO-15
Date Analyzed: 12/17/2018
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09530

Sample Number	Parameter	Analysis Time	Spike Amount (ppbv)	Surrogate Result (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
CCV	Bromofluorobenzene	12:08 PM	10.00	10.38	104	60 - 140	
LCS	Bromofluorobenzene	1:04 PM	10.00	10.61	106	60 - 140	
BLANK	Bromofluorobenzene	3:40 PM	10.00	7.15	72	60 - 140	
GSL_181191-002	Bromofluorobenzene	5:32 PM	10.00	12.08	121	60 - 140	
Duplicate	Bromofluorobenzene	6:27 PM	10.00	12.90	129	60 - 140	
GSL_181191-006	Bromofluorobenzene	7:22 PM	10.00	13.10	131	60 - 140	
GSL_181193-001	Bromofluorobenzene	8:18 PM	10.00	12.61	126	60 - 140	
GSL_181193-001 (20x)	Bromofluorobenzene	9:12 PM	10.00	10.44	104	60 - 140	

Laboratory Analysis Report

Quality Control Information

Surrogate Recovery

Test: Analysis by Method TO-17
Date Analyzed: 12/18/2018
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09540

Sample Number	Parameter	Analysis Time	Spike Amount (ppbv)	Surrogate Result (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
LCS	Bromofluorobenzene	12:53 PM	10.00	10.88	109	60 - 140	
GSL_181184-003	Bromofluorobenzene	2:45 PM	10.00	11.12	111	60 - 140	
GSL_181184-004	Bromofluorobenzene	3:41 PM	10.00	10.41	104	60 - 140	
GSL_181184-005	Bromofluorobenzene	4:36 PM	10.00	10.84	108	60 - 140	
GSL_181191-007	Bromofluorobenzene	5:31 PM	10.00	10.74	107	60 - 140	
GSL_181191-008	Bromofluorobenzene	6:27 PM	10.00	10.65	106	60 - 140	
GSL_181191-009	Bromofluorobenzene	7:22 PM	10.00	8.96	90	60 - 140	
GSL_181191-010	Bromofluorobenzene	8:17 PM	10.00	10.14	101	60 - 140	
GSL_181192-003	Bromofluorobenzene	9:12 PM	10.00	10.26	103	60 - 140	
GSL_181184-003 (20x)	Bromofluorobenzene	10:07 PM	10.00	10.22	102	60 - 140	
Duplicate	Bromofluorobenzene	11:02 PM	10.00	10.89	109	60 - 140	
GSL_181191-008 (20x)	Bromofluorobenzene	11:56 PM	10.00	9.14	91	60 - 140	

Laboratory Analysis Report

Quality Control Information

Surrogate Recovery

Test: Analysis by Method TO-17
Date Analyzed: 12/19/2018
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09540

Sample Number	Parameter	Analysis Time	Spike Amount (ppbv)	Surrogate Result (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
GSL_181191-010 (20x)	Bromofluorobenzene	12:51 AM	10.00	9.58	96	60 - 140	
GSL_181192-003 (20x)	Bromofluorobenzene	1:46 AM	10.00	10.26	103	60 - 140	

Laboratory Analysis Report

Quality Control Information

Surrogate Recovery

Test: Analysis by Method TO-17
Date Analyzed: 12/19/2018
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09542

Sample Number	Parameter	Analysis Time	Spike Amount (ppbv)	Surrogate Result (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
CCV	Bromofluorobenzene	9:40 AM	10.00	10.95	110	60 - 140	
LCS	Bromofluorobenzene	10:35 AM	10.00	10.96	110	60 - 140	
BLANK	Bromofluorobenzene	11:33 AM	10.00	7.92	79	60 - 140	
GSL_181192-004	Bromofluorobenzene	12:27 PM	10.00	9.49	95	60 - 140	
GSL_181192-005	Bromofluorobenzene	1:22 PM	10.00	14.72	147	60 - 140	H
GSL_181214-001	Bromofluorobenzene	3:15 PM	10.00	13.00	130	60 - 140	
Duplicate	Bromofluorobenzene	4:10 PM	10.00	13.25	132	60 - 140	
GSL_181193-003	Bromofluorobenzene	5:05 PM	10.00	12.10	121	60 - 140	
GSL_181193-004	Bromofluorobenzene	6:01 PM	10.00	11.11	111	60 - 140	
GSL_181193-005	Bromofluorobenzene	6:57 PM	10.00	13.96	140	60 - 140	
GSL_181193-006	Bromofluorobenzene	7:52 PM	10.00	14.25	142	60 - 140	H
GSL_181192-005 (20x)	Bromofluorobenzene	8:47 PM	10.00	12.32	123	60 - 140	
GSL_181193-005 (20x)	Bromofluorobenzene	9:42 PM	10.00	11.36	114	60 - 140	
GSL_181193-006 (20x)	Bromofluorobenzene	10:37 PM	10.00	11.19	112	60 - 140	

Laboratory Analysis Report

Quality Control Information

Sample Duplicate Recovery

Test: Analysis by Method TO-15
Duplicate Sample Number: GSL_181178-001
Duplicate Sample Dilution: 2.00x
Date Analyzed: 12/13/2018 at 01:02 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09524

Parameter	SQL (ppbv)	Sample Result (ppbv)	Duplicate Result (ppbv)	RPD (%)	RPD Limit (%)	Flag
1,3-Butadiene	1.00	< 1.00	< 1.00	NC	20	
Ethanol	1.00	< 1.00	< 1.00	NC	20	
Acetone	1.00	46.00	50.60	10	20	
Isopropanol	1.00	< 1.00	< 1.00	NC	20	
Methylene Chloride	1.00	4.00	5.00	22	20	F
Carbon disulfide	1.00	< 1.00	< 1.00	NC	20	
MEK	1.00	< 1.00	< 1.00	NC	20	
Hexane	1.00	< 1.00	< 1.00	NC	20	
Chloroform	1.00	8.00	9.72	19	20	
Ethyl Acetate	1.00	< 1.00	< 1.00	NC	20	
Benzene	1.00	< 1.00	< 1.00	NC	20	
Carbon tetrachloride	1.00	< 1.00	< 1.00	NC	20	
Cyclohexane	1.00	< 1.00	< 1.00	NC	20	
1,4-Dioxane	1.00	< 1.00	< 1.00	NC	20	
Toluene	1.00	< 1.00	1.92	NC	20	
Ethylbenzene	1.00	< 1.00	< 1.00	NC	20	
m,p-Xylenes	2.00	< 2.00	< 2.00	NC	20	
Styrene	1.00	< 1.00	< 1.00	NC	20	
o-Xylene	1.00	< 1.00	< 1.00	NC	20	
1,3,5-Trimethylbenzene	1.00	< 1.00	< 1.00	NC	20	
1,2,4-Trimethylbenzene	1.00	< 1.00	< 1.00	NC	20	

Laboratory Analysis Report

Quality Control Information

Sample Duplicate Recovery

Test: Analysis by Method TO-15
Duplicate Sample Number: GSL_181189-001
Duplicate Sample Dilution: 2.00x
Date Analyzed: 12/14/2018 at 04:45 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09530

Parameter	SQL (ppbv)	Sample Result (ppbv)	Duplicate Result (ppbv)	RPD (%)	RPD Limit (%)	Flag
1,3-Butadiene	1.00	< 1.00	< 1.00	NC	20	
Ethanol	1.00	< 1.00	< 1.00	NC	20	
Acetone	1.00	161.98	144.24	12	20	
Isopropanol	1.00	< 1.00	< 1.00	NC	20	
Methylene Chloride	1.00	26.36	23.50	11	20	
Carbon disulfide	1.00	< 1.00	< 1.00	NC	20	
MEK	1.00	1.60	1.38	15	20	
Hexane	1.00	< 1.00	< 1.00	NC	20	
Chloroform	1.00	5.04	4.70	7	20	
Ethyl Acetate	1.00	1.16	< 1.00	NC	20	
Benzene	1.00	< 1.00	< 1.00	NC	20	
Carbon tetrachloride	1.00	< 1.00	< 1.00	NC	20	
Cyclohexane	1.00	2.48	2.06	19	20	
1,4-Dioxane	1.00	< 1.00	< 1.00	NC	20	
Toluene	1.00	42.86	40.34	6	20	
Ethylbenzene	1.00	< 1.00	< 1.00	NC	20	
m,p-Xylenes	2.00	< 2.00	< 2.00	NC	20	
Styrene	1.00	< 1.00	< 1.00	NC	20	
o-Xylene	1.00	< 1.00	< 1.00	NC	20	
1,3,5-Trimethylbenzene	1.00	< 1.00	< 1.00	NC	20	
1,2,4-Trimethylbenzene	1.00	< 1.00	< 1.00	NC	20	

Laboratory Analysis Report

Quality Control Information

Sample Duplicate Recovery

Test: Analysis by Method TO-15
Duplicate Sample Number: GSL_181189-001
Duplicate Sample Dilution: 3.26x
Date Analyzed: 12/17/2018 at 06:27 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09530

Parameter	SQL (ppbv)	Sample Result (ppbv)	Duplicate Result (ppbv)	RPD (%)	RPD Limit (%)	Flag
1,3-Butadiene	1.63	< 1.63	< 1.63	NC	20	
Ethanol	1.63	< 1.63	< 1.63	NC	20	
Acetone	1.63	43.23	45.71	6	20	
Isopropanol	1.63	< 1.63	< 1.63	NC	20	
Methylene Chloride	1.63	< 1.63	< 1.63	NC	20	
Carbon disulfide	1.63	4.96	5.12	3	20	
MEK	1.63	< 1.63	< 1.63	NC	20	
Hexane	1.63	2.93	2.74	7	20	
Chloroform	1.63	< 1.63	< 1.63	NC	20	
Ethyl Acetate	1.63	< 1.63	< 1.63	NC	20	
Benzene	1.63	21.39	19.89	7	20	
Carbon tetrachloride	1.63	< 1.63	< 1.63	NC	20	
Cyclohexane	1.63	< 1.63	< 1.63	NC	20	
1,4-Dioxane	1.63	< 1.63	< 1.63	NC	20	
Toluene	1.63	8.05	8.44	5	20	
Ethylbenzene	1.63	< 1.63	< 1.63	NC	20	
m,p-Xylenes	3.26	< 3.26	< 3.26	NC	20	
Styrene	1.63	51.18	51.51	1	20	
o-Xylene	1.63	< 1.63	< 1.63	NC	20	
1,3,5-Trimethylbenzene	1.63	< 1.63	< 1.63	NC	20	
1,2,4-Trimethylbenzene	1.63	< 1.63	< 1.63	NC	20	

Laboratory Analysis Report

Quality Control Information

Sample Duplicate Recovery

Test: Analysis by Method TO-17
Duplicate Sample Number: GSL_181184-003
Duplicate Sample Dilution: 20.00x
Date Analyzed: 12/18/2018 at 11:02 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09540

Parameter	SQL (ppbv)	Sample Result (ppbv)	Duplicate Result (ppbv)	RPD (%)	RPD Limit (%)	Flag
Acetone	10.00	< 10.00	< 10.00	NC	20	
Benzene	10.00	< 10.00	< 10.00	NC	20	
1,3-butadiene	10.00	< 10.00	< 10.00	NC	20	
Carbon disulfide	10.00	< 10.00	< 10.00	NC	20	
Carbon tetrachloride	10.00	< 10.00	< 10.00	NC	20	
Chloroform	10.00	< 10.00	< 10.00	NC	20	
Cyclohexane	10.00	< 10.00	< 10.00	NC	20	
1,4-dioxane	10.00	< 10.00	< 10.00	NC	20	
Ethanol	10.00	< 10.00	< 10.00	NC	20	
Ethyl acetate	10.00	< 10.00	< 10.00	NC	20	
Ethylbenzene	10.00	< 10.00	< 10.00	NC	20	
Hexane	10.00	< 10.00	< 10.00	NC	20	
Isopropanol	10.00	< 10.00	< 10.00	NC	20	
MEK	10.00	< 10.00	< 10.00	NC	20	
Methylene chloride	10.00	< 10.00	< 10.00	NC	20	
Styrene	10.00	824.80	740.20	11	20	
Toluene	10.00	< 10.00	< 10.00	NC	20	
1,2,4-trimethylbenzene	10.00	< 10.00	< 10.00	NC	20	
1,3,5-trimethylbenzene	10.00	< 10.00	< 10.00	NC	20	
m,p-Xylenes	20.00	< 20.00	< 20.00	NC	20	
o-xylene	10.00	< 10.00	< 10.00	NC	20	

Laboratory Analysis Report

Quality Control Information

Blank Analysis

Test: Analysis by Method TO-15
Date Analyzed: 12/13/2018 at 11:12 AM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09524

Parameter	CAS #	MQL (ppbv)	Blank Result (ppbv)	Flag
1,3-Butadiene	106-99-0	0.50	< 0.50	
Ethanol	64-17-5	0.50	< 0.50	
Acetone	67-64-1	0.50	< 0.50	
Isopropanol	67-63-0	0.50	< 0.50	
Methylene Chloride	75-09-2	0.50	< 0.50	
Carbon disulfide	75-15-0	0.50	< 0.50	
MEK	78-93-3	0.50	< 0.50	
Hexane	110-54-3	0.50	< 0.50	
Chloroform	67-66-3	0.50	< 0.50	
Ethyl Acetate	141-78-6	0.50	< 0.50	
Benzene	71-43-2	0.50	< 0.50	
Carbon tetrachloride	56-23-5	0.50	< 0.50	
Cyclohexane	110-82-7	0.50	< 0.50	
1,4-Dioxane	123-91-1	0.50	< 0.50	
Toluene	108-88-3	0.50	< 0.50	
Ethylbenzene	100-41-4	0.50	< 0.50	
m,p-Xylenes	108-38-3, 106-42-3	1.00	< 1.00	
Styrene	100-42-5	0.50	< 0.50	
o-Xylene	95-47-6	0.50	< 0.50	
1,3,5-Trimethylbenzene	108-67-8	0.50	< 0.50	
1,2,4-Trimethylbenzene	95-63-6	0.50	< 0.50	

Laboratory Analysis Report

Quality Control Information

Blank Analysis

Test: Analysis by Method TO-15
Date Analyzed: 12/14/2018 at 02:55 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09530

Parameter	CAS #	MQL (ppbv)	Blank Result (ppbv)	Flag
1,3-Butadiene	106-99-0	0.50	< 0.50	
Ethanol	64-17-5	0.50	< 0.50	
Acetone	67-64-1	0.50	< 0.50	
Isopropanol	67-63-0	0.50	< 0.50	
Methylene Chloride	75-09-2	0.50	< 0.50	
Carbon disulfide	75-15-0	0.50	< 0.50	
MEK	78-93-3	0.50	< 0.50	
Hexane	110-54-3	0.50	< 0.50	
Chloroform	67-66-3	0.50	< 0.50	
Ethyl Acetate	141-78-6	0.50	< 0.50	
Benzene	71-43-2	0.50	< 0.50	
Carbon tetrachloride	56-23-5	0.50	< 0.50	
Cyclohexane	110-82-7	0.50	< 0.50	
1,4-Dioxane	123-91-1	0.50	< 0.50	
Toluene	108-88-3	0.50	< 0.50	
Ethylbenzene	100-41-4	0.50	< 0.50	
m,p-Xylenes	108-38-3, 106-42-3	1.00	< 1.00	
Styrene	100-42-5	0.50	< 0.50	
o-Xylene	95-47-6	0.50	< 0.50	
1,3,5-Trimethylbenzene	108-67-8	0.50	< 0.50	
1,2,4-Trimethylbenzene	95-63-6	0.50	< 0.50	

Laboratory Analysis Report

Quality Control Information

Blank Analysis

Test: Analysis by Method TO-15
Date Analyzed: 12/17/2018 at 03:40 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09530

Parameter	CAS #	MQL (ppbv)	Blank Result (ppbv)	Flag
1,3-Butadiene	106-99-0	0.50	< 0.50	
Ethanol	64-17-5	0.50	< 0.50	
Acetone	67-64-1	0.50	< 0.50	
Isopropanol	67-63-0	0.50	< 0.50	
Methylene Chloride	75-09-2	0.50	< 0.50	
Carbon disulfide	75-15-0	0.50	< 0.50	
MEK	78-93-3	0.50	< 0.50	
Hexane	110-54-3	0.50	< 0.50	
Chloroform	67-66-3	0.50	< 0.50	
Ethyl Acetate	141-78-6	0.50	< 0.50	
Benzene	71-43-2	0.50	< 0.50	
Carbon tetrachloride	56-23-5	0.50	< 0.50	
Cyclohexane	110-82-7	0.50	< 0.50	
1,4-Dioxane	123-91-1	0.50	< 0.50	
Toluene	108-88-3	0.50	< 0.50	
Ethylbenzene	100-41-4	0.50	< 0.50	
m,p-Xylenes	108-38-3, 106-42-3	1.00	< 1.00	
Styrene	100-42-5	0.50	1.76	B
o-Xylene	95-47-6	0.50	< 0.50	
1,3,5-Trimethylbenzene	108-67-8	0.50	< 0.50	
1,2,4-Trimethylbenzene	95-63-6	0.50	< 0.50	

Laboratory Analysis Report

Quality Control Information

Blank Analysis

Test: Analysis by Method TO-17
Date Analyzed: 12/18/2018 at 01:50 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09540

Parameter	CAS #	MQL (ppbv)	Blank Result (ppbv)	Flag
Acetone	67-64-1	0.50	< 0.50	
Benzene	71-43-2	0.50	< 0.50	
1,3-butadiene	106-99-0	0.50	< 0.50	
Carbon disulfide	75-15-0	0.50	< 0.50	
Carbon tetrachloride	56-23-5	0.50	< 0.50	
Chloroform	67-66-3	0.50	< 0.50	
Cyclohexane	110-82-7	0.50	< 0.50	
1,4-dioxane	123-91-1	0.50	< 0.50	
Ethanol	64-17-5	0.50	< 0.50	
Ethyl acetate	141-78-6	0.50	< 0.50	
Ethylbenzene	100-41-4	0.50	< 0.50	
Hexane	110-54-3	0.50	< 0.50	
Isopropanol	67-63-0	0.50	< 0.50	
MEK	78-93-3	0.50	< 0.50	
Methylene chloride	75-09-2	0.50	< 0.50	
Styrene	100-42-5	0.50	< 0.50	
Toluene	108-88-3	0.50	< 0.50	
1,2,4-trimethylbenzene	95-63-6	0.50	< 0.50	
1,3,5-trimethylbenzene	108-67-8	0.50	< 0.50	
m,p-Xylenes	108-38-3, 106-42-3	1.00	< 1.00	
o-xylene	95-47-6	0.50	< 0.50	

Laboratory Analysis Report

Quality Control Information

Blank Analysis

Test: Analysis by Method TO-17
Date Analyzed: 12/19/2018 at 11:33 AM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09542

Parameter	CAS #	MQL (ppbv)	Blank Result (ppbv)	Flag
Acetone	67-64-1	0.50	< 0.50	
Benzene	71-43-2	0.50	< 0.50	
1,3-butadiene	106-99-0	0.50	< 0.50	
Carbon disulfide	75-15-0	0.50	< 0.50	
Carbon tetrachloride	56-23-5	0.50	< 0.50	
Chloroform	67-66-3	0.50	< 0.50	
Cyclohexane	110-82-7	0.50	< 0.50	
1,4-dioxane	123-91-1	0.50	< 0.50	
Ethanol	64-17-5	0.50	< 0.50	
Ethyl acetate	141-78-6	0.50	< 0.50	
Ethylbenzene	100-41-4	0.50	< 0.50	
Hexane	110-54-3	0.50	< 0.50	
Isopropanol	67-63-0	0.50	< 0.50	
MEK	78-93-3	0.50	< 0.50	
Methylene chloride	75-09-2	0.50	< 0.50	
Styrene	100-42-5	0.50	< 0.50	
Toluene	108-88-3	0.50	< 0.50	
1,2,4-trimethylbenzene	95-63-6	0.50	< 0.50	
1,3,5-trimethylbenzene	108-67-8	0.50	< 0.50	
m,p-Xylenes	108-38-3, 106-42-3	1.00	< 1.00	
o-xylene	95-47-6	0.50	< 0.50	

Laboratory Analysis Report

Quality Control Information

Laboratory Control Sample

Test: Analysis by Method TO-15
Date Analyzed: 12/13/2018 at 10:16 AM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09524

Parameter	LCS Result (ppbv)	Spike Amount (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
1,3-Butadiene	5.27	5.00	105	65 - 135	
Ethanol	4.32	5.00	86	65 - 135	
Acetone	4.99	5.00	100	65 - 135	
Isopropanol	4.60	5.00	92	65 - 135	
Methylene Chloride	4.90	5.00	98	65 - 135	
Carbon disulfide	4.84	5.00	97	65 - 135	
MEK	4.51	5.00	90	65 - 135	
Hexane	4.40	5.00	88	65 - 135	
Chloroform	5.08	5.00	102	65 - 135	
Ethyl Acetate	4.39	5.00	88	65 - 135	
Benzene	4.52	5.00	90	65 - 135	
Carbon tetrachloride	5.34	5.00	107	65 - 135	
Cyclohexane	4.82	5.00	96	65 - 135	
1,4-Dioxane	4.61	5.00	92	65 - 135	
Toluene	4.57	5.00	91	65 - 135	
Ethylbenzene	4.85	5.00	97	65 - 135	
m,p-Xylenes	9.43	10.00	94	65 - 135	
Styrene	4.76	5.00	95	65 - 135	
o-Xylene	4.84	5.00	97	65 - 135	
1,3,5-Trimethylbenzene	5.25	5.00	105	65 - 135	
1,2,4-Trimethylbenzene	5.06	5.00	101	65 - 135	

Laboratory Analysis Report

Quality Control Information

Laboratory Control Sample

Test: Analysis by Method TO-15
Date Analyzed: 12/14/2018 at 01:58 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09530

Parameter	LCS Result (ppbv)	Spike Amount (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
1,3-Butadiene	5.21	5.00	104	65 - 135	
Ethanol	4.25	5.00	85	65 - 135	
Acetone	5.09	5.00	102	65 - 135	
Isopropanol	4.73	5.00	95	65 - 135	
Methylene Chloride	4.71	5.00	94	65 - 135	
Carbon disulfide	4.94	5.00	99	65 - 135	
MEK	4.99	5.00	100	65 - 135	
Hexane	4.20	5.00	84	65 - 135	
Chloroform	4.76	5.00	95	65 - 135	
Ethyl Acetate	4.81	5.00	96	65 - 135	
Benzene	4.38	5.00	88	65 - 135	
Carbon tetrachloride	5.25	5.00	105	65 - 135	
Cyclohexane	4.37	5.00	87	65 - 135	
1,4-Dioxane	4.60	5.00	92	65 - 135	
Toluene	4.62	5.00	92	65 - 135	
Ethylbenzene	4.74	5.00	95	65 - 135	
m,p-Xylenes	10.03	10.00	100	65 - 135	
Styrene	4.94	5.00	99	65 - 135	
o-Xylene	5.03	5.00	101	65 - 135	
1,3,5-Trimethylbenzene	4.99	5.00	100	65 - 135	
1,2,4-Trimethylbenzene	5.43	5.00	109	65 - 135	

Laboratory Analysis Report

Quality Control Information

Laboratory Control Sample

Test: Analysis by Method TO-15
Date Analyzed: 12/17/2018 at 01:04 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09530

Parameter	LCS Result (ppbv)	Spike Amount (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
1,3-Butadiene	4.33	5.00	87	65 - 135	
Ethanol	3.41	5.00	68	65 - 135	
Acetone	4.15	5.00	83	65 - 135	
Isopropanol	4.56	5.00	91	65 - 135	
Methylene Chloride	4.20	5.00	84	65 - 135	
Carbon disulfide	5.58	5.00	112	65 - 135	
MEK	5.23	5.00	105	65 - 135	
Hexane	5.02	5.00	100	65 - 135	
Chloroform	5.34	5.00	107	65 - 135	
Ethyl Acetate	5.20	5.00	104	65 - 135	
Benzene	5.54	5.00	111	65 - 135	
Carbon tetrachloride	5.69	5.00	114	65 - 135	
Cyclohexane	5.44	5.00	109	65 - 135	
1,4-Dioxane	4.26	5.00	85	65 - 135	
Toluene	4.83	5.00	97	65 - 135	
Ethylbenzene	4.56	5.00	91	65 - 135	
m,p-Xylenes	9.51	10.00	95	65 - 135	
Styrene	5.37	5.00	107	65 - 135	
o-Xylene	4.70	5.00	94	65 - 135	
1,3,5-Trimethylbenzene	4.92	5.00	98	65 - 135	
1,2,4-Trimethylbenzene	4.99	5.00	100	65 - 135	

Laboratory Analysis Report

Quality Control Information

Laboratory Control Sample

Test: Analysis by Method TO-17
Date Analyzed: 12/18/2018 at 12:53 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09540

Parameter	LCS Result (ppbv)	Spike Amount (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
Acetone	4.80	5.00	96	65 - 135	
Benzene	4.71	5.00	94	65 - 135	
1,3-butadiene	4.88	5.00	98	65 - 135	
Carbon disulfide	4.79	5.00	96	65 - 135	
Carbon tetrachloride	5.54	5.00	111	65 - 135	
Chloroform	5.50	5.00	110	65 - 135	
Cyclohexane	4.55	5.00	91	65 - 135	
1,4-dioxane	4.64	5.00	93	65 - 135	
Ethanol	3.88	5.00	78	65 - 135	
Ethyl acetate	4.55	5.00	91	65 - 135	
Ethylbenzene	4.64	5.00	93	65 - 135	
Hexane	4.51	5.00	90	65 - 135	
Isopropanol	4.72	5.00	94	65 - 135	
MEK	5.22	5.00	104	65 - 135	
Methylene chloride	4.24	5.00	85	65 - 135	
Styrene	5.07	5.00	101	65 - 135	
Toluene	5.15	5.00	103	65 - 135	
1,2,4-trimethylbenzene	4.97	5.00	99	65 - 135	
1,3,5-trimethylbenzene	5.13	5.00	103	65 - 135	
m,p-Xylenes	9.29	10.00	93	65 - 135	
o-xylene	4.66	5.00	93	65 - 135	

Laboratory Analysis Report

Quality Control Information

Laboratory Control Sample

Test: Analysis by Method TO-17
Date Analyzed: 12/19/2018 at 10:35 AM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09542

Parameter	LCS Result (ppbv)	Spike Amount (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
Acetone	4.81	5.00	96	65 - 135	
Benzene	4.55	5.00	91	65 - 135	
1,3-butadiene	5.41	5.00	108	65 - 135	
Carbon disulfide	4.99	5.00	100	65 - 135	
Carbon tetrachloride	5.27	5.00	105	65 - 135	
Chloroform	4.85	5.00	97	65 - 135	
Cyclohexane	4.13	5.00	83	65 - 135	
1,4-dioxane	4.08	5.00	82	65 - 135	
Ethanol	4.32	5.00	86	65 - 135	
Ethyl acetate	4.43	5.00	89	65 - 135	
Ethylbenzene	4.18	5.00	84	65 - 135	
Hexane	4.31	5.00	86	65 - 135	
Isopropanol	4.54	5.00	91	65 - 135	
MEK	4.74	5.00	95	65 - 135	
Methylene chloride	4.73	5.00	95	65 - 135	
Styrene	4.53	5.00	91	65 - 135	
Toluene	4.42	5.00	88	65 - 135	
1,2,4-trimethylbenzene	4.76	5.00	95	65 - 135	
1,3,5-trimethylbenzene	4.70	5.00	94	65 - 135	
m,p-Xylenes	8.55	10.00	86	65 - 135	
o-xylene	4.50	5.00	90	65 - 135	

Data Qualifiers and Flags

- MDL – Method Detection Limit
- MQL – Method Quantitation Limit
- SDL – Sample Detection Limit
- SQL – Sample Quantitation Limit
- RPD - Relative Percent Difference
- J – Target analyte is between the MDL and SQL values.
- L – Target analyte recovered below the recovery limits.
- H – Target analyte recovered above the recovery limits.
- B – Target analyte identified in blank run.
- F – RPD/RSD is outside the control limits.
- NC – Not calculated due to division by zero, or negative spike recovery.
- M – Target analyte reported outside control limit due to matrix interference.
- E – Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in narrative.
- ND - Non-detect; analyte is below the MDL value, or TIC not detected in GC/MS scan.
- A - Sample analyzed outside holding time.
- C - Sample analyzed by FTIR; results estimated.
- I - Internal standard outside acceptable response range.

Laboratory Report

Absolute Resource associates
124 Heritage Avenue Portsmouth NH 03801

Jenifer Milam
Engineer Research & Development Center
3909 Halls Ferry Road
Vicksburg, MS 39180

PO Number: W912HZ-15-A-0043
Job ID: 47066
Date Received: 12/14/18

Project: Order ID: 1069 18L1301

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, the analyses performed met the requirements of Absolute Resource Associates' Quality Assurance Plan. The Standard Operating Procedures are based upon USEPA SW-846, USEPA Methods for Chemical Analysis of Water and Wastewater, Standard Methods for the Examination of Water and Wastewater and other recognized methodologies. The results contained in this report pertain only to the samples as indicated on the chain of custody.

Absolute Resource Associates maintains certification with the agencies listed below.

We appreciate the opportunity to provide laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be glad to assist you.

Sincerely,
Absolute Resource Associates

(for)

Jennifer Lowe
Laboratory Manager

Date of Approval: 1/10/2019
Total number of pages: 25

Absolute Resource Associates Certifications

New Hampshire	1732	Massachusetts	M-NH902
Maine	NH903		

Project ID: Order ID: 1069 18L1301

Lab ID: 47066

Sample Association Table

Field ID	Matrix	Date-Time Sampled	Lab#	Analysis
18L1301-01	Water	12/12/2018 12:00	47066-001	VOCs in water by 8260
18L1301-02	Water	12/12/2018 12:00	47066-002	VOCs in water by 8260
18L1301-03	Water	12/12/2018 12:00	47066-003	VOCs in water by 8260

Project ID: Order ID: 1069 18L1301
Job ID: 47066
Sample#: 47066-001
Sample ID: 18L1301-01
Matrix: Water
Sampled: 12/12/18 12:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
dichlorodifluoromethane	U	10000	2400	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
chloromethane	U	10000	3600	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
vinyl chloride	U	10000	3800	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
bromomethane	U	10000	9400	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
chloroethane	U	10000	2500	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
trichlorofluoromethane	U	10000	2800	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
diethyl ether	U	25000	3300	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
acetone	U	250000	17000	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,1-dichloroethene	U	5000	3500	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
methylene chloride	U	25000	3400	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
carbon disulfide	U	10000	3800	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
methyl t-butyl ether (MTBE)	U	10000	3000	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
trans-1,2-dichloroethene	U	10000	3100	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,1-dichloroethane	U	10000	3300	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
2-butanone (MEK)	U	50000	9100	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
2,2-dichloropropane	U	10000	2600	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
cis-1,2-dichloroethene	U	10000	3800	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
chloroform	U	10000	2900	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
bromochloromethane	U	10000	2700	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
tetrahydrofuran (THF)	U	50000	6200	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,1,1-trichloroethane	U	10000	2900	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,1-dichloropropene	U	10000	3300	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
carbon tetrachloride	U	10000	3000	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,2-dichloroethane	U	10000	3200	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
benzene	U	10000	3300	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
trichloroethene	U	10000	3000	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,2-dichloropropane	U	10000	3300	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
bromodichloromethane	U	3000	2500	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
dibromomethane	U	10000	3400	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
4-methyl-2-pentanone (MIBK)	U	50000	4100	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
cis-1,3-dichloropropene	U	10000	3200	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
toluene	U	10000	3200	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
trans-1,3-dichloropropene	U	10000	2800	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
2-hexanone	U	50000	3200	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,1,2-trichloroethane	U	10000	3600	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,3-dichloropropane	U	10000	3500	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
tetrachloroethene	U	10000	2400	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
dibromochloromethane	U	10000	2900	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,2-dibromoethane (EDB)	U	10000	3500	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
chlorobenzene	U	10000	3300	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,1,1,2-tetrachloroethane	U	10000	3800	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
ethylbenzene	U	10000	3600	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C

Project ID: Order ID: 1069 18L1301
Job ID: 47066
Sample#: 47066-001
Sample ID: 18L1301-01
Matrix: Water
Sampled: 12/12/18 12:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
m&p-xylenes	U	10000	7100	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
o-xylene	U	10000	3100	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
styrene	**170000**	10000	3000	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
bromoform	U	10000	3200	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
isopropylbenzene	U	10000	3000	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,1,2,2-tetrachloroethane	U	10000	3100	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,2,3-trichloropropane	U	10000	3300	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
n-propylbenzene	U	10000	2600	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
bromobenzene	U	10000	4300	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,3,5-trimethylbenzene	U	10000	3300	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
2-chlorotoluene	U	10000	4000	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
4-chlorotoluene	U	10000	3700	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
tert-butylbenzene	U	10000	3700	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,2,4-trimethylbenzene	U	10000	3100	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
sec-butylbenzene	U	10000	3000	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,3-dichlorobenzene	U	10000	3200	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
4-isopropyltoluene	U	10000	2500	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,4-dichlorobenzene	U	10000	2400	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,2-dichlorobenzene	U	10000	2800	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
n-butylbenzene	U	10000	3000	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,2-dibromo-3-chloropropane (DBCP)	U	10000	5000	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,2,4-trichlorobenzene	U	10000	2600	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
hexachlorobutadiene	U	2500	2000	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
naphthalene	U	25000	2900	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
1,2,3-trichlorobenzene	U	10000	3000	ug/L	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
Surrogate Recovery		**Limits**										
dibromofluoromethane SUR	**91**	78-114		%	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
toluene-D8 SUR	**99**	88-110		%	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C
4-bromofluorobenzene SUR	**94**	86-115		%	5000	LMM			1803736	12/21/18	0:25	SW5030C8260C

Project ID: Order ID: 1069 18L1301
Job ID: 47066
Sample#: 47066-002
Sample ID: 18L1301-02
Matrix: Water
Sampled: 12/12/18 12:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
dichlorodifluoromethane	U	400	95	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
chloromethane	U	400	140	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
vinyl chloride	U	400	150	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
bromomethane	U	400	370	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
chloroethane	U	400	100	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
trichlorofluoromethane	U	400	110	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
diethyl ether	U	1000	130	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
acetone	700 J	10000	690	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,1-dichloroethene	U	200	140	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
methylene chloride	U	1000	140	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
carbon disulfide	U	400	150	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
methyl t-butyl ether (MTBE)	U	400	120	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
trans-1,2-dichloroethene	U	400	120	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,1-dichloroethane	U	400	130	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
2-butanone (MEK)	U	2000	360	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
2,2-dichloropropane	U	400	100	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
cis-1,2-dichloroethene	U	400	150	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
chloroform	U	400	120	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
bromochloromethane	U	400	110	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
tetrahydrofuran (THF)	U	2000	250	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,1,1-trichloroethane	U	400	110	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,1-dichloropropene	U	400	130	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
carbon tetrachloride	U	400	120	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,2-dichloroethane	U	400	130	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
benzene	U	400	130	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
trichloroethene	U	400	120	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,2-dichloropropane	U	400	130	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
bromodichloromethane	U	120	100	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
dibromomethane	U	400	140	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
4-methyl-2-pentanone (MIBK)	U	2000	160	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
cis-1,3-dichloropropene	U	400	130	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
toluene	U	400	130	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
trans-1,3-dichloropropene	U	400	110	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
2-hexanone	U	2000	130	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,1,2-trichloroethane	U	400	140	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,3-dichloropropane	U	400	140	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
tetrachloroethene	U	400	95	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
dibromochloromethane	U	400	120	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,2-dibromoethane (EDB)	U	400	140	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
chlorobenzene	U	400	130	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,1,1,2-tetrachloroethane	U	400	150	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
ethylbenzene	U	400	150	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C

Project ID: Order ID: 1069 18L1301
Job ID: 47066
Sample#: 47066-002
Sample ID: 18L1301-02
Matrix: Water
Sampled: 12/12/18 12:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
m&p-xylenes	U	400	280	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
o-xylene	U	400	120	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
styrene	**33000**	400	120	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
bromoform	U	400	130	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
isopropylbenzene	U	400	120	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,1,2,2-tetrachloroethane	U	400	120	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,2,3-trichloropropane	U	400	130	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
n-propylbenzene	U	400	100	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
bromobenzene	U	400	170	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,3,5-trimethylbenzene	U	400	130	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
2-chlorotoluene	U	400	160	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
4-chlorotoluene	U	400	150	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
tert-butylbenzene	U	400	150	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,2,4-trimethylbenzene	U	400	130	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
sec-butylbenzene	U	400	120	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,3-dichlorobenzene	U	400	130	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
4-isopropyltoluene	U	400	100	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,4-dichlorobenzene	U	400	96	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,2-dichlorobenzene	U	400	110	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
n-butylbenzene	U	400	120	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,2-dibromo-3-chloropropane (DBCP)	U	400	200	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,2,4-trichlorobenzene	U	400	100	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
hexachlorobutadiene	U	100	79	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
naphthalene	U	1000	120	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
1,2,3-trichlorobenzene	U	400	120	ug/L	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
Surrogate Recovery		**Limits**										
dibromofluoromethane SUR	**93**	78-114		%	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
toluene-D8 SUR	**100**	88-110		%	200	LMM			1803724	12/20/18	10:32	SW5030C8260C
4-bromofluorobenzene SUR	**94**	86-115		%	200	LMM			1803724	12/20/18	10:32	SW5030C8260C

Project ID: Order ID: 1069 18L1301
Job ID: 47066
Sample#: 47066-003
Sample ID: 18L1301-03
Matrix: Water
Sampled: 12/12/18 12:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
dichlorodifluoromethane	U	200	48	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
chloromethane	U	200	72	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
vinyl chloride	U	200	76	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
bromomethane	U	200	190	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
chloroethane	U	200	50	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
trichlorofluoromethane	U	200	56	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
diethyl ether	U	500	66	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
acetone	600 J	5000	350	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,1-dichloroethene	U	100	71	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
methylene chloride	U	500	69	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
carbon disulfide	U	200	75	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
methyl t-butyl ether (MTBE)	U	200	59	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
trans-1,2-dichloroethene	U	200	61	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,1-dichloroethane	U	200	65	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
2-butanone (MEK)	U	1000	180	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
2,2-dichloropropane	U	200	51	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
cis-1,2-dichloroethene	U	200	77	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
chloroform	U	200	58	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
bromochloromethane	U	200	53	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
tetrahydrofuran (THF)	U	1000	120	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,1,1-trichloroethane	U	200	57	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,1-dichloropropene	U	200	65	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
carbon tetrachloride	U	200	60	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,2-dichloroethane	U	200	65	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
benzene	U	200	66	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
trichloroethene	U	200	60	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,2-dichloropropane	U	200	66	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
bromodichloromethane	U	60	50	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
dibromomethane	U	200	68	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
4-methyl-2-pentanone (MIBK)	U	1000	82	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
cis-1,3-dichloropropene	U	200	63	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
toluene	U	200	65	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
trans-1,3-dichloropropene	U	200	57	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
2-hexanone	U	1000	64	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,1,2-trichloroethane	U	200	71	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,3-dichloropropane	U	200	69	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
tetrachloroethene	U	200	48	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
dibromochloromethane	U	200	58	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,2-dibromoethane (EDB)	U	200	70	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
chlorobenzene	U	200	65	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,1,1,2-tetrachloroethane	U	200	75	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
ethylbenzene	U	200	73	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C

Project ID: Order ID: 1069 18L1301
Job ID: 47066
Sample#: 47066-003
Sample ID: 18L1301-03
Matrix: Water
Sampled: 12/12/18 12:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Analysis Batch	Analysis Date	Analysis Time	Reference
m&p-xylenes	U	200	140	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
o-xylene	U	200	62	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
styrene	**29000**	200	61	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
bromoform	U	200	63	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
isopropylbenzene	U	200	60	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,1,2,2-tetrachloroethane	U	200	62	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,2,3-trichloropropane	U	200	67	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
n-propylbenzene	U	200	51	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
bromobenzene	U	200	87	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,3,5-trimethylbenzene	U	200	66	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
2-chlorotoluene	U	200	80	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
4-chlorotoluene	U	200	75	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
tert-butylbenzene	U	200	73	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,2,4-trimethylbenzene	U	200	63	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
sec-butylbenzene	U	200	61	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,3-dichlorobenzene	U	200	64	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
4-isopropyltoluene	U	200	50	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,4-dichlorobenzene	U	200	48	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,2-dichlorobenzene	U	200	55	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
n-butylbenzene	U	200	59	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,2-dibromo-3-chloropropane (DBCP)	U	200	100	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,2,4-trichlorobenzene	U	200	52	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
hexachlorobutadiene	U	50	40	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
naphthalene	U	500	58	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
1,2,3-trichlorobenzene	U	200	61	ug/L	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
Surrogate Recovery		**Limits**										
dibromofluoromethane SUR	**96**	78-114		%	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
toluene-D8 SUR	**102**	88-110		%	100	LMM			1803724	12/20/18	10:57	SW5030C8260C
4-bromofluorobenzene SUR	**102**	86-115		%	100	LMM			1803724	12/20/18	10:57	SW5030C8260C

Quality Control Report

124 Heritage Avenue Unit 16
Portsmouth, NH 03801
www.absoluteresourceassociates.com

Sample Integrity Table

Parameter	Method	Matrix	Minimum Volume	Recommended Container(s)	Required Preservation	Holding Time
Volatile Organics	EPA 8260	Aqueous	40mL	2 x 40mL VOA Vials with Teflon lined septa	Cool to ≤6°C 1:1 HCl to pH <2	14 Days
Volatile Organics	EPA 8260	Solid	40mL	1 x 40mL VOA Vial with 10mLs Methanol and 1 unpreserved container for percent moisture	Cool to ≤6°C Methanol	14 Days
Semivolatile Organics	EPA 8270	Aqueous	1L	1L Amber Glass Bottle w/Teflon liner	Cool to ≤6°C	7 Days
Semivolatile Organics	EPA 8270	Solid	20g	4oz Amber Glass Jar w/Teflon liner	Cool to ≤6°C	14 Days
Organochlorine Pesticides	EPA 8081	Aqueous	1L	1L Amber Glass Bottle w/Teflon liner	Cool to ≤6°C	7 Days
Organochlorine Pesticides	EPA 8081	Solid	20g	4oz Glass Jar w/Teflon liner	Cool to ≤6°C	14 Days
PCBs	EPA 8082	Aqueous	1L	1L Amber Glass Bottle w/Teflon liner	Cool to ≤6°C	365 Days
PCBs	EPA 8082	Solid	20g	4oz Glass Jar w/Teflon liner	Cool to ≤6°C	365 Days
Herbicides (subcontracted)	EPA 8151	Aqueous	1L	1L Amber Glass Bottle w/Teflon liner	Cool to ≤6°C	7 Days
Herbicides (subcontracted)	EPA 8151	Solid	30g	4oz Glass Jar w/Teflon liner	Cool to ≤6°C	14 Days
MA DEP VPH	MADEP VPH	Aqueous	40mL	2 x 40mL VOA Vials with Teflon lined septa	Cool to ≤6°C 1:1 HCl to pH <2	14 Days
MA DEP VPH	MADEP VPH	Solid	40mL	1 x 40mL VOA Vial with 10mLs Methanol and 1 unpreserved container for percent moisture	Cool to ≤6°C Methanol	28 Days
MA DEP EPH	MADEP EPH	Aqueous	1L	1L Amber Glass Bottle w/Teflon liner	Cool to ≤6°C 1:1 HCl to pH <2	14 Days
MA DEP EPH	MADEP EPH	Solid	30g	4oz Amber Glass Jar w/Teflon liner	Cool to ≤6°C	14 Days
Total Metals	EPA 6010	Aqueous	100mL	250mL Polyethylene Bottle	1:1 HNO_3 to pH <2	180 Days
Dissolved Metals	EPA 6010	Aqueous	100mL	250mL Polyethylene Bottle	Filter First 1:1 HNO_3 to pH <2	180 Days
Total Metals	EPA 6010	Solid	15g	4oz Glass Jar w/Teflon liner	Cool to ≤6°C	180 Days
Total Mercury (may be combined with Total Metals)	EPA 7470	Aqueous	100mL	125mL Polyethylene Bottle	1:1 HNO_3 to pH <2	28 Days
Total Mercury (may be combined with Total Metals)	EPA 7471	Solid	15g	4oz Glass Jar w/Teflon liner	Cool to ≤6°C	28 Days
Chromium, Hexavalent	EPA 7196	Aqueous	100mL	125mL Polyethylene Bottle	Cool to ≤6°C (NH4)2SO4 buffer	28 Days
Chromium, Hexavalent (subcontract)	EPA 7196	Solid	15g	4oz Glass Jar w/Teflon liner	Cool to ≤6°C	30 Days
Cyanide, Total	EPA 9014	Aqueous	125mL	125mL Polyethylene Bottle	Cool to ≤6°C 1:1 NaOH to pH >8	14 Days
Cyanide, Total	EPA 9014	Solid	15g	4oz Glass Jar w/Teflon liner	Cool to ≤6°C	14 Days

Absolute Resource Associates
124 Heritage Avenue Unit 16
Portsmouth, NH 03801
www.absoluteresourceassociates.com

Case Narrative
Lab # 47066

Sample Receiving and Chain of Custody Discrepancies

Samples were received in acceptable condition, at 0 degrees C, on ice, and in accordance with sample handling, preservation and integrity guidelines.

Calibration

No exceptions noted.

Method Blank

No exceptions noted.

Surrogate Recoveries

No exceptions noted.

Laboratory Control Sample Results

VOC: The LCS/D1803724 did not meet the acceptance criteria for bromomethane. This compound showed high recovery. There is no impact to the data as this analyte was not detected in the associated samples.

VOC: The LCS1803736 did not meet the acceptance criteria for bromomethane, acetone, and tetrahydrofuran (THF). The LCSD1803736 did not meet the acceptance criteria for bromomethane and carbon disulfide. These compounds showed high recovery. There is no impact to the data as these analytes were not detected in the associated samples.

Matrix Spike/Matrix Spike Duplicate/Duplicate Results

Not requested for this project.

Other

Reporting Limits: Dilutions performed during the analysis are noted on the result pages.

No other exceptions noted.

Data Qualifiers

U = This compound was analyzed for, but not detected above the associated method detection limit.
J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

GLOSSARY

%R	Percent Recovery
BLK	Blank (Method Blank, Preparation Blank)
CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification
Dil'n	Dilution
DL	Detection Limit
DUP	Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantitation
MB	Methanol Blank (associated with solid VOC samples)
MLCS	Methanol Laboratory Control Sample (associated with solid VOC samples)
MLCSD	Methanol Laboratory Control Sample Duplicate (associated with solid VOC samples)
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PB	Preparation Blank
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference
SUR	Surrogate

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits	RPD	RPD Limit
SW5030C8260C	BLK1803724	dichlorodifluoromethane		< 2	ug/L					
		chloromethane		< 2	ug/L					
		vinyl chloride		< 2	ug/L					
		bromomethane		< 2	ug/L					
		chloroethane		< 2	ug/L					
		trichlorofluoromethane		< 2	ug/L					
		diethyl ether		< 2	ug/L					
		acetone		< 10	ug/L					
		1,1-dichloroethene		< 1	ug/L					
		methylene chloride		< 2	ug/L					
		carbon disulfide		< 2	ug/L					
		methyl t-butyl ether (MTBE)		< 2	ug/L					
		trans-1,2-dichloroethene		< 2	ug/L					
		1,1-dichloroethane		< 2	ug/L					
		2-butanone (MEK)		< 10	ug/L					
		2,2-dichloropropane		< 2	ug/L					
		cis-1,2-dichloroethene		< 2	ug/L					
		chloroform		< 2	ug/L					
		bromochloromethane		< 2	ug/L					
		tetrahydrofuran (THF)		< 2	ug/L					
		1,1,1-trichloroethane		< 2	ug/L					
		1,1-dichloropropene		< 2	ug/L					
		carbon tetrachloride		< 2	ug/L					
		1,2-dichloroethane		< 2	ug/L					
		benzene		< 2	ug/L					
		trichloroethene		< 2	ug/L					
		1,2-dichloropropane		< 2	ug/L					
		bromodichloromethane		< 0.6	ug/L					
		dibromomethane		< 2	ug/L					
		4-methyl-2-pentanone (MIBK)		< 10	ug/L					
		cis-1,3-dichloropropene		< 2	ug/L					
		toluene		< 2	ug/L					
		trans-1,3-dichloropropene		< 2	ug/L					
		2-hexanone		< 10	ug/L					
		1,1,2-trichloroethane		< 2	ug/L					
		1,3-dichloropropane		< 2	ug/L					
		tetrachloroethene		< 2	ug/L					
		dibromochloromethane		< 2	ug/L					
		1,2-dibromoethane (EDB)		< 2	ug/L					
		chlorobenzene		< 2	ug/L					
		1,1,1,2-tetrachloroethane		< 2	ug/L					
		ethylbenzene		< 2	ug/L					
		m&p-xylenes		< 2	ug/L					
		o-xylene		< 2	ug/L					
		styrene		< 2	ug/L					
		bromoform		< 2	ug/L					
		isopropylbenzene		< 2	ug/L					
		1,1,2,2-tetrachloroethane		< 2	ug/L					
		1,2,3-trichloropropane		< 2	ug/L					
		n-propylbenzene		< 2	ug/L					

Method	QC ID	Parameter	Associated Sample		Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW5030C8260C	BLK1803724	bromobenzene		<	2	ug/L						
		1,3,5-trimethylbenzene		<	2	ug/L						
		2-chlorotoluene		<	2	ug/L						
		4-chlorotoluene		<	2	ug/L						
		tert-butylbenzene		<	2	ug/L						
		1,2,4-trimethylbenzene		<	2	ug/L						
		sec-butylbenzene		<	2	ug/L						
		1,3-dichlorobenzene		<	2	ug/L						
		4-isopropyltoluene		<	2	ug/L						
		1,4-dichlorobenzene		<	2	ug/L						
		1,2-dichlorobenzene		<	2	ug/L						
		n-butylbenzene		<	2	ug/L						
		1,2-dibromo-3-chloropropane (DBCP)		<	2	ug/L						
		1,2,4-trichlorobenzene		<	2	ug/L						
		hexachlorobutadiene		<	0.5	ug/L						
		naphthalene		<	2	ug/L						
		1,2,3-trichlorobenzene		<	2	ug/L						
		dibromofluoromethane SUR			94	%			78	114		
		toluene-D8 SUR			101	%			88	110		
		4-bromofluorobenzene SUR			90	%			86	115		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R		Limits		RPD	RPD Limit
SW5030C8260C	LCS1803724	dichlorodifluoromethane		21	ug/L	20	103		70	130		
		chloromethane		24	ug/L	20	118		70	130		
		vinyl chloride		25	ug/L	20	126		70	130		
		bromomethane		30	ug/L	20	149	*	70	130		
		chloroethane		24	ug/L	20	120		70	130		
		trichlorofluoromethane		22	ug/L	20	111		70	130		
		diethyl ether		21	ug/L	20	107		70	130		
		acetone		23	ug/L	20	114		70	130		
		1,1-dichloroethene		18	ug/L	20	88		70	130		
		methylene chloride		20	ug/L	20	98		70	130		
		carbon disulfide		23	ug/L	20	115		70	130		
		methyl t-butyl ether (MTBE)		20	ug/L	20	100		70	130		
		trans-1,2-dichloroethene		17	ug/L	20	87		70	130		
		1,1-dichloroethane		20	ug/L	20	102		70	130		
		2-butanone (MEK)		23	ug/L	20	116		70	130		
		2,2-dichloropropane		17	ug/L	20	87		70	130		
		cis-1,2-dichloroethene		18	ug/L	20	92		70	130		
		chloroform		19	ug/L	20	97		70	130		
		bromochloromethane		18	ug/L	20	92		70	130		
		tetrahydrofuran (THF)		25	ug/L	20	126		70	130		
		1,1,1-trichloroethane		19	ug/L	20	96		70	130		
		1,1-dichloropropene		21	ug/L	20	103		70	130		
		carbon tetrachloride		19	ug/L	20	94		70	130		
		1,2-dichloroethane		21	ug/L	20	103		70	130		
		benzene		20	ug/L	20	102		70	130		
		trichloroethene		18	ug/L	20	92		70	130		
		1,2-dichloropropane		21	ug/L	20	104		70	130		
		bromodichloromethane		20	ug/L	20	102		70	130		
		dibromomethane		19	ug/L	20	96		70	130		
		4-methyl-2-pentanone (MIBK)		21	ug/L	20	104		70	130		
		cis-1,3-dichloropropene		21	ug/L	20	106		70	130		
		toluene		20	ug/L	20	99		70	130		
		trans-1,3-dichloropropene		20	ug/L	20	99		70	130		
		2-hexanone		21	ug/L	20	103		70	130		
		1,1,2-trichloroethane		21	ug/L	20	106		70	130		
		1,3-dichloropropane		21	ug/L	20	103		70	130		
		tetrachloroethene		17	ug/L	20	85		70	130		
		dibromochloromethane		18	ug/L	20	88		70	130		
		1,2-dibromoethane (EDB)		20	ug/L	20	98		70	130		
		chlorobenzene		17	ug/L	20	85		70	130		
		1,1,1,2-tetrachloroethane		19	ug/L	20	95		70	130		
		ethylbenzene		19	ug/L	20	97		70	130		
		m&p-xylenes		39	ug/L	40	98		70	130		
		o-xylene		19	ug/L	20	95		70	130		
		styrene		19	ug/L	20	95		70	130		
		bromoform		18	ug/L	20	89		70	130		
		isopropylbenzene		19	ug/L	20	96		70	130		
		1,1,2,2-tetrachloroethane		21	ug/L	20	107		70	130		
		1,2,3-trichloropropane		23	ug/L	20	113		70	130		
		n-propylbenzene		20	ug/L	20	102		70	130		
		bromobenzene		18	ug/L	20	90		70	130		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW5030C8260C	LCS1803724	1,3,5-trimethylbenzene		20	ug/L	20	100	70	130		
		2-chlorotoluene		20	ug/L	20	100	70	130		
		4-chlorotoluene		21	ug/L	20	104	70	130		
		tert-butylbenzene		20	ug/L	20	102	70	130		
		1,2,4-trimethylbenzene		18	ug/L	20	91	70	130		
		sec-butylbenzene		19	ug/L	20	95	70	130		
		1,3-dichlorobenzene		19	ug/L	20	94	70	130		
		4-isopropyltoluene		17	ug/L	20	87	70	130		
		1,4-dichlorobenzene		17	ug/L	20	86	70	130		
		1,2-dichlorobenzene		18	ug/L	20	88	70	130		
		n-butylbenzene		22	ug/L	20	108	70	130		
		1,2-dibromo-3-chloropropane (DBCP)		21	ug/L	20	104	70	130		
		1,2,4-trichlorobenzene		19	ug/L	20	94	70	130		
		hexachlorobutadiene		19	ug/L	20	96	70	130		
		naphthalene		20	ug/L	20	100	70	130		
		1,2,3-trichlorobenzene		19	ug/L	20	93	70	130		
		dibromofluoromethane SUR		97	%			78	114		
		toluene-D8 SUR		101	%			88	110		
		4-bromofluorobenzene SUR		95	%			86	115		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R		Limits		RPD	RPD Limit
SW5030C8260C	LCSD1803724	dichlorodifluoromethane		21	ug/L	20	103		70	130	0	20
		chloromethane		24	ug/L	20	119		70	130	1	20
		vinyl chloride		24	ug/L	20	122		70	130	3	20
		bromomethane		31	ug/L	20	155	*	70	130	4	20
		chloroethane		23	ug/L	20	114		70	130	5	20
		trichlorofluoromethane		21	ug/L	20	107		70	130	4	20
		diethyl ether		21	ug/L	20	104		70	130	3	20
		acetone		25	ug/L	20	127		70	130	11	20
		1,1-dichloroethene		17	ug/L	20	84		70	130	4	20
		methylene chloride		19	ug/L	20	96		70	130	2	20
		carbon disulfide		23	ug/L	20	115		70	130	0	20
		methyl t-butyl ether (MTBE)		20	ug/L	20	99		70	130	2	20
		trans-1,2-dichloroethene		18	ug/L	20	88		70	130	1	20
		1,1-dichloroethane		20	ug/L	20	102		70	130	0	20
		2-butanone (MEK)		24	ug/L	20	121		70	130	4	20
		2,2-dichloropropane		17	ug/L	20	84		70	130	3	20
		cis-1,2-dichloroethene		19	ug/L	20	93		70	130	0	20
		chloroform		19	ug/L	20	95		70	130	2	20
		bromochloromethane		18	ug/L	20	88		70	130	4	20
		tetrahydrofuran (THF)		25	ug/L	20	123		70	130	2	20
		1,1,1-trichloroethane		19	ug/L	20	94		70	130	2	20
		1,1-dichloropropene		20	ug/L	20	102		70	130	1	20
		carbon tetrachloride		18	ug/L	20	91		70	130	3	20
		1,2-dichloroethane		21	ug/L	20	104		70	130	1	20
		benzene		20	ug/L	20	100		70	130	2	20
		trichloroethene		18	ug/L	20	90		70	130	2	20
		1,2-dichloropropane		21	ug/L	20	103		70	130	1	20
		bromodichloromethane		21	ug/L	20	103		70	130	0	20
		dibromomethane		20	ug/L	20	98		70	130	2	20
		4-methyl-2-pentanone (MIBK)		21	ug/L	20	104		70	130	1	20
		cis-1,3-dichloropropene		21	ug/L	20	105		70	130	1	20
		toluene		20	ug/L	20	99		70	130	1	20
		trans-1,3-dichloropropene		20	ug/L	20	100		70	130	0	20
		2-hexanone		20	ug/L	20	101		70	130	1	20
		1,1,2-trichloroethane		21	ug/L	20	105		70	130	2	20
		1,3-dichloropropane		21	ug/L	20	106		70	130	2	20
		tetrachloroethene		17	ug/L	20	86		70	130	1	20
		dibromochloromethane		19	ug/L	20	93		70	130	5	20
		1,2-dibromoethane (EDB)		20	ug/L	20	100		70	130	2	20
		chlorobenzene		17	ug/L	20	87		70	130	3	20
		1,1,1,2-tetrachloroethane		20	ug/L	20	99		70	130	4	20
		ethylbenzene		20	ug/L	20	99		70	130	2	20
		m&p-xylenes		40	ug/L	40	100		70	130	2	20
		o-xylene		20	ug/L	20	98		70	130	3	20
		styrene		20	ug/L	20	98		70	130	3	20
		bromoform		18	ug/L	20	91		70	130	3	20
		isopropylbenzene		20	ug/L	20	99		70	130	2	20
		1,1,2,2-tetrachloroethane		21	ug/L	20	107		70	130	0	20
		1,2,3-trichloropropane		22	ug/L	20	111		70	130	2	20
		n-propylbenzene		21	ug/L	20	104		70	130	2	20
		bromobenzene		19	ug/L	20	94		70	130	4	20

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW5030C8260C	LCSD1803724	1,3,5-trimethylbenzene		20	ug/L	20	100	70	130	0	20
		2-chlorotoluene		20	ug/L	20	102	70	130	2	20
		4-chlorotoluene		21	ug/L	20	106	70	130	1	20
		tert-butylbenzene		21	ug/L	20	104	70	130	2	20
		1,2,4-trimethylbenzene		18	ug/L	20	91	70	130	0	20
		sec-butylbenzene		19	ug/L	20	95	70	130	0	20
		1,3-dichlorobenzene		19	ug/L	20	94	70	130	1	20
		4-isopropyltoluene		17	ug/L	20	87	70	130	0	20
		1,4-dichlorobenzene		17	ug/L	20	87	70	130	1	20
		1,2-dichlorobenzene		18	ug/L	20	89	70	130	1	20
		n-butylbenzene		21	ug/L	20	107	70	130	1	20
		1,2-dibromo-3-chloropropane (DBCP)		20	ug/L	20	101	70	130	2	20
		1,2,4-trichlorobenzene		19	ug/L	20	96	70	130	3	20
		hexachlorobutadiene		20	ug/L	20	98	70	130	2	20
		naphthalene		21	ug/L	20	103	70	130	3	20
		1,2,3-trichlorobenzene		19	ug/L	20	96	70	130	4	20
		dibromofluoromethane SUR		98	%			78	114		
		toluene-D8 SUR		100	%			88	110		
		4-bromofluorobenzene SUR		99	%			86	115		

Method	QC ID	Parameter	Associated Sample		Result	Units	Amt Added	%R	Limits	RPD	RPD Limit
SW5030C8260C	BLK1803736	dichlorodifluoromethane		<	2	ug/L					
		chloromethane		<	2	ug/L					
		vinyl chloride		<	2	ug/L					
		bromomethane		<	2	ug/L					
		chloroethane		<	2	ug/L					
		trichlorofluoromethane		<	2	ug/L					
		diethyl ether		<	2	ug/L					
		acetone		<	10	ug/L					
		1,1-dichloroethene		<	1	ug/L					
		methylene chloride		<	2	ug/L					
		carbon disulfide		<	2	ug/L					
		methyl t-butyl ether (MTBE)		<	2	ug/L					
		trans-1,2-dichloroethene		<	2	ug/L					
		1,1-dichloroethane		<	2	ug/L					
		2-butanone (MEK)		<	10	ug/L					
		2,2-dichloropropane		<	2	ug/L					
		cis-1,2-dichloroethene		<	2	ug/L					
		chloroform		<	2	ug/L					
		bromochloromethane		<	2	ug/L					
		tetrahydrofuran (THF)		<	2	ug/L					
		1,1,1-trichloroethane		<	2	ug/L					
		1,1-dichloropropene		<	2	ug/L					
		carbon tetrachloride		<	2	ug/L					
		1,2-dichloroethane		<	2	ug/L					
		benzene		<	2	ug/L					
		trichloroethene		<	2	ug/L					
		1,2-dichloropropane		<	2	ug/L					
		bromodichloromethane		<	0.6	ug/L					
		dibromomethane		<	2	ug/L					
		4-methyl-2-pentanone (MIBK)		<	10	ug/L					
		cis-1,3-dichloropropene		<	2	ug/L					
		toluene		<	2	ug/L					
		trans-1,3-dichloropropene		<	2	ug/L					
		2-hexanone		<	10	ug/L					
		1,1,2-trichloroethane		<	2	ug/L					
		1,3-dichloropropane		<	2	ug/L					
		tetrachloroethene		<	2	ug/L					
		dibromochloromethane		<	2	ug/L					
		1,2-dibromoethane (EDB)		<	2	ug/L					
		chlorobenzene		<	2	ug/L					
		1,1,1,2-tetrachloroethane		<	2	ug/L					
		ethylbenzene		<	2	ug/L					
		m&p-xylenes		<	2	ug/L					
		o-xylene		<	2	ug/L					
		styrene		<	2	ug/L					
		bromoform		<	2	ug/L					
		isopropylbenzene		<	2	ug/L					
		1,1,2,2-tetrachloroethane		<	2	ug/L					
		1,2,3-trichloropropane		<	2	ug/L					
		n-propylbenzene		<	2	ug/L					
		bromobenzene		<	2	ug/L					

Method	QC ID	Parameter	Associated Sample		Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW5030C8260C	BLK1803736	1,3,5-trimethylbenzene		<	2	ug/L						
		2-chlorotoluene		<	2	ug/L						
		4-chlorotoluene		<	2	ug/L						
		tert-butylbenzene		<	2	ug/L						
		1,2,4-trimethylbenzene		<	2	ug/L						
		sec-butylbenzene		<	2	ug/L						
		1,3-dichlorobenzene		<	2	ug/L						
		4-isopropyltoluene		<	2	ug/L						
		1,4-dichlorobenzene		<	2	ug/L						
		1,2-dichlorobenzene		<	2	ug/L						
		n-butylbenzene		<	2	ug/L						
		1,2-dibromo-3-chloropropane (DBCP)		<	2	ug/L						
		1,2,4-trichlorobenzene		<	2	ug/L						
		hexachlorobutadiene		<	0.5	ug/L						
		naphthalene		<	2	ug/L						
		1,2,3-trichlorobenzene		<	2	ug/L						
		dibromofluoromethane SUR			94	%			78	114		
		toluene-D8 SUR			100	%			88	110		
		4-bromofluorobenzene SUR			91	%			86	115		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R		Limits		RPD	RPD Limit
SW5030C8260C	LCS1803736	dichlorodifluoromethane		21	ug/L	20	104		70	130		
		chloromethane		25	ug/L	20	123		70	130		
		vinyl chloride		23	ug/L	20	117		70	130		
		bromomethane		40	ug/L	20	200	*	70	130		
		chloroethane		23	ug/L	20	117		70	130		
		trichlorofluoromethane		22	ug/L	20	108		70	130		
		diethyl ether		21	ug/L	20	105		70	130		
		acetone		28	ug/L	20	141	*	70	130		
		1,1-dichloroethene		18	ug/L	20	88		70	130		
		methylene chloride		20	ug/L	20	98		70	130		
		carbon disulfide		21	ug/L	20	103		70	130		
		methyl t-butyl ether (MTBE)		21	ug/L	20	103		70	130		
		trans-1,2-dichloroethene		18	ug/L	20	90		70	130		
		1,1-dichloroethane		21	ug/L	20	105		70	130		
		2-butanone (MEK)		25	ug/L	20	126		70	130		
		2,2-dichloropropane		16	ug/L	20	79		70	130		
		cis-1,2-dichloroethene		19	ug/L	20	94		70	130		
		chloroform		20	ug/L	20	99		70	130		
		bromochloromethane		19	ug/L	20	95		70	130		
		tetrahydrofuran (THF)		26	ug/L	20	132	*	70	130		
		1,1,1-trichloroethane		20	ug/L	20	98		70	130		
		1,1-dichloropropene		21	ug/L	20	105		70	130		
		carbon tetrachloride		18	ug/L	20	92		70	130		
		1,2-dichloroethane		21	ug/L	20	107		70	130		
		benzene		21	ug/L	20	105		70	130		
		trichloroethene		19	ug/L	20	95		70	130		
		1,2-dichloropropane		22	ug/L	20	108		70	130		
		bromodichloromethane		20	ug/L	20	98		70	130		
		dibromomethane		21	ug/L	20	104		70	130		
		4-methyl-2-pentanone (MIBK)		22	ug/L	20	112		70	130		
		cis-1,3-dichloropropene		21	ug/L	20	104		70	130		
		toluene		21	ug/L	20	103		70	130		
		trans-1,3-dichloropropene		20	ug/L	20	98		70	130		
		2-hexanone		22	ug/L	20	108		70	130		
		1,1,2-trichloroethane		21	ug/L	20	107		70	130		
		1,3-dichloropropane		21	ug/L	20	106		70	130		
		tetrachloroethene		18	ug/L	20	91		70	130		
		dibromochloromethane		17	ug/L	20	83		70	130		
		1,2-dibromoethane (EDB)		20	ug/L	20	101		70	130		
		chlorobenzene		17	ug/L	20	87		70	130		
		1,1,1,2-tetrachloroethane		19	ug/L	20	94		70	130		
		ethylbenzene		20	ug/L	20	102		70	130		
		m&p-xylenes		41	ug/L	40	104		70	130		
		o-xylene		20	ug/L	20	100		70	130		
		styrene		20	ug/L	20	98		70	130		
		bromoform		17	ug/L	20	85		70	130		
		isopropylbenzene		20	ug/L	20	100		70	130		
		1,1,2,2-tetrachloroethane		20	ug/L	20	102		70	130		
		1,2,3-trichloropropane		23	ug/L	20	113		70	130		
		n-propylbenzene		21	ug/L	20	103		70	130		
		bromobenzene		19	ug/L	20	95		70	130		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW5030C8260C	LCS1803736	1,3,5-trimethylbenzene		20	ug/L	20	101	70	130		
		2-chlorotoluene		21	ug/L	20	103	70	130		
		4-chlorotoluene		21	ug/L	20	106	70	130		
		tert-butylbenzene		21	ug/L	20	106	70	130		
		1,2,4-trimethylbenzene		19	ug/L	20	93	70	130		
		sec-butylbenzene		20	ug/L	20	98	70	130		
		1,3-dichlorobenzene		19	ug/L	20	96	70	130		
		4-isopropyltoluene		18	ug/L	20	89	70	130		
		1,4-dichlorobenzene		18	ug/L	20	89	70	130		
		1,2-dichlorobenzene		18	ug/L	20	90	70	130		
		n-butylbenzene		22	ug/L	20	109	70	130		
		1,2-dibromo-3-chloropropane (DBCP)		19	ug/L	20	95	70	130		
		1,2,4-trichlorobenzene		19	ug/L	20	95	70	130		
		hexachlorobutadiene		20	ug/L	20	98	70	130		
		naphthalene		22	ug/L	20	110	70	130		
		1,2,3-trichlorobenzene		20	ug/L	20	98	70	130		
		dibromofluoromethane SUR		95	%			78	114		
		toluene-D8 SUR		101	%			88	110		
		4-bromofluorobenzene SUR		99	%			86	115		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R		Limits		RPD	RPD Limit
SW5030C8260C	LCSD1803736	dichlorodifluoromethane		25	ug/L	20	124		70	130	8	20
		chloromethane		22	ug/L	20	112		70	130	9	20
		vinyl chloride		22	ug/L	20	109		70	130	5	20
		bromomethane		28	ug/L	20	141	*	70	130	15	20
		chloroethane		24	ug/L	20	122		70	130	8	20
		trichlorofluoromethane		25	ug/L	20	124		70	130	5	20
		diethyl ether		22	ug/L	20	112		70	130	8	20
		acetone		24	ug/L	20	120		70	130	1	20
		1,1-dichloroethene		20	ug/L	20	100		70	130	10	20
		methylene chloride		21	ug/L	20	107		70	130	4	20
		carbon disulfide		26	ug/L	20	131	*	70	130	10	20
		methyl t-butyl ether (MTBE)		22	ug/L	20	108		70	130	6	20
		trans-1,2-dichloroethene		20	ug/L	20	102		70	130	7	20
		1,1-dichloroethane		20	ug/L	20	101		70	130	6	20
		2-butanone (MEK)		20	ug/L	20	101		70	130	2	20
		2,2-dichloropropane		19	ug/L	20	94		70	130	1	20
		cis-1,2-dichloroethene		21	ug/L	20	103		70	130	2	20
		chloroform		21	ug/L	20	105		70	130	2	20
		bromochloromethane		21	ug/L	20	103		70	130	0	20
		tetrahydrofuran (THF)		22	ug/L	20	109		70	130	5	20
		1,1,1-trichloroethane		21	ug/L	20	107		70	130	5	20
		1,1-dichloropropene		21	ug/L	20	105		70	130	3	20
		carbon tetrachloride		21	ug/L	20	106		70	130	4	20
		1,2-dichloroethane		23	ug/L	20	116		70	130	2	20
		benzene		24	ug/L	20	118		70	130	4	20
		trichloroethene		23	ug/L	20	113		70	130	4	20
		1,2-dichloropropane		22	ug/L	20	112		70	130	1	20
		bromodichloromethane		22	ug/L	20	108		70	130	3	20
		dibromomethane		23	ug/L	20	113		70	130	1	20
		4-methyl-2-pentanone (MIBK)		22	ug/L	20	112		70	130	1	20
		cis-1,3-dichloropropene		22	ug/L	20	111		70	130	2	20
		toluene		24	ug/L	20	122		70	130	4	20
		trans-1,3-dichloropropene		22	ug/L	20	112		70	130	3	20
		2-hexanone		23	ug/L	20	113		70	130	3	20
		1,1,2-trichloroethane		24	ug/L	20	122		70	130	2	20
		1,3-dichloropropane		21	ug/L	20	103		70	130	3	20
		tetrachloroethene		20	ug/L	20	99		70	130	6	20
		dibromochloromethane		18	ug/L	20	92		70	130	3	20
		1,2-dibromoethane (EDB)		20	ug/L	20	98		70	130	5	20
		chlorobenzene		22	ug/L	20	109		70	130	1	20
		1,1,1,2-tetrachloroethane		22	ug/L	20	108		70	130	4	20
		ethylbenzene		21	ug/L	20	107		70	130	8	20
		m&p-xylenes		45	ug/L	40	112		70	130	6	20
		o-xylene		21	ug/L	20	105		70	130	3	20
		styrene		21	ug/L	20	104		70	130	5	20
		bromoform		20	ug/L	20	99		70	130	2	20
		isopropylbenzene		21	ug/L	20	103		70	130	6	20
		1,1,2,2-tetrachloroethane		18	ug/L	20	92		70	130	3	20
		1,2,3-trichloropropane		19	ug/L	20	95		70	130	7	20
		n-propylbenzene		19	ug/L	20	96		70	130	4	20
		bromobenzene		19	ug/L	20	96		70	130	2	20

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW5030C8260C	LCSD1803736	1,3,5-trimethylbenzene		19	ug/L	20	97	70	130	3	20
		2-chlorotoluene		21	ug/L	20	103	70	130	3	20
		4-chlorotoluene		17	ug/L	20	85	70	130	2	20
		tert-butylbenzene		20	ug/L	20	98	70	130	4	20
		1,2,4-trimethylbenzene		19	ug/L	20	96	70	130	0	20
		sec-butylbenzene		18	ug/L	20	91	70	130	3	20
		1,3-dichlorobenzene		19	ug/L	20	95	70	130	3	20
		4-isopropyltoluene		19	ug/L	20	94	70	130	4	20
		1,4-dichlorobenzene		19	ug/L	20	96	70	130	3	20
		1,2-dichlorobenzene		19	ug/L	20	94	70	130	1	20
		n-butylbenzene		18	ug/L	20	90	70	130	3	20
		1,2-dibromo-3-chloropropane (DBCP)		16	ug/L	20	79	70	130	0	20
		1,2,4-trichlorobenzene		18	ug/L	20	89	70	130	2	20
		hexachlorobutadiene		17	ug/L	20	87	70	130	2	20
		naphthalene		17	ug/L	20	86	70	130	1	20
		1,2,3-trichlorobenzene		17	ug/L	20	86	70	130	0	20
		dibromofluoromethane SUR		99	%			78	114		
		toluene-D8 SUR		111	%			88	110		
		4-bromofluorobenzene SUR		110	%			86	115		

Sites 4-5 (St. Louis, MO)

Laboratory Narrative

Supplement to Test Report GSL_190230:

The laboratory analysis report number GSL_190230 has been revised; TO-17 results are calculated correctly, and 3/23/19 analyses have been re-processed with the correct calibration.

Accreditation:

The Missouri Department of Natural Resources Division of Environmental Quality does not currently offer accreditation for air testing.

TO-17 Sorbent Tubes:

TO-17 sorbent tube samples were thermally desorbed for analysis into 500ml deactivated glass vacuum bottles, and raw data from sample analyses represent the analyzed concentration present in the glass vacuum bottles. TO-17 final results are calculated based on the total mass of analyte, the total volume of air sampled in each tube, the total length of time each tube was open for sampling, and either the uptake rate of the target analyte (for passive sampling tubes) or a known flow rate of 1.0 L/min (for active sampling tubes). Passive sampling tubes which were collected using a diffusion cap on each end of the tube include an additional 2x factored into the uptake rate based on the assumption that the second cap effectively doubles the ability of the tube to uptake analytical targets.

Data Qualifiers and Flags:

Due to extreme analyte concentrations and corresponding analyzer problems, several data flags and qualifiers are present in this report:

-Several sample results which are above the instrument's calibration range after significant dilution are reported with 'E' flags.
-Several surrogate results which are outside the control limits are reported with 'H' flags.
-Styrene duplicate results which are outside the control limits are reported with 'F' flags.
-Several laboratory control sample results which are outside the control limits are reported with 'L' flags.

Respectfully,

James Haynes
Operations Manager

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_190210-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1116 - Initial Cure**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 01:20 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone	0.50	387.50	193.75	519.25	67-64-1
Benzene	0.50	387.50	193.75	< 193.75	71-43-2
1,3-Butadiene	0.50	387.50	193.75	< 193.75	106-99-0
Carbon disulfide	0.50	387.50	193.75	< 193.75	75-15-0
Carbon tetrachloride	0.50	387.50	193.75	< 193.75	56-23-5
Chloroform	0.50	387.50	193.75	< 193.75	67-66-3
Cyclohexane	0.50	387.50	193.75	375.88	110-82-7
1,4-Dioxane	0.50	387.50	193.75	< 193.75	123-91-1
Ethanol	0.50	387.50	193.75	< 193.75	64-17-5
Ethyl Acetate	0.50	387.50	193.75	< 193.75	141-78-6
Ethylbenzene	0.50	387.50	193.75	< 193.75	100-41-4
Hexane	0.50	387.50	193.75	325.50	110-54-3
Isopropanol	0.50	387.50	193.75	< 193.75	67-63-0
MEK	0.50	387.50	193.75	< 193.75	78-93-3
Methylene Chloride	0.50	387.50	193.75	< 193.75	75-09-2
Styrene	0.50	1550.00	775.00	110,639.00 E	100-42-5
Toluene	0.50	387.50	193.75	709.13	108-88-3
1,2,4-Trimethylbenzene	0.50	387.50	193.75	< 193.75	95-63-6
1,3,5-Trimethylbenzene	0.50	387.50	193.75	< 193.75	108-67-8
m,p-Xylenes	1.00	387.50	387.50	< 387.50	108-38-3, 106-42-3
o-Xylene	0.50	387.50	193.75	< 193.75	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190210-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1116 - Initial Cure**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 01:20 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.50	387.50	193.75	ND	76-13-1
2-methyl-2-butanol	0.50	387.50	193.75	ND	75-85-4
2-methylbutane	0.50	387.50	193.75	ND	78-78-4
2-methylnaphthalene	0.50	387.50	193.75	ND	91-57-6
Benzaldehyde	0.50	387.50	193.75	ND	100-52-7
Benzoic acid	0.50	387.50	193.75	ND	65-85-0
Ethylene glycol	0.50	387.50	193.75	ND	107-21-1
Isopropylbenzene	0.50	387.50	193.75	ND	98-82-8
Naphthalene	0.50	387.50	193.75	ND	91-20-3
n-propyl benzene	0.50	387.50	193.75	ND	103-65-1
p-isopropyltoluene	0.50	387.50	193.75	ND	99-87-6
Propionitrile	0.50	387.50	193.75	ND	107-12-0
Trans-1,3-dichloropropene	0.50	387.50	193.75	ND	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_190210-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1119 - 117F exhaust**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 02:14 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone	0.50	410.00	205.00	2,648.60	67-64-1
Benzene	0.50	410.00	205.00	< 205.00	71-43-2
1,3-Butadiene	0.50	410.00	205.00	< 205.00	106-99-0
Carbon disulfide	0.50	410.00	205.00	< 205.00	75-15-0
Carbon tetrachloride	0.50	410.00	205.00	< 205.00	56-23-5
Chloroform	0.50	410.00	205.00	< 205.00	67-66-3
Cyclohexane	0.50	410.00	205.00	< 205.00	110-82-7
1,4-Dioxane	0.50	410.00	205.00	< 205.00	123-91-1
Ethanol	0.50	410.00	205.00	< 205.00	64-17-5
Ethyl Acetate	0.50	410.00	205.00	< 205.00	141-78-6
Ethylbenzene	0.50	410.00	205.00	241.90	100-41-4
Hexane	0.50	410.00	205.00	< 205.00	110-54-3
Isopropanol	0.50	410.00	205.00	< 205.00	67-63-0
MEK	0.50	410.00	205.00	< 205.00	78-93-3
Methylene Chloride	0.50	410.00	205.00	< 205.00	75-09-2
Styrene	0.50	1640.00	820.00	292,674.40 E	100-42-5
Toluene	0.50	410.00	205.00	385.40	108-88-3
1,2,4-Trimethylbenzene	0.50	410.00	205.00	< 205.00	95-63-6
1,3,5-Trimethylbenzene	0.50	410.00	205.00	< 205.00	108-67-8
m,p-Xylenes	1.00	410.00	410.00	< 410.00	108-38-3, 106-42-3
o-Xylene	0.50	410.00	205.00	< 205.00	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190210-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1119 - 117F exhaust**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 02:14 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.50	410.00	205.00	ND	76-13-1
2-methyl-2-butanol	0.50	410.00	205.00	ND	75-85-4
2-methylbutane	0.50	410.00	205.00	ND	78-78-4
2-methylnaphthalene	0.50	410.00	205.00	ND	91-57-6
Benzaldehyde	0.50	410.00	205.00	ND	100-52-7
Benzoic acid	0.50	410.00	205.00	ND	65-85-0
Ethylene glycol	0.50	410.00	205.00	ND	107-21-1
Isopropylbenzene	0.50	410.00	205.00	ND	98-82-8
Naphthalene	0.50	410.00	205.00	ND	91-20-3
n-propyl benzene	0.50	410.00	205.00	ND	103-65-1
p-isopropyltoluene	0.50	410.00	205.00	ND	99-87-6
Propionitrile	0.50	410.00	205.00	ND	107-12-0
Trans-1,3-dichloropropene	0.50	410.00	205.00	ND	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_190211-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**6306 - Exhaust 154F**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/26/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 10:36 AM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone	0.50	8.00	4.00	93.60	67-64-1
Benzene	0.50	8.00	4.00	4.96	71-43-2
1,3-Butadiene	0.50	8.00	4.00	< 4.00	106-99-0
Carbon disulfide	0.50	8.00	4.00	< 4.00	75-15-0
Carbon tetrachloride	0.50	8.00	4.00	< 4.00	56-23-5
Chloroform	0.50	8.00	4.00	< 4.00	67-66-3
Cyclohexane	0.50	8.00	4.00	< 4.00	110-82-7
1,4-Dioxane	0.50	8.00	4.00	< 4.00	123-91-1
Ethanol	0.50	8.00	4.00	< 4.00	64-17-5
Ethyl Acetate	0.50	8.00	4.00	< 4.00	141-78-6
Ethylbenzene	0.50	8.00	4.00	< 4.00	100-41-4
Hexane	0.50	8.00	4.00	< 4.00	110-54-3
Isopropanol	0.50	8.00	4.00	< 4.00	67-63-0
MEK	0.50	8.00	4.00	< 4.00	78-93-3
Methylene Chloride	0.50	8.00	4.00	< 4.00	75-09-2
Styrene	0.50	32.00	16.00	8,446.08 E	100-42-5
Toluene	0.50	8.00	4.00	< 4.00	108-88-3
1,2,4-Trimethylbenzene	0.50	8.00	4.00	< 4.00	95-63-6
1,3,5-Trimethylbenzene	0.50	8.00	4.00	< 4.00	108-67-8
m,p-Xylenes	1.00	8.00	8.00	< 8.00	108-38-3, 106-42-3
o-Xylene	0.50	8.00	4.00	< 4.00	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190211-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**6306 - Exhaust 154F**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/26/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 10:36 AM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.50	8.00	4.00	ND	76-13-1
2-methyl-2-butanol	0.50	8.00	4.00	ND	75-85-4
2-methylbutane	0.50	8.00	4.00	ND	78-78-4
2-methylnaphthalene	0.50	8.00	4.00	ND	91-57-6
Benzaldehyde	0.50	8.00	4.00	ND	100-52-7
Benzoic acid	0.50	8.00	4.00	ND	65-85-0
Ethylene glycol	0.50	8.00	4.00	ND	107-21-1
Isopropylbenzene	0.50	8.00	4.00	ND	98-82-8
Naphthalene	0.50	8.00	4.00	ND	91-20-3
n-propyl benzene	0.50	8.00	4.00	ND	103-65-1
p-isopropyltoluene	0.50	8.00	4.00	ND	99-87-6
Propionitrile	0.50	8.00	4.00	ND	107-12-0
Trans-1,3-dichloropropene	0.50	8.00	4.00	ND	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_190211-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**3845 - Opening of track**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 03:09 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone	0.50	387.50	193.75	825.38	67-64-1
Benzene	0.50	387.50	193.75	< 193.75	71-43-2
1,3-Butadiene	0.50	387.50	193.75	< 193.75	106-99-0
Carbon disulfide	0.50	387.50	193.75	< 193.75	75-15-0
Carbon tetrachloride	0.50	387.50	193.75	< 193.75	56-23-5
Chloroform	0.50	387.50	193.75	< 193.75	67-66-3
Cyclohexane	0.50	387.50	193.75	< 193.75	110-82-7
1,4-Dioxane	0.50	387.50	193.75	< 193.75	123-91-1
Ethanol	0.50	387.50	193.75	< 193.75	64-17-5
Ethyl Acetate	0.50	387.50	193.75	< 193.75	141-78-6
Ethylbenzene	0.50	387.50	193.75	267.38	100-41-4
Hexane	0.50	387.50	193.75	< 193.75	110-54-3
Isopropanol	0.50	387.50	193.75	< 193.75	67-63-0
MEK	0.50	387.50	193.75	< 193.75	78-93-3
Methylene Chloride	0.50	387.50	193.75	< 193.75	75-09-2
Styrene	0.50	1550.00	775.00	95,542.00 E	100-42-5
Toluene	0.50	387.50	193.75	399.13	108-88-3
1,2,4-Trimethylbenzene	0.50	387.50	193.75	< 193.75	95-63-6
1,3,5-Trimethylbenzene	0.50	387.50	193.75	< 193.75	108-67-8
m,p-Xylenes	1.00	387.50	387.50	< 387.50	108-38-3, 106-42-3
o-Xylene	0.50	387.50	193.75	< 193.75	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190211-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**3845 - Opening of track**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 03:09 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.50	387.50	193.75	ND	76-13-1
2-methyl-2-butanol	0.50	387.50	193.75	ND	75-85-4
2-methylbutane	0.50	387.50	193.75	ND	78-78-4
2-methylnaphthalene	0.50	387.50	193.75	ND	91-57-6
Benzaldehyde	0.50	387.50	193.75	ND	100-52-7
Benzoic acid	0.50	387.50	193.75	ND	65-85-0
Ethylene glycol	0.50	387.50	193.75	ND	107-21-1
Isopropylbenzene	0.50	387.50	193.75	ND	98-82-8
Naphthalene	0.50	387.50	193.75	ND	91-20-3
n-propyl benzene	0.50	387.50	193.75	ND	103-65-1
p-isopropyltoluene	0.50	387.50	193.75	ND	99-87-6
Propionitrile	0.50	387.50	193.75	ND	107-12-0
Trans-1,3-dichloropropene	0.50	387.50	193.75	ND	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_190212-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1064 - Opening of track**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/26/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 04:03 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone	0.50	395.00	197.50	750.50	67-64-1
Benzene	0.50	395.00	197.50	< 197.50	71-43-2
1,3-Butadiene	0.50	395.00	197.50	< 197.50	106-99-0
Carbon disulfide	0.50	395.00	197.50	< 197.50	75-15-0
Carbon tetrachloride	0.50	395.00	197.50	< 197.50	56-23-5
Chloroform	0.50	395.00	197.50	< 197.50	67-66-3
Cyclohexane	0.50	395.00	197.50	< 197.50	110-82-7
1,4-Dioxane	0.50	395.00	197.50	< 197.50	123-91-1
Ethanol	0.50	395.00	197.50	< 197.50	64-17-5
Ethyl Acetate	0.50	395.00	197.50	< 197.50	141-78-6
Ethylbenzene	0.50	395.00	197.50	205.40	100-41-4
Hexane	0.50	395.00	197.50	< 197.50	110-54-3
Isopropanol	0.50	395.00	197.50	< 197.50	67-63-0
MEK	0.50	395.00	197.50	< 197.50	78-93-3
Methylene Chloride	0.50	395.00	197.50	< 197.50	75-09-2
Styrene	0.50	1580.00	790.00	156,862.40 E	100-42-5
Toluene	0.50	395.00	197.50	525.35	108-88-3
1,2,4-Trimethylbenzene	0.50	395.00	197.50	< 197.50	95-63-6
1,3,5-Trimethylbenzene	0.50	395.00	197.50	< 197.50	108-67-8
m,p-Xylenes	1.00	395.00	395.00	< 395.00	108-38-3, 106-42-3
o-Xylene	0.50	395.00	197.50	< 197.50	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190212-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1064 - Opening of track**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/26/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 04:03 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.50	395.00	197.50	ND	76-13-1
2-methyl-2-butanol	0.50	395.00	197.50	ND	75-85-4
2-methylbutane	0.50	395.00	197.50	ND	78-78-4
2-methylnaphthalene	0.50	395.00	197.50	ND	91-57-6
Benzaldehyde	0.50	395.00	197.50	ND	100-52-7
Benzoic acid	0.50	395.00	197.50	ND	65-85-0
Ethylene glycol	0.50	395.00	197.50	ND	107-21-1
Isopropylbenzene	0.50	395.00	197.50	ND	98-82-8
Naphthalene	0.50	395.00	197.50	ND	91-20-3
n-propyl benzene	0.50	395.00	197.50	ND	103-65-1
p-isopropyltoluene	0.50	395.00	197.50	ND	99-87-6
Propionitrile	0.50	395.00	197.50	ND	107-12-0
Trans-1,3-dichloropropene	0.50	395.00	197.50	ND	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**GSL_190212-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1076 - Initial Cure**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/26/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 12:25 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone	0.50	8.15	4.08	23.88	67-64-1
Benzene	0.50	8.15	4.08	< 4.08	71-43-2
1,3-Butadiene	0.50	8.15	4.08	< 4.08	106-99-0
Carbon disulfide	0.50	8.15	4.08	< 4.08	75-15-0
Carbon tetrachloride	0.50	8.15	4.08	< 4.08	56-23-5
Chloroform	0.50	8.15	4.08	< 4.08	67-66-3
Cyclohexane	0.50	8.15	4.08	< 4.08	110-82-7
1,4-Dioxane	0.50	8.15	4.08	< 4.08	123-91-1
Ethanol	0.50	8.15	4.08	< 4.08	64-17-5
Ethyl Acetate	0.50	8.15	4.08	< 4.08	141-78-6
Ethylbenzene	0.50	8.15	4.08	< 4.08	100-41-4
Hexane	0.50	8.15	4.08	< 4.08	110-54-3
Isopropanol	0.50	8.15	4.08	< 4.08	67-63-0
MEK	0.50	8.15	4.08	< 4.08	78-93-3
Methylene Chloride	0.50	8.15	4.08	< 4.08	75-09-2
Styrene	0.50	8.15	4.08	187.21 E	100-42-5
Toluene	0.50	8.15	4.08	< 4.08	108-88-3
1,2,4-Trimethylbenzene	0.50	8.15	4.08	< 4.08	95-63-6
1,3,5-Trimethylbenzene	0.50	8.15	4.08	< 4.08	108-67-8
m,p-Xylenes	1.00	8.15	8.15	< 8.15	108-38-3, 106-42-3
o-Xylene	0.50	8.15	4.08	< 4.08	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190212-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1076 - Initial Cure**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/26/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 12:25 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.50	8.15	4.08	ND	76-13-1
2-methyl-2-butanol	0.50	8.15	4.08	ND	75-85-4
2-methylbutane	0.50	8.15	4.08	ND	78-78-4
2-methylnaphthalene	0.50	8.15	4.08	ND	91-57-6
Benzaldehyde	0.50	8.15	4.08	ND	100-52-7
Benzoic acid	0.50	8.15	4.08	ND	65-85-0
Ethylene glycol	0.50	8.15	4.08	ND	107-21-1
Isopropylbenzene	0.50	8.15	4.08	ND	98-82-8
Naphthalene	0.50	8.15	4.08	ND	91-20-3
n-propyl benzene	0.50	8.15	4.08	ND	103-65-1
p-isopropyltoluene	0.50	8.15	4.08	ND	99-87-6
Propionitrile	0.50	8.15	4.08	ND	107-12-0
Trans-1,3-dichloropropene	0.50	8.15	4.08	ND	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_190228-001**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118232 (Active pump)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 08:05 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 04:57 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0000017	5.00	0.0000085	0.0000643	0.0000256	67-64-1
Benzene	0.0000023	5.00	0.0000114	0.0001541	0.0000456	71-43-2
1,3-Butadiene	0.0000016	5.00	0.0000079	< 0.0000079	< 0.0000034	106-99-0
Carbon Disulfide	0.0000022	5.00	0.0000111	< 0.0000111	< 0.0000034	75-15-0
Carbon tetrachloride	0.0000045	5.00	0.0000224	0.0000247	0.0000037	56-23-5
Chloroform	0.0000035	5.00	0.0000174	< 0.0000174	< 0.0000034	67-66-3
Cyclohexane	0.0000025	5.00	0.0000123	< 0.0000123	< 0.0000034	110-82-7
1,4-Dioxane	0.0000026	5.00	0.0000128	< 0.0000128	< 0.0000034	123-91-1
Ethanol	0.0000013	5.00	0.0000067	< 0.0000067	< 0.0000034	64-17-5
Ethyl acetate	0.0000026	5.00	0.0000128	< 0.0000128	< 0.0000034	141-78-6
Ethylbenzene	0.0000031	5.00	0.0000155	< 0.0000155	< 0.0000034	100-41-4
Hexane	0.0000025	5.00	0.0000126	0.0000814	0.0000218	110-54-3
Isopropanol	0.0000018	5.00	0.0000088	< 0.0000088	< 0.0000034	67-63-0
MEK	0.0000021	5.00	0.0000105	0.0000485	0.0000155	78-93-3
Methylene chloride	0.0000025	5.00	0.0000124	< 0.0000124	< 0.0000034	75-09-2
Styrene	0.0000030	5.00	0.0000152	< 0.0000152	< 0.0000034	100-42-5
Toluene	0.0000027	5.00	0.0000134	0.0001692	0.0000424	108-88-3
1,2,4-Trimethylbenzene	0.0000035	5.00	0.0000175	< 0.0000175	< 0.0000034	95-63-6
1,3,5-Trimethylbenzene	0.0000035	5.00	0.0000175	< 0.0000175	< 0.0000034	108-67-8
m,p-Xylenes	0.0000062	5.00	0.0000309	< 0.0000309	< 0.0000067	108-38-3, 106-42-3
o-Xylene	0.0000031	5.00	0.0000155	< 0.0000155	< 0.0000034	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190228-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118232 (Active pump)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 08:05 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 04:57 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0000055	5.00	0.0000273	< 0.0000273	< 0.0000034	76-13-1
2-methyl-2-butanol	0.0000026	5.00	0.0000128	< 0.0000128	< 0.0000034	75-85-4
2-methylbutane	0.0000021	5.00	0.0000105	< 0.0000105	< 0.0000034	78-78-4
2-methylnaphthalene	0.0000041	5.00	0.0000207	< 0.0000207	< 0.0000034	91-57-6
Benzaldehyde	0.0000031	5.00	0.0000155	0.0000894	0.0000195	100-52-7
Benzoic acid	0.0000036	5.00	0.0000178	< 0.0000178	< 0.0000034	65-85-0
Ethylene glycol	0.0000018	5.00	0.0000090	< 0.0000090	< 0.0000034	107-21-1
Isopropylbenzene	0.0000035	5.00	0.0000175	< 0.0000175	< 0.0000034	98-82-8
Naphthalene	0.0000037	5.00	0.0000187	< 0.0000187	< 0.0000034	91-20-3
n-propyl benzene	0.0000035	5.00	0.0000175	< 0.0000175	< 0.0000034	103-65-1
p-isopropyltoluene	0.0000039	5.00	0.0000196	< 0.0000196	< 0.0000034	99-87-6
Propionitrile	0.0000016	5.00	0.0000080	< 0.0000080	< 0.0000034	107-12-0
Trans-1,3-dichloropropene	0.0000032	5.00	0.0000162	< 0.0000162	< 0.0000034	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_190228-002**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118236 (Active pump)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 08:05 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/24/2019 at 02:01 AM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0000017	5.00	0.0000085	0.0001564	0.0000622	67-64-1
Benzene	0.0000023	5.00	0.0000114	0.0001832	0.0000542	71-43-2
1,3-Butadiene	0.0000016	5.00	0.0000079	< 0.0000079	< 0.0000034	106-99-0
Carbon Disulfide	0.0000022	5.00	0.0000111	< 0.0000111	< 0.0000034	75-15-0
Carbon tetrachloride	0.0000045	5.00	0.0000224	0.0000323	0.0000048	56-23-5
Chloroform	0.0000035	5.00	0.0000174	0.0000689	0.0000133	67-66-3
Cyclohexane	0.0000025	5.00	0.0000123	< 0.0000123	< 0.0000034	110-82-7
1,4-Dioxane	0.0000026	5.00	0.0000128	< 0.0000128	< 0.0000034	123-91-1
Ethanol	0.0000013	5.00	0.0000067	< 0.0000067	< 0.0000034	64-17-5
Ethyl acetate	0.0000026	5.00	0.0000128	< 0.0000128	< 0.0000034	141-78-6
Ethylbenzene	0.0000031	5.00	0.0000155	0.0002088	0.0000454	100-41-4
Hexane	0.0000025	5.00	0.0000126	0.0000997	0.0000267	110-54-3
Isopropanol	0.0000018	5.00	0.0000088	< 0.0000088	< 0.0000034	67-63-0
MEK	0.0000021	5.00	0.0000105	0.0001183	0.0000379	78-93-3
Methylene chloride	0.0000025	5.00	0.0000124	0.0000158	0.0000043	75-09-2
Styrene	0.0000030	20.00	0.0000607	0.1834326 E	0.0406820 E	100-42-5
Toluene	0.0000027	20.00	0.0000537	0.0018313	0.0004591	108-88-3
1,2,4-Trimethylbenzene	0.0000035	20.00	0.0000701	0.0004904	0.0000942	95-63-6
1,3,5-Trimethylbenzene	0.0000035	5.00	0.0000175	0.0002494	0.0000479	108-67-8
m,p-Xylenes	0.0000062	5.00	0.0000309	0.0007456	0.0001622	108-38-3, 106-42-3
o-Xylene	0.0000031	5.00	0.0000155	0.0004681	0.0001018	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190228-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118236 (Active pump)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 08:05 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 05:52 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0000055	5.00	0.0000273	< 0.0000273	< 0.0000034	76-13-1
2-methyl-2-butanol	0.0000026	5.00	0.0000128	< 0.0000128	< 0.0000034	75-85-4
2-methylbutane	0.0000021	5.00	0.0000105	< 0.0000105	< 0.0000034	78-78-4
2-methylnaphthalene	0.0000041	5.00	0.0000207	< 0.0000207	< 0.0000034	91-57-6
Benzaldehyde	0.0000031	5.00	0.0000155	0.0000272	0.0000059	100-52-7
Benzoic acid	0.0000036	5.00	0.0000178	< 0.0000178	< 0.0000034	65-85-0
Ethylene glycol	0.0000018	5.00	0.0000090	< 0.0000090	< 0.0000034	107-21-1
Isopropylbenzene	0.0000035	5.00	0.0000175	< 0.0000175	< 0.0000034	98-82-8
Naphthalene	0.0000037	5.00	0.0000187	< 0.0000187	< 0.0000034	91-20-3
n-propyl benzene	0.0000035	5.00	0.0000175	< 0.0000175	< 0.0000034	103-65-1
p-isopropyltoluene	0.0000039	5.00	0.0000196	< 0.0000196	< 0.0000034	99-87-6
Propionitrile	0.0000016	5.00	0.0000080	< 0.0000080	< 0.0000034	107-12-0
Trans-1,3-dichloropropene	0.0000032	5.00	0.0000162	< 0.0000162	< 0.0000034	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_190228-003**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118228 (Active pump)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 08:05 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 06:46 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0000017	5.00	0.0000085	0.0001021	0.0000406	67-64-1
Benzene	0.0000023	5.00	0.0000114	0.0001338	0.0000396	71-43-2
1,3-Butadiene	0.0000016	5.00	0.0000079	< 0.0000079	< 0.0000034	106-99-0
Carbon Disulfide	0.0000022	5.00	0.0000111	< 0.0000111	< 0.0000034	75-15-0
Carbon tetrachloride	0.0000045	5.00	0.0000224	0.0000238	0.0000036	56-23-5
Chloroform	0.0000035	5.00	0.0000174	< 0.0000174	< 0.0000034	67-66-3
Cyclohexane	0.0000025	5.00	0.0000123	< 0.0000123	< 0.0000034	110-82-7
1,4-Dioxane	0.0000026	5.00	0.0000128	< 0.0000128	< 0.0000034	123-91-1
Ethanol	0.0000013	5.00	0.0000067	< 0.0000067	< 0.0000034	64-17-5
Ethyl acetate	0.0000026	5.00	0.0000128	< 0.0000128	< 0.0000034	141-78-6
Ethylbenzene	0.0000031	5.00	0.0000155	0.0000257	0.0000056	100-41-4
Hexane	0.0000025	5.00	0.0000126	0.0000824	0.0000221	110-54-3
Isopropanol	0.0000018	5.00	0.0000088	< 0.0000088	< 0.0000034	67-63-0
MEK	0.0000021	5.00	0.0000105	0.0000651	0.0000209	78-93-3
Methylene chloride	0.0000025	5.00	0.0000124	0.0000218	0.0000059	75-09-2
Styrene	0.0000030	20.00	0.0000607	0.0349682 E	0.0077553 E	100-42-5
Toluene	0.0000027	20.00	0.0000537	0.0010644	0.0002668	108-88-3
1,2,4-Trimethylbenzene	0.0000035	5.00	0.0000175	0.0000676	0.0000130	95-63-6
1,3,5-Trimethylbenzene	0.0000035	5.00	0.0000175	< 0.0000175	< 0.0000034	108-67-8
m,p-Xylenes	0.0000062	5.00	0.0000309	0.0000752	0.0000164	108-38-3, 106-42-3
o-Xylene	0.0000031	5.00	0.0000155	0.0000523	0.0000114	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190228-003**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118228 (Active pump)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 08:05 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 06:46 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0000055	5.00	0.0000273	< 0.0000273	< 0.0000034	76-13-1
2-methyl-2-butanol	0.0000026	5.00	0.0000128	< 0.0000128	< 0.0000034	75-85-4
2-methylbutane	0.0000021	5.00	0.0000105	< 0.0000105	< 0.0000034	78-78-4
2-methylnaphthalene	0.0000041	5.00	0.0000207	< 0.0000207	< 0.0000034	91-57-6
Benzaldehyde	0.0000031	5.00	0.0000155	< 0.0000155	< 0.0000034	100-52-7
Benzoic acid	0.0000036	5.00	0.0000178	< 0.0000178	< 0.0000034	65-85-0
Ethylene glycol	0.0000018	5.00	0.0000090	< 0.0000090	< 0.0000034	107-21-1
Isopropylbenzene	0.0000035	5.00	0.0000175	< 0.0000175	< 0.0000034	98-82-8
Naphthalene	0.0000037	5.00	0.0000187	< 0.0000187	< 0.0000034	91-20-3
n-propyl benzene	0.0000035	5.00	0.0000175	< 0.0000175	< 0.0000034	103-65-1
p-isopropyltoluene	0.0000039	5.00	0.0000196	< 0.0000196	< 0.0000034	99-87-6
Propionitrile	0.0000016	5.00	0.0000080	< 0.0000080	< 0.0000034	107-12-0
Trans-1,3-dichloropropene	0.0000032	5.00	0.0000162	< 0.0000162	< 0.0000034	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_190229-001**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118221 (Dual cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/26/2019 at 07:30 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 07:41 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0018	5.00	0.0091	0.1193	0.0474	67-64-1
Benzene	0.0018	5.00	0.0092	< 0.0092	< 0.0027	71-43-2
1,3-Butadiene	0.0014	5.00	0.0070	< 0.0070	< 0.0030	106-99-0
Carbon Disulfide	0.0024	5.00	0.0120	< 0.0120	< 0.0036	75-15-0
Carbon tetrachloride	0.0047	5.00	0.0237	< 0.0237	< 0.0036	56-23-5
Chloroform	0.0037	5.00	0.0187	< 0.0187	< 0.0036	67-66-3
Cyclohexane	0.0026	5.00	0.0132	< 0.0132	< 0.0036	110-82-7
1,4-Dioxane	0.0028	5.00	0.0138	< 0.0138	< 0.0036	123-91-1
Ethanol	0.0014	5.00	0.0072	< 0.0072	< 0.0036	64-17-5
Ethyl acetate	0.0028	5.00	0.0138	< 0.0138	< 0.0036	141-78-6
Ethylbenzene	0.0036	5.00	0.0181	< 0.0181	< 0.0039	100-41-4
Hexane	0.0027	5.00	0.0135	< 0.0135	< 0.0036	110-54-3
Isopropanol	0.0019	5.00	0.0094	< 0.0094	< 0.0036	67-63-0
MEK	0.0023	5.00	0.0113	< 0.0113	< 0.0036	78-93-3
Methylene chloride	0.0027	5.00	0.0133	0.0149	0.0041	75-09-2
Styrene	0.0033	5.00	0.0164	11.9967 E	2.6607 E	100-42-5
Toluene	0.0028	5.00	0.0139	< 0.0139	< 0.0035	108-88-3
1,2,4-Trimethylbenzene	0.0038	5.00	0.0189	< 0.0189	< 0.0036	95-63-6
1,3,5-Trimethylbenzene	0.0046	5.00	0.0230	< 0.0230	< 0.0044	108-67-8
m,p-Xylenes	0.0072	5.00	0.0362	< 0.0362	< 0.0079	108-38-3, 106-42-3
o-Xylene	0.0036	5.00	0.0181	< 0.0181	< 0.0039	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190229-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118221 (Dual cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/26/2019 at 07:30 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/23/2019 at 07:41 PM
QC Batch ID:	QC_09776	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0064	5.00	0.0320	< 0.0320	< 0.0039	76-13-1
2-methyl-2-butanol	0.0028	5.00	0.0138	< 0.0138	< 0.0036	75-85-4
2-methylbutane	0.0023	5.00	0.0113	< 0.0113	< 0.0036	78-78-4
2-methylnaphthalene	0.0045	5.00	0.0223	< 0.0223	< 0.0036	91-57-6
Benzaldehyde	0.0033	5.00	0.0167	< 0.0167	< 0.0036	100-52-7
Benzoic acid	0.0038	5.00	0.0192	< 0.0192	< 0.0036	65-85-0
Ethylene glycol	0.0019	5.00	0.0097	< 0.0097	< 0.0036	107-21-1
Isopropylbenzene	0.0038	5.00	0.0189	< 0.0189	< 0.0036	98-82-8
Naphthalene	0.0040	5.00	0.0201	< 0.0201	< 0.0036	91-20-3
n-propyl benzene	0.0038	5.00	0.0189	< 0.0189	< 0.0036	103-65-1
p-isopropyltoluene	0.0042	5.00	0.0211	< 0.0211	< 0.0036	99-87-6
Propionitrile	0.0017	5.00	0.0086	< 0.0086	< 0.0036	107-12-0
Trans-1,3-dichloropropene	0.0035	5.00	0.0174	< 0.0174	< 0.0036	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_190229-002**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi119252 (Single cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 07:45 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/25/2019 at 01:44 PM
QC Batch ID:	QC_09775	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0035	5.00	0.0177	0.0696	0.0277	67-64-1
Benzene	0.0035	5.00	0.0177	< 0.0177	< 0.0052	71-43-2
1,3-Butadiene	0.0027	5.00	0.0135	< 0.0135	< 0.0058	106-99-0
Carbon Disulfide	0.0046	5.00	0.0231	< 0.0231	< 0.0070	75-15-0
Carbon tetrachloride	0.0092	5.00	0.0458	< 0.0458	< 0.0069	56-23-5
Chloroform	0.0073	5.00	0.0363	< 0.0363	< 0.0070	67-66-3
Cyclohexane	0.0051	5.00	0.0256	< 0.0256	< 0.0070	110-82-7
1,4-Dioxane	0.0054	5.00	0.0268	< 0.0268	< 0.0070	123-91-1
Ethanol	0.0028	5.00	0.0140	0.2047	0.1026	64-17-5
Ethyl acetate	0.0054	5.00	0.0268	< 0.0268	< 0.0070	141-78-6
Ethylbenzene	0.0070	5.00	0.0351	< 0.0351	< 0.0076	100-41-4
Hexane	0.0052	5.00	0.0262	< 0.0262	< 0.0070	110-54-3
Isopropanol	0.0037	5.00	0.0183	< 0.0183	< 0.0070	67-63-0
MEK	0.0044	5.00	0.0219	< 0.0219	< 0.0070	78-93-3
Methylene chloride	0.0052	5.00	0.0258	< 0.0258	< 0.0070	75-09-2
Styrene	0.0063	5.00	0.0317	0.0842	0.0187	100-42-5
Toluene	0.0054	5.00	0.0269	< 0.0269	< 0.0068	108-88-3
1,2,4-Trimethylbenzene	0.0073	5.00	0.0365	< 0.0365	< 0.0070	95-63-6
1,3,5-Trimethylbenzene	0.0089	5.00	0.0446	< 0.0446	< 0.0086	108-67-8
m,p-Xylenes	0.0140	5.00	0.0702	< 0.0702	< 0.0153	108-38-3, 106-42-3
o-Xylene	0.0070	5.00	0.0351	< 0.0351	< 0.0076	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190229-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi119252 (Single cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 07:45 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/25/2019 at 01:44 PM
QC Batch ID:	QC_09775	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0124	5.00	0.0619	< 0.0619	< 0.0076	76-13-1
2-methyl-2-butanol	0.0054	5.00	0.0268	< 0.0268	< 0.0070	75-85-4
2-methylbutane	0.0044	5.00	0.0219	< 0.0219	< 0.0070	78-78-4
2-methylnaphthalene	0.0086	5.00	0.0432	< 0.0432	< 0.0070	91-57-6
Benzaldehyde	0.0065	5.00	0.0323	< 0.0323	< 0.0070	100-52-7
Benzoic acid	0.0074	5.00	0.0371	< 0.0371	< 0.0070	65-85-0
Ethylene glycol	0.0038	5.00	0.0189	< 0.0189	< 0.0070	107-21-1
Isopropylbenzene	0.0073	5.00	0.0365	< 0.0365	< 0.0070	98-82-8
Naphthalene	0.0078	5.00	0.0390	< 0.0390	< 0.0070	91-20-3
n-propyl benzene	0.0073	5.00	0.0365	< 0.0365	< 0.0070	103-65-1
p-isopropyltoluene	0.0082	5.00	0.0408	< 0.0408	< 0.0070	99-87-6
Propionitrile	0.0033	5.00	0.0167	< 0.0167	< 0.0070	107-12-0
Trans-1,3-dichloropropene	0.0067	5.00	0.0337	< 0.0337	< 0.0070	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_190229-003**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118211 (Dual cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 07:45 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/25/2019 at 02:39 PM
QC Batch ID:	QC_09775	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0018	5.00	0.0088	< 0.0088	< 0.0035	67-64-1
Benzene	0.0018	5.00	0.0089	< 0.0089	< 0.0026	71-43-2
1,3-Butadiene	0.0013	5.00	0.0067	< 0.0067	< 0.0029	106-99-0
Carbon Disulfide	0.0023	5.00	0.0116	< 0.0116	< 0.0035	75-15-0
Carbon tetrachloride	0.0046	5.00	0.0229	< 0.0229	< 0.0034	56-23-5
Chloroform	0.0036	5.00	0.0181	< 0.0181	< 0.0035	67-66-3
Cyclohexane	0.0026	5.00	0.0128	< 0.0128	< 0.0035	110-82-7
1,4-Dioxane	0.0027	5.00	0.0134	< 0.0134	< 0.0035	123-91-1
Ethanol	0.0014	5.00	0.0070	< 0.0070	< 0.0035	64-17-5
Ethyl acetate	0.0027	5.00	0.0134	< 0.0134	< 0.0035	141-78-6
Ethylbenzene	0.0035	5.00	0.0175	< 0.0175	< 0.0038	100-41-4
Hexane	0.0026	5.00	0.0131	< 0.0131	< 0.0035	110-54-3
Isopropanol	0.0018	5.00	0.0091	< 0.0091	< 0.0035	67-63-0
MEK	0.0022	5.00	0.0110	< 0.0110	< 0.0035	78-93-3
Methylene chloride	0.0026	5.00	0.0129	< 0.0129	< 0.0035	75-09-2
Styrene	0.0032	20.00	0.0633	2.2223	0.4929	100-42-5
Toluene	0.0027	5.00	0.0135	< 0.0135	< 0.0034	108-88-3
1,2,4-Trimethylbenzene	0.0037	5.00	0.0183	< 0.0183	< 0.0035	95-63-6
1,3,5-Trimethylbenzene	0.0045	5.00	0.0223	< 0.0223	< 0.0043	108-67-8
m,p-Xylenes	0.0070	5.00	0.0351	< 0.0351	< 0.0076	108-38-3, 106-42-3
o-Xylene	0.0035	5.00	0.0175	< 0.0175	< 0.0038	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190229-003**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118211 (Dual cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 07:45 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/25/2019 at 02:39 PM
QC Batch ID:	QC_09775	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0062	5.00	0.0310	< 0.0310	< 0.0038	76-13-1
2-methyl-2-butanol	0.0027	5.00	0.0134	< 0.0134	< 0.0035	75-85-4
2-methylbutane	0.0022	5.00	0.0110	< 0.0110	< 0.0035	78-78-4
2-methylnaphthalene	0.0043	5.00	0.0216	< 0.0216	< 0.0035	91-57-6
Benzaldehyde	0.0032	5.00	0.0161	< 0.0161	< 0.0035	100-52-7
Benzoic acid	0.0037	5.00	0.0186	< 0.0186	< 0.0035	65-85-0
Ethylene glycol	0.0019	5.00	0.0094	< 0.0094	< 0.0035	107-21-1
Isopropylbenzene	0.0037	5.00	0.0183	< 0.0183	< 0.0035	98-82-8
Naphthalene	0.0039	5.00	0.0195	< 0.0195	< 0.0035	91-20-3
n-propyl benzene	0.0037	5.00	0.0183	< 0.0183	< 0.0035	103-65-1
p-isopropyltoluene	0.0041	5.00	0.0204	< 0.0204	< 0.0035	99-87-6
Propionitrile	0.0017	5.00	0.0084	< 0.0084	< 0.0035	107-12-0
Trans-1,3-dichloropropene	0.0034	5.00	0.0169	< 0.0169	< 0.0035	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_190229-004**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi119263 (Single cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 08:45 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/25/2019 at 03:33 PM
QC Batch ID:	QC_09775	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0031	5.00	0.0156	< 0.0156	< 0.0062	67-64-1
Benzene	0.0031	5.00	0.0157	< 0.0157	< 0.0046	71-43-2
1,3-Butadiene	0.0024	5.00	0.0119	< 0.0119	< 0.0051	106-99-0
Carbon Disulfide	0.0041	5.00	0.0205	< 0.0205	< 0.0062	75-15-0
Carbon tetrachloride	0.0081	5.00	0.0406	< 0.0406	< 0.0061	56-23-5
Chloroform	0.0064	5.00	0.0321	< 0.0321	< 0.0062	67-66-3
Cyclohexane	0.0045	5.00	0.0227	< 0.0227	< 0.0062	110-82-7
1,4-Dioxane	0.0047	5.00	0.0237	< 0.0237	< 0.0062	123-91-1
Ethanol	0.0025	5.00	0.0124	< 0.0124	< 0.0062	64-17-5
Ethyl acetate	0.0047	5.00	0.0237	< 0.0237	< 0.0062	141-78-6
Ethylbenzene	0.0062	5.00	0.0311	< 0.0311	< 0.0068	100-41-4
Hexane	0.0046	5.00	0.0232	< 0.0232	< 0.0062	110-54-3
Isopropanol	0.0032	5.00	0.0162	< 0.0162	< 0.0062	67-63-0
MEK	0.0039	5.00	0.0194	< 0.0194	< 0.0062	78-93-3
Methylene chloride	0.0046	5.00	0.0229	< 0.0229	< 0.0062	75-09-2
Styrene	0.0056	20.00	0.1122	4.1923	0.9298	100-42-5
Toluene	0.0048	5.00	0.0239	< 0.0239	< 0.0060	108-88-3
1,2,4-Trimethylbenzene	0.0065	5.00	0.0324	< 0.0324	< 0.0062	95-63-6
1,3,5-Trimethylbenzene	0.0079	5.00	0.0395	< 0.0395	< 0.0076	108-67-8
m,p-Xylenes	0.0124	5.00	0.0621	< 0.0621	< 0.0135	108-38-3, 106-42-3
o-Xylene	0.0062	5.00	0.0311	< 0.0311	< 0.0068	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190229-004**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi119263 (Single cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 08:45 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/25/2019 at 03:33 PM
QC Batch ID:	QC_09775	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0110	5.00	0.0548	< 0.0548	< 0.0068	76-13-1
2-methyl-2-butanol	0.0047	5.00	0.0237	< 0.0237	< 0.0062	75-85-4
2-methylbutane	0.0039	5.00	0.0194	< 0.0194	< 0.0062	78-78-4
2-methylnaphthalene	0.0077	5.00	0.0383	< 0.0383	< 0.0062	91-57-6
Benzaldehyde	0.0057	5.00	0.0286	< 0.0286	< 0.0062	100-52-7
Benzoic acid	0.0066	5.00	0.0329	< 0.0329	< 0.0062	65-85-0
Ethylene glycol	0.0033	5.00	0.0167	< 0.0167	< 0.0062	107-21-1
Isopropylbenzene	0.0065	5.00	0.0324	< 0.0324	< 0.0062	98-82-8
Naphthalene	0.0069	5.00	0.0345	< 0.0345	< 0.0062	91-20-3
n-propyl benzene	0.0065	5.00	0.0324	< 0.0324	< 0.0062	103-65-1
p-isopropyltoluene	0.0072	5.00	0.0361	< 0.0361	< 0.0062	99-87-6
Propionitrile	0.0030	5.00	0.0148	< 0.0148	< 0.0062	107-12-0
Trans-1,3-dichloropropene	0.0060	5.00	0.0299	< 0.0299	< 0.0062	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_190229-005**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi107674 (Active pump)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 08:05 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/25/2019 at 04:28 PM
QC Batch ID:	QC_09775	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0000017	5.00	0.0000085	0.0000489	0.0000195	67-64-1
Benzene	0.0000023	5.00	0.0000114	0.0001329	0.0000393	71-43-2
1,3-Butadiene	0.0000016	5.00	0.0000079	< 0.0000079	< 0.0000034	106-99-0
Carbon Disulfide	0.0000022	5.00	0.0000111	< 0.0000111	< 0.0000034	75-15-0
Carbon tetrachloride	0.0000045	5.00	0.0000224	< 0.0000224	< 0.0000034	56-23-5
Chloroform	0.0000035	5.00	0.0000174	< 0.0000174	< 0.0000034	67-66-3
Cyclohexane	0.0000025	5.00	0.0000123	< 0.0000123	< 0.0000034	110-82-7
1,4-Dioxane	0.0000026	5.00	0.0000128	< 0.0000128	< 0.0000034	123-91-1
Ethanol	0.0000013	5.00	0.0000067	< 0.0000067	< 0.0000034	64-17-5
Ethyl acetate	0.0000026	5.00	0.0000128	< 0.0000128	< 0.0000034	141-78-6
Ethylbenzene	0.0000031	5.00	0.0000155	0.0000999	0.0000217	100-41-4
Hexane	0.0000025	5.00	0.0000126	0.0000846	0.0000227	110-54-3
Isopropanol	0.0000018	5.00	0.0000088	< 0.0000088	< 0.0000034	67-63-0
MEK	0.0000021	5.00	0.0000105	0.0000563	0.0000180	78-93-3
Methylene chloride	0.0000025	5.00	0.0000124	< 0.0000124	< 0.0000034	75-09-2
Styrene	0.0000030	5.00	0.0000152	0.0000534	0.0000118	100-42-5
Toluene	0.0000027	20.00	0.0000537	0.0011761	0.0002948	108-88-3
1,2,4-Trimethylbenzene	0.0000035	5.00	0.0000175	0.0000788	0.0000151	95-63-6
1,3,5-Trimethylbenzene	0.0000035	5.00	0.0000175	< 0.0000175	< 0.0000034	108-67-8
m,p-Xylenes	0.0000062	5.00	0.0000309	0.0002955	0.0000643	108-38-3, 106-42-3
o-Xylene	0.0000031	5.00	0.0000155	0.0001077	0.0000234	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190229-005**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi107674 (Active pump)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 08:05 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/25/2019 at 04:28 PM
QC Batch ID:	QC_09775	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0000055	5.00	0.0000273	< 0.0000273	< 0.0000034	76-13-1
2-methyl-2-butanol	0.0000026	5.00	0.0000128	< 0.0000128	< 0.0000034	75-85-4
2-methylbutane	0.0000021	5.00	0.0000105	< 0.0000105	< 0.0000034	78-78-4
2-methylnaphthalene	0.0000041	5.00	0.0000207	< 0.0000207	< 0.0000034	91-57-6
Benzaldehyde	0.0000031	5.00	0.0000155	0.0005112	0.0001113	100-52-7
Benzoic acid	0.0000036	5.00	0.0000178	< 0.0000178	< 0.0000034	65-85-0
Ethylene glycol	0.0000018	5.00	0.0000090	< 0.0000090	< 0.0000034	107-21-1
Isopropylbenzene	0.0000035	5.00	0.0000175	< 0.0000175	< 0.0000034	98-82-8
Naphthalene	0.0000037	5.00	0.0000187	< 0.0000187	< 0.0000034	91-20-3
n-propyl benzene	0.0000035	5.00	0.0000175	< 0.0000175	< 0.0000034	103-65-1
p-isopropyltoluene	0.0000039	5.00	0.0000196	< 0.0000196	< 0.0000034	99-87-6
Propionitrile	0.0000016	5.00	0.0000080	< 0.0000080	< 0.0000034	107-12-0
Trans-1,3-dichloropropene	0.0000032	5.00	0.0000162	< 0.0000162	< 0.0000034	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_190230-001**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi119214 (Dual cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 08:45 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/25/2019 at 05:22 PM
QC Batch ID:	QC_09775	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0016	5.00	0.0078	0.1493	0.0594	67-64-1
Benzene	0.0016	5.00	0.0078	0.0118	0.0035	71-43-2
1,3-Butadiene	0.0012	5.00	0.0060	< 0.0060	< 0.0025	106-99-0
Carbon Disulfide	0.0020	5.00	0.0102	< 0.0102	< 0.0031	75-15-0
Carbon tetrachloride	0.0041	5.00	0.0203	< 0.0203	< 0.0030	56-23-5
Chloroform	0.0032	5.00	0.0161	< 0.0161	< 0.0031	67-66-3
Cyclohexane	0.0023	5.00	0.0113	< 0.0113	< 0.0031	110-82-7
1,4-Dioxane	0.0024	5.00	0.0119	< 0.0119	< 0.0031	123-91-1
Ethanol	0.0012	5.00	0.0062	< 0.0062	< 0.0031	64-17-5
Ethyl acetate	0.0024	5.00	0.0119	< 0.0119	< 0.0031	141-78-6
Ethylbenzene	0.0031	5.00	0.0155	< 0.0155	< 0.0034	100-41-4
Hexane	0.0023	5.00	0.0116	< 0.0116	< 0.0031	110-54-3
Isopropanol	0.0016	5.00	0.0081	< 0.0081	< 0.0031	67-63-0
MEK	0.0019	5.00	0.0097	0.0149	0.0048	78-93-3
Methylene chloride	0.0023	5.00	0.0114	< 0.0114	< 0.0031	75-09-2
Styrene	0.0028	20.00	0.0561	73.6632 E	16.3372 E	100-42-5
Toluene	0.0024	5.00	0.0119	0.0770	0.0193	108-88-3
1,2,4-Trimethylbenzene	0.0032	5.00	0.0162	< 0.0162	< 0.0031	95-63-6
1,3,5-Trimethylbenzene	0.0039	5.00	0.0197	< 0.0197	< 0.0038	108-67-8
m,p-Xylenes	0.0062	5.00	0.0311	< 0.0311	< 0.0068	108-38-3, 106-42-3
o-Xylene	0.0031	5.00	0.0155	< 0.0155	< 0.0034	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190230-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi119214 (Dual cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 08:45 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/25/2019 at 05:22 PM
QC Batch ID:	QC_09775	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0055	5.00	0.0274	< 0.0274	< 0.0034	76-13-1
2-methyl-2-butanol	0.0024	5.00	0.0119	< 0.0119	< 0.0031	75-85-4
2-methylbutane	0.0019	5.00	0.0097	< 0.0097	< 0.0031	78-78-4
2-methylnaphthalene	0.0038	5.00	0.0191	< 0.0191	< 0.0031	91-57-6
Benzaldehyde	0.0029	5.00	0.0143	< 0.0143	< 0.0031	100-52-7
Benzoic acid	0.0033	5.00	0.0164	< 0.0164	< 0.0031	65-85-0
Ethylene glycol	0.0017	5.00	0.0084	< 0.0084	< 0.0031	107-21-1
Isopropylbenzene	0.0032	5.00	0.0162	< 0.0162	< 0.0031	98-82-8
Naphthalene	0.0035	5.00	0.0173	< 0.0173	< 0.0031	91-20-3
n-propyl benzene	0.0032	5.00	0.0162	< 0.0162	< 0.0031	103-65-1
p-isopropyltoluene	0.0036	5.00	0.0181	< 0.0181	< 0.0031	99-87-6
Propionitrile	0.0015	5.00	0.0074	< 0.0074	< 0.0031	107-12-0
Trans-1,3-dichloropropene	0.0030	5.00	0.0149	< 0.0149	< 0.0031	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_190230-002**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118231 (Single cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 08:45 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/25/2019 at 06:16 PM
QC Batch ID:	QC_09775	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0031	5.00	0.0156	0.1576	0.0627	67-64-1
Benzene	0.0031	5.00	0.0157	< 0.0157	< 0.0046	71-43-2
1,3-Butadiene	0.0024	5.00	0.0119	< 0.0119	< 0.0051	106-99-0
Carbon Disulfide	0.0041	5.00	0.0205	< 0.0205	< 0.0062	75-15-0
Carbon tetrachloride	0.0081	5.00	0.0406	< 0.0406	< 0.0061	56-23-5
Chloroform	0.0064	5.00	0.0321	< 0.0321	< 0.0062	67-66-3
Cyclohexane	0.0045	5.00	0.0227	< 0.0227	< 0.0062	110-82-7
1,4-Dioxane	0.0047	5.00	0.0237	< 0.0237	< 0.0062	123-91-1
Ethanol	0.0025	5.00	0.0124	< 0.0124	< 0.0062	64-17-5
Ethyl acetate	0.0047	5.00	0.0237	< 0.0237	< 0.0062	141-78-6
Ethylbenzene	0.0062	5.00	0.0311	< 0.0311	< 0.0068	100-41-4
Hexane	0.0046	5.00	0.0232	< 0.0232	< 0.0062	110-54-3
Isopropanol	0.0032	5.00	0.0162	< 0.0162	< 0.0062	67-63-0
MEK	0.0039	5.00	0.0194	< 0.0194	< 0.0062	78-93-3
Methylene chloride	0.0046	5.00	0.0229	< 0.0229	< 0.0062	75-09-2
Styrene	0.0056	20.00	0.1122	76.3863 E	16.9411 E	100-42-5
Toluene	0.0048	5.00	0.0239	0.1345	0.0337	108-88-3
1,2,4-Trimethylbenzene	0.0065	5.00	0.0324	< 0.0324	< 0.0062	95-63-6
1,3,5-Trimethylbenzene	0.0079	5.00	0.0395	< 0.0395	< 0.0076	108-67-8
m,p-Xylenes	0.0124	5.00	0.0621	< 0.0621	< 0.0135	108-38-3, 106-42-3
o-Xylene	0.0062	5.00	0.0311	< 0.0311	< 0.0068	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190230-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118231 (Single cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/27/2019 at 08:45 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/25/2019 at 06:16 PM
QC Batch ID:	QC_09775	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0110	5.00	0.0548	< 0.0548	< 0.0068	76-13-1
2-methyl-2-butanol	0.0047	5.00	0.0237	< 0.0237	< 0.0062	75-85-4
2-methylbutane	0.0039	5.00	0.0194	< 0.0194	< 0.0062	78-78-4
2-methylnaphthalene	0.0077	5.00	0.0383	< 0.0383	< 0.0062	91-57-6
Benzaldehyde	0.0057	5.00	0.0286	< 0.0286	< 0.0062	100-52-7
Benzoic acid	0.0066	5.00	0.0329	< 0.0329	< 0.0062	65-85-0
Ethylene glycol	0.0033	5.00	0.0167	< 0.0167	< 0.0062	107-21-1
Isopropylbenzene	0.0065	5.00	0.0324	< 0.0324	< 0.0062	98-82-8
Naphthalene	0.0069	5.00	0.0345	< 0.0345	< 0.0062	91-20-3
n-propyl benzene	0.0065	5.00	0.0324	< 0.0324	< 0.0062	103-65-1
p-isopropyltoluene	0.0072	5.00	0.0361	< 0.0361	< 0.0062	99-87-6
Propionitrile	0.0030	5.00	0.0148	< 0.0148	< 0.0062	107-12-0
Trans-1,3-dichloropropene	0.0060	5.00	0.0299	< 0.0299	< 0.0062	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_190230-003**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118226 (Single cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/26/2019 at 07:30 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/27/2019 at 01:14 PM
QC Batch ID:	QC_09772	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0036	5.00	0.0182	< 0.0182	< 0.0073	67-64-1
Benzene	0.0037	5.00	0.0183	< 0.0183	< 0.0054	71-43-2
1,3-Butadiene	0.0028	5.00	0.0139	< 0.0139	< 0.0059	106-99-0
Carbon Disulfide	0.0048	5.00	0.0239	< 0.0239	< 0.0073	75-15-0
Carbon tetrachloride	0.0095	5.00	0.0474	< 0.0474	< 0.0071	56-23-5
Chloroform	0.0075	5.00	0.0375	< 0.0375	< 0.0073	67-66-3
Cyclohexane	0.0053	5.00	0.0264	< 0.0264	< 0.0073	110-82-7
1,4-Dioxane	0.0055	5.00	0.0277	< 0.0277	< 0.0073	123-91-1
Ethanol	0.0029	5.00	0.0145	< 0.0145	< 0.0073	64-17-5
Ethyl acetate	0.0055	5.00	0.0277	< 0.0277	< 0.0073	141-78-6
Ethylbenzene	0.0072	5.00	0.0362	< 0.0362	< 0.0079	100-41-4
Hexane	0.0054	5.00	0.0271	< 0.0271	< 0.0073	110-54-3
Isopropanol	0.0038	5.00	0.0189	< 0.0189	< 0.0073	67-63-0
MEK	0.0045	5.00	0.0226	< 0.0226	< 0.0073	78-93-3
Methylene chloride	0.0053	5.00	0.0267	< 0.0267	< 0.0073	75-09-2
Styrene	0.0065	5.00	0.0327	0.1492	0.0331	100-42-5
Toluene	0.0056	5.00	0.0278	< 0.0278	< 0.0070	108-88-3
1,2,4-Trimethylbenzene	0.0075	5.00	0.0377	< 0.0377	< 0.0073	95-63-6
1,3,5-Trimethylbenzene	0.0092	5.00	0.0460	< 0.0460	< 0.0088	108-67-8
m,p-Xylenes	0.0145	5.00	0.0725	< 0.0725	< 0.0158	108-38-3, 106-42-3
o-Xylene	0.0072	5.00	0.0362	< 0.0362	< 0.0079	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190230-003**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi118226 (Single cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/26/2019 at 07:30 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/27/2019 at 01:14 PM
QC Batch ID:	QC_09772	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-Trichloro-1,2,2-Trifluoroethan	0.0128	5.00	0.0640	< 0.0640	< 0.0079	76-13-1
2-methyl-2-butanol	0.0055	5.00	0.0277	< 0.0277	< 0.0073	75-85-4
2-methylbutane	0.0045	5.00	0.0227	< 0.0227	< 0.0073	78-78-4
2-methylnaphthalene	0.0089	5.00	0.0447	< 0.0447	< 0.0073	91-57-6
Benzaldehyde	0.0067	5.00	0.0333	< 0.0333	< 0.0073	100-52-7
Benzoic acid	0.0077	5.00	0.0384	< 0.0384	< 0.0073	65-85-0
Ethylene glycol	0.0039	5.00	0.0195	< 0.0195	< 0.0073	107-21-1
Isopropylbenzene	0.0075	5.00	0.0377	< 0.0377	< 0.0073	98-82-8
Naphthalene	0.0081	5.00	0.0403	< 0.0403	< 0.0073	91-20-3
n-propyl benzene	0.0076	5.00	0.0378	< 0.0378	< 0.0073	103-65-1
p-isopropyltoluene	0.0084	5.00	0.0422	< 0.0422	< 0.0073	99-87-6
Propionitrile	0.0035	5.00	0.0173	< 0.0173	< 0.0073	107-12-0
Trans-1,3-dichloropropene	0.0070	5.00	0.0349	< 0.0349	< 0.0073	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_190230-004**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi107665 (Single cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/26/2019 at 07:30 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/27/2019 at 03:02 PM
QC Batch ID:	QC_09772	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0036	5.00	0.0182	0.1416	0.0563	67-64-1
Benzene	0.0037	5.00	0.0183	0.0209	0.0062	71-43-2
1,3-Butadiene	0.0028	5.00	0.0139	< 0.0139	< 0.0059	106-99-0
Carbon Disulfide	0.0048	5.00	0.0239	< 0.0239	< 0.0073	75-15-0
Carbon tetrachloride	0.0095	5.00	0.0474	< 0.0474	< 0.0071	56-23-5
Chloroform	0.0075	5.00	0.0375	< 0.0375	< 0.0073	67-66-3
Cyclohexane	0.0053	5.00	0.0264	< 0.0264	< 0.0073	110-82-7
1,4-Dioxane	0.0055	5.00	0.0277	< 0.0277	< 0.0073	123-91-1
Ethanol	0.0029	5.00	0.0145	< 0.0145	< 0.0073	64-17-5
Ethyl acetate	0.0055	5.00	0.0277	< 0.0277	< 0.0073	141-78-6
Ethylbenzene	0.0072	5.00	0.0362	< 0.0362	< 0.0079	100-41-4
Hexane	0.0054	5.00	0.0271	< 0.0271	< 0.0073	110-54-3
Isopropanol	0.0038	5.00	0.0189	< 0.0189	< 0.0073	67-63-0
MEK	0.0045	5.00	0.0226	< 0.0226	< 0.0073	78-93-3
Methylene chloride	0.0053	5.00	0.0267	< 0.0267	< 0.0073	75-09-2
Styrene	0.0065	20.00	0.1308	10.9100 E	2.4196 E	100-42-5
Toluene	0.0056	5.00	0.0278	< 0.0278	< 0.0070	108-88-3
1,2,4-Trimethylbenzene	0.0075	5.00	0.0377	< 0.0377	< 0.0073	95-63-6
1,3,5-Trimethylbenzene	0.0092	5.00	0.0460	< 0.0460	< 0.0088	108-67-8
m,p-Xylenes	0.0145	5.00	0.0725	< 0.0725	< 0.0158	108-38-3, 106-42-3
o-Xylene	0.0072	5.00	0.0362	< 0.0362	< 0.0079	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190230-004**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi107665 (Single cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/26/2019 at 07:30 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/27/2019 at 03:02 PM
QC Batch ID:	QC_09772	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-Trichloro-1,2,2-Trifluoroethan	0.0128	5.00	0.0640	< 0.0640	< 0.0079	76-13-1
2-methyl-2-butanol	0.0055	5.00	0.0277	< 0.0277	< 0.0073	75-85-4
2-methylbutane	0.0045	5.00	0.0227	< 0.0227	< 0.0073	78-78-4
2-methylnaphthalene	0.0089	5.00	0.0447	< 0.0447	< 0.0073	91-57-6
Benzaldehyde	0.0067	5.00	0.0333	1.4625	0.3183	100-52-7
Benzoic acid	0.0077	5.00	0.0384	< 0.0384	< 0.0073	65-85-0
Ethylene glycol	0.0039	5.00	0.0195	< 0.0195	< 0.0073	107-21-1
Isopropylbenzene	0.0075	5.00	0.0377	< 0.0377	< 0.0073	98-82-8
Naphthalene	0.0081	5.00	0.0403	< 0.0403	< 0.0073	91-20-3
n-propyl benzene	0.0076	5.00	0.0378	< 0.0378	< 0.0073	103-65-1
p-isopropyltoluene	0.0084	5.00	0.0422	< 0.0422	< 0.0073	99-87-6
Propionitrile	0.0035	5.00	0.0173	< 0.0173	< 0.0073	107-12-0
Trans-1,3-dichloropropene	0.0070	5.00	0.0349	< 0.0349	< 0.0073	542-75-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**GSL_190230-005**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi119219 (Single cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/26/2019 at 07:30 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/27/2019 at 03:56 PM
QC Batch ID:	QC_09772	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0036	5.00	0.0182	< 0.0182	< 0.0073	67-64-1
Benzene	0.0037	5.00	0.0183	< 0.0183	< 0.0054	71-43-2
1,3-Butadiene	0.0028	5.00	0.0139	< 0.0139	< 0.0059	106-99-0
Carbon Disulfide	0.0048	5.00	0.0239	< 0.0239	< 0.0073	75-15-0
Carbon tetrachloride	0.0095	5.00	0.0474	< 0.0474	< 0.0071	56-23-5
Chloroform	0.0075	5.00	0.0375	< 0.0375	< 0.0073	67-66-3
Cyclohexane	0.0053	5.00	0.0264	< 0.0264	< 0.0073	110-82-7
1,4-Dioxane	0.0055	5.00	0.0277	< 0.0277	< 0.0073	123-91-1
Ethanol	0.0029	5.00	0.0145	< 0.0145	< 0.0073	64-17-5
Ethyl acetate	0.0055	5.00	0.0277	< 0.0277	< 0.0073	141-78-6
Ethylbenzene	0.0072	5.00	0.0362	< 0.0362	< 0.0079	100-41-4
Hexane	0.0054	5.00	0.0271	< 0.0271	< 0.0073	110-54-3
Isopropanol	0.0038	5.00	0.0189	< 0.0189	< 0.0073	67-63-0
MEK	0.0045	5.00	0.0226	< 0.0226	< 0.0073	78-93-3
Methylene chloride	0.0053	5.00	0.0267	< 0.0267	< 0.0073	75-09-2
Styrene	0.0065	20.00	0.1308	8.3664 E	1.8555 E	100-42-5
Toluene	0.0056	5.00	0.0278	< 0.0278	< 0.0070	108-88-3
1,2,4-Trimethylbenzene	0.0075	5.00	0.0377	< 0.0377	< 0.0073	95-63-6
1,3,5-Trimethylbenzene	0.0092	5.00	0.0460	< 0.0460	< 0.0088	108-67-8
m,p-Xylenes	0.0145	5.00	0.0725	< 0.0725	< 0.0158	108-38-3, 106-42-3
o-Xylene	0.0072	5.00	0.0362	< 0.0362	< 0.0079	95-47-6

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**GSL_190230-005**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**St. Louis**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**Mi119219 (Single cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	2/26/2019 at 07:30 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	3/27/2019 at 03:56 PM
QC Batch ID:	QC_09772	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-Trichloro-1,2,2-Trifluoroethan	0.0128	5.00	0.0640	< 0.0640	< 0.0079	76-13-1
2-methyl-2-butanol	0.0055	5.00	0.0277	< 0.0277	< 0.0073	75-85-4
2-methylbutane	0.0045	5.00	0.0227	< 0.0227	< 0.0073	78-78-4
2-methylnaphthalene	0.0089	5.00	0.0447	< 0.0447	< 0.0073	91-57-6
Benzaldehyde	0.0067	5.00	0.0333	< 0.0333	< 0.0073	100-52-7
Benzoic acid	0.0077	5.00	0.0384	< 0.0384	< 0.0073	65-85-0
Ethylene glycol	0.0039	5.00	0.0195	< 0.0195	< 0.0073	107-21-1
Isopropylbenzene	0.0075	5.00	0.0377	< 0.0377	< 0.0073	98-82-8
Naphthalene	0.0081	5.00	0.0403	< 0.0403	< 0.0073	91-20-3
n-propyl benzene	0.0076	5.00	0.0378	< 0.0378	< 0.0073	103-65-1
p-isopropyltoluene	0.0084	5.00	0.0422	< 0.0422	< 0.0073	99-87-6
Propionitrile	0.0035	5.00	0.0173	< 0.0173	< 0.0073	107-12-0
Trans-1,3-dichloropropene	0.0070	5.00	0.0349	< 0.0349	< 0.0073	542-75-6

Laboratory Analysis Report

Quality Control Information

Surrogate Recovery

Test: Analysis by Method TO-15
Date Analyzed: 3/23/2019
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09776

Sample Number	Parameter	Analysis Time	Spike Amount (ppbv)	Surrogate Result (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
CCV	Bromofluorobenzene	7:49 AM	10.00	9.48	95	60 - 140	
LCS	Bromofluorobenzene	8:45 AM	10.00	9.60	96	60 - 140	
BLANK	Bromofluorobenzene	9:42 AM	10.00	10.93	109	60 - 140	
GSL_190211-001 (5x)	Bromofluorobenzene	10:36 AM	10.00	21.18	212	60 - 140	H
GSL_190212-002 (5x)	Bromofluorobenzene	12:25 PM	10.00	14.43	144	60 - 140	H
GSL_190210-001 (250x)	Bromofluorobenzene	1:20 PM	10.00	11.22	112	60 - 140	
GSL_190210-002 (250x)	Bromofluorobenzene	2:14 PM	10.00	13.58	136	60 - 140	
GSL_190211-002 (250x)	Bromofluorobenzene	3:09 PM	10.00	19.76	198	60 - 140	H
GSL_190212-001 (250x)	Bromofluorobenzene	4:03 PM	10.00	16.07	161	60 - 140	H
GSL_190228-001 (5x)	Bromofluorobenzene	4:57 PM	10.00	10.98	110	60 - 140	
GSL_190228-002 (5x)	Bromofluorobenzene	5:52 PM	10.00	66.63	666	60 - 140	H
GSL_190228-003 (5x)	Bromofluorobenzene	6:46 PM	10.00	18.85	189	60 - 140	H
GSL_190229-001 (5x)	Bromofluorobenzene	7:41 PM	10.00	15.67	157	60 - 140	H
GSL_190211-001 (20x)	Bromofluorobenzene	8:35 PM	10.00	11.00	110	60 - 140	
Duplicate	Bromofluorobenzene	9:29 PM	10.00	19.00	190	60 - 140	H
GSL_190211-002 (1000x)	Bromofluorobenzene	10:23 PM	10.00	12.59	126	60 - 140	
GSL_190210-001 (1000x)	Bromofluorobenzene	11:18 PM	10.00	9.46	95	60 - 140	

Laboratory Analysis Report

Quality Control Information

Surrogate Recovery

Test: Analysis by Method TO-15
Date Analyzed: 3/24/2019
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09776

Sample Number	Parameter	Analysis Time	Spike Amount (ppbv)	Surrogate Result (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
GSL_190210-002 (1000x)	Bromofluorobenzene	12:13 AM	10.00	13.41	134	60 - 140	
GSL_190212-001 (1000x)	Bromofluorobenzene	1:07 AM	10.00	12.53	125	60 - 140	
GSL_190228-002 (20x)	Bromofluorobenzene	2:01 AM	10.00	21.53	215	60 - 140	H
GSL_190228-003 (20x)	Bromofluorobenzene	2:56 AM	10.00	15.27	153	60 - 140	H

Laboratory Analysis Report

Quality Control Information

Sample Duplicate Recovery

Test: Analysis by Method TO-15
Duplicate Sample Number: GSL_190211-001
Duplicate Sample Dilution: 8.00x
Date Analyzed: 3/23/2019 at 11:31 AM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09776

Parameter	SQL (ppbv)	Sample Result (ppbv)	Duplicate Result (ppbv)	RPD (%)	RPD Limit (%)	Flag
1,3-Butadiene	4.00	< 4.00	< 4.00	NC	20	
Ethanol	4.00	< 4.00	< 4.00	NC	20	
Acetone	4.00	93.60	91.52	2	20	
Isopropanol	4.00	< 4.00	< 4.00	NC	20	
Methylene Chloride	4.00	< 4.00	< 4.00	NC	20	
Carbon disulfide	4.00	< 4.00	< 4.00	NC	20	
MEK	4.00	< 4.00	< 4.00	NC	20	
Hexane	4.00	< 4.00	< 4.00	NC	20	
Chloroform	4.00	< 4.00	< 4.00	NC	20	
Ethyl Acetate	4.00	< 4.00	< 4.00	NC	20	
Benzene	4.00	4.96	4.56	8	20	
Carbon tetrachloride	4.00	< 4.00	< 4.00	NC	20	
Cyclohexane	4.00	< 4.00	< 4.00	NC	20	
1,4-Dioxane	4.00	< 4.00	< 4.00	NC	20	
Toluene	4.00	< 4.00	< 4.00	NC	20	
Ethylbenzene	4.00	< 4.00	< 4.00	NC	20	
m,p-Xylenes	8.00	< 8.00	< 8.00	NC	20	
o-Xylene	4.00	< 4.00	< 4.00	NC	20	
1,3,5-Trimethylbenzene	4.00	< 4.00	< 4.00	NC	20	
1,2,4-Trimethylbenzene	4.00	< 4.00	< 4.00	NC	20	

Laboratory Analysis Report

Quality Control Information

Sample Duplicate Recovery

Test: Analysis by Method TO-15
Duplicate Sample Number: GSL_190211-001
Duplicate Sample Dilution: 32.00x
Date Analyzed: 3/23/2019 at 09:29 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09776

Parameter	SQL (ppbv)	Sample Result (ppbv)	Duplicate Result (ppbv)	RPD (%)	RPD Limit (%)	Flag
Styrene	16.00	8,446.08	15,864.64	61	20	F

Laboratory Analysis Report

Quality Control Information

Sample Duplicate Recovery

Test: Analysis by Method TO-17
Duplicate Sample Number: GSL_190229-003
Duplicate Sample Dilution: 20.00x
Date Analyzed: 3/25/2019 at 08:04 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09775

Parameter	SQL (ppbv)	Sample Result (ppbv)	Duplicate Result (ppbv)	RPD (%)	RPD Limit (%)	Flag
Acetone	10.00	< 10.00	< 10.00	NC	20	
Benzene	10.00	< 10.00	< 10.00	NC	20	
1,3-butadiene	10.00	< 10.00	< 10.00	NC	20	
Carbon disulfide	10.00	< 10.00	< 10.00	NC	20	
Carbon tetrachloride	10.00	< 10.00	< 10.00	NC	20	
Chloroform	10.00	< 10.00	< 10.00	NC	20	
Cyclohexane	10.00	< 10.00	< 10.00	NC	20	
1,4-dioxane	10.00	< 10.00	< 10.00	NC	20	
Ethanol	10.00	< 10.00	< 10.00	NC	20	
Ethyl acetate	10.00	< 10.00	< 10.00	NC	20	
Ethylbenzene	10.00	< 10.00	< 10.00	NC	20	
Hexane	10.00	< 10.00	< 10.00	NC	20	
Isopropanol	10.00	< 10.00	< 10.00	NC	20	
MEK	10.00	< 10.00	< 10.00	NC	20	
Methylene chloride	10.00	< 10.00	< 10.00	NC	20	
Styrene	10.00	351.00	301.80	15	20	
Toluene	10.00	< 10.00	< 10.00	NC	20	
1,2,4-trimethylbenzene	10.00	< 10.00	< 10.00	NC	20	
1,3,5-trimethylbenzene	10.00	< 10.00	< 10.00	NC	20	
m,p-Xylenes	20.00	< 20.00	< 20.00	NC	20	
o-xylene	10.00	< 10.00	< 10.00	NC	20	

Laboratory Analysis Report

Quality Control Information

Sample Duplicate Recovery

Test: Analysis by Method TO-17
Duplicate Sample Number: GSL_190230-003
Duplicate Sample Dilution: 5.00x
Date Analyzed: 3/27/2019 at 02:08 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09772

Parameter	SQL (ppbv)	Sample Result (ppbv)	Duplicate Result (ppbv)	RPD (%)	RPD Limit (%)	Flag
Acetone	2.50	< 2.50	< 2.50	NC	20	
Benzene	2.50	< 2.50	< 2.50	NC	20	
1,3-butadiene	2.50	< 2.50	< 2.50	NC	20	
Carbon disulfide	2.50	< 2.50	< 2.50	NC	20	
Carbon tetrachloride	2.50	< 2.50	< 2.50	NC	20	
Chloroform	2.50	< 2.50	< 2.50	NC	20	
Cyclohexane	2.50	< 2.50	< 2.50	NC	20	
1,4-dioxane	2.50	< 2.50	< 2.50	NC	20	
Ethanol	2.50	< 2.50	< 2.50	NC	20	
Ethyl acetate	2.50	< 2.50	< 2.50	NC	20	
Ethylbenzene	2.50	< 2.50	< 2.50	NC	20	
Hexane	2.50	< 2.50	< 2.50	NC	20	
Isopropanol	2.50	< 2.50	< 2.50	NC	20	
MEK	2.50	< 2.50	< 2.50	NC	20	
Methylene chloride	2.50	< 2.50	< 2.50	NC	20	
Styrene	2.50	11.40	10.00	13	20	
Toluene	2.50	< 2.50	< 2.50	NC	20	
1,2,4-trimethylbenzene	2.50	< 2.50	< 2.50	NC	20	
1,3,5-trimethylbenzene	2.50	< 2.50	< 2.50	NC	20	
m,p-Xylenes	5.00	< 5.00	< 5.00	NC	20	
o-xylene	2.50	< 2.50	< 2.50	NC	20	

Laboratory Analysis Report

Quality Control Information

Blank Analysis

Test: Analysis by Method TO-17
Date Analyzed: 3/23/2019 at 09:42 AM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09776

Parameter	CAS #	MQL (ppbv)	Blank Result (ppbv)	Flag
Acetone	67-64-1	0.50	< 0.50	
Benzene	71-43-2	0.50	< 0.50	
1,3-butadiene	106-99-0	0.50	< 0.50	
Carbon disulfide	75-15-0	0.50	< 0.50	
Carbon tetrachloride	56-23-5	0.50	< 0.50	
Chloroform	67-66-3	0.50	< 0.50	
Cyclohexane	110-82-7	0.50	< 0.50	
1,4-dioxane	123-91-1	0.50	< 0.50	
Ethanol	64-17-5	0.50	< 0.50	
Ethyl acetate	141-78-6	0.50	< 0.50	
Ethylbenzene	100-41-4	0.50	< 0.50	
Hexane	110-54-3	0.50	< 0.50	
Isopropanol	67-63-0	0.50	< 0.50	
MEK	78-93-3	0.50	< 0.50	
Methylene chloride	75-09-2	0.50	< 0.50	
Styrene	100-42-5	0.50	< 0.50	
Toluene	108-88-3	0.50	< 0.50	
1,2,4-trimethylbenzene	95-63-6	0.50	< 0.50	
1,3,5-trimethylbenzene	108-67-8	0.50	< 0.50	
m,p-Xylenes	108-38-3, 106-42-3	1.00	< 1.00	
o-xylene	95-47-6	0.50	< 0.50	

Laboratory Analysis Report

Quality Control Information

Blank Analysis

Test: Analysis by Method TO-17
Date Analyzed: 3/25/2019 at 11:53 AM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09775

Parameter	CAS #	MQL (ppbv)	Blank Result (ppbv)	Flag
Acetone	67-64-1	0.50	< 0.50	
Benzene	71-43-2	0.50	< 0.50	
1,3-butadiene	106-99-0	0.50	< 0.50	
Carbon disulfide	75-15-0	0.50	< 0.50	
Carbon tetrachloride	56-23-5	0.50	< 0.50	
Chloroform	67-66-3	0.50	< 0.50	
Cyclohexane	110-82-7	0.50	< 0.50	
1,4-dioxane	123-91-1	0.50	< 0.50	
Ethanol	64-17-5	0.50	< 0.50	
Ethyl acetate	141-78-6	0.50	< 0.50	
Ethylbenzene	100-41-4	0.50	< 0.50	
Hexane	110-54-3	0.50	< 0.50	
Isopropanol	67-63-0	0.50	< 0.50	
MEK	78-93-3	0.50	< 0.50	
Methylene chloride	75-09-2	0.50	< 0.50	
Styrene	100-42-5	0.50	< 0.50	
Toluene	108-88-3	0.50	< 0.50	
1,2,4-trimethylbenzene	95-63-6	0.50	< 0.50	
1,3,5-trimethylbenzene	108-67-8	0.50	< 0.50	
m,p-Xylenes	108-38-3, 106-42-3	1.00	< 1.00	
o-xylene	95-47-6	0.50	< 0.50	

Laboratory Analysis Report

Quality Control Information

Blank Analysis

Test: Analysis by Method TO-17
Date Analyzed: 3/27/2019 at 12:19 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09772

Parameter	CAS #	MQL (ppbv)	Blank Result (ppbv)	Flag
Acetone	67-64-1	0.50	< 0.50	
Benzene	71-43-2	0.50	< 0.50	
1,3-butadiene	106-99-0	0.50	< 0.50	
Carbon disulfide	75-15-0	0.50	< 0.50	
Carbon tetrachloride	56-23-5	0.50	< 0.50	
Chloroform	67-66-3	0.50	< 0.50	
Cyclohexane	110-82-7	0.50	< 0.50	
1,4-dioxane	123-91-1	0.50	< 0.50	
Ethanol	64-17-5	0.50	< 0.50	
Ethyl acetate	141-78-6	0.50	< 0.50	
Ethylbenzene	100-41-4	0.50	< 0.50	
Hexane	110-54-3	0.50	< 0.50	
Isopropanol	67-63-0	0.50	< 0.50	
MEK	78-93-3	0.50	< 0.50	
Methylene chloride	75-09-2	0.50	< 0.50	
Styrene	100-42-5	0.50	< 0.50	
Toluene	108-88-3	0.50	< 0.50	
1,2,4-trimethylbenzene	95-63-6	0.50	< 0.50	
1,3,5-trimethylbenzene	108-67-8	0.50	< 0.50	
m,p-Xylenes	108-38-3, 106-42-3	1.00	< 1.00	
o-xylene	95-47-6	0.50	< 0.50	

Laboratory Analysis Report

Quality Control Information

Laboratory Control Sample

Test: Analysis by Method TO-17
Date Analyzed: 3/23/2019 at 08:45 AM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09776

Parameter	LCS Result (ppbv)	Spike Amount (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
Acetone	3.69	5.00	74	65 - 135	
Benzene	4.50	5.00	90	65 - 135	
1,3-butadiene	4.85	5.00	97	65 - 135	
Carbon disulfide	5.01	5.00	100	65 - 135	
Carbon tetrachloride	4.09	5.00	82	65 - 135	
Chloroform	4.04	5.00	81	65 - 135	
Cyclohexane	5.23	5.00	105	65 - 135	
1,4-dioxane	3.30	5.00	66	65 - 135	
Ethanol	3.76	5.00	75	65 - 135	
Ethyl acetate	3.78	5.00	76	65 - 135	
Ethylbenzene	3.94	5.00	79	65 - 135	
Hexane	5.57	5.00	111	65 - 135	
Isopropanol	4.52	5.00	90	65 - 135	
MEK	3.90	5.00	78	65 - 135	
Methylene chloride	4.45	5.00	89	65 - 135	
Styrene	3.31	5.00	66	65 - 135	
Toluene	4.23	5.00	85	65 - 135	
1,2,4-trimethylbenzene	3.18	5.00	64	65 - 135	L
1,3,5-trimethylbenzene	3.57	5.00	71	65 - 135	
m,p-Xylenes	7.46	10.00	75	65 - 135	
o-xylene	3.91	5.00	78	65 - 135	

Laboratory Analysis Report

Quality Control Information

Laboratory Control Sample

Test: Analysis by Method TO-17
Date Analyzed: 3/25/2019 at 10:56 AM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09775

Parameter	LCS Result (ppbv)	Spike Amount (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
Acetone	3.55	5.00	71	65 - 135	
Benzene	4.02	5.00	80	65 - 135	
1,3-butadiene	4.63	5.00	93	65 - 135	
Carbon disulfide	4.74	5.00	95	65 - 135	
Carbon tetrachloride	4.13	5.00	83	65 - 135	
Chloroform	3.56	5.00	71	65 - 135	
Cyclohexane	4.56	5.00	91	65 - 135	
1,4-dioxane	2.36	5.00	47	65 - 135	L
Ethanol	3.91	5.00	78	65 - 135	
Ethyl acetate	3.58	5.00	72	65 - 135	
Ethylbenzene	3.33	5.00	67	65 - 135	
Hexane	4.89	5.00	98	65 - 135	
Isopropanol	4.04	5.00	81	65 - 135	
MEK	3.76	5.00	75	65 - 135	
Methylene chloride	4.27	5.00	85	65 - 135	
Styrene	2.65	5.00	53	65 - 135	L
Toluene	2.22	5.00	44	65 - 135	L
1,2,4-trimethylbenzene	2.87	5.00	57	65 - 135	L
1,3,5-trimethylbenzene	3.03	5.00	61	65 - 135	L
m,p-Xylenes	6.57	10.00	66	65 - 135	
o-xylene	3.32	5.00	66	65 - 135	

Laboratory Analysis Report

Quality Control Information

Laboratory Control Sample

Test: Analysis by Method TO-17
Date Analyzed: 3/27/2019 at 11:23 AM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09772

Parameter	LCS Result (ppbv)	Spike Amount (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
Acetone	3.76	5.00	75	65 - 135	
Benzene	4.82	5.00	96	65 - 135	
1,3-butadiene	4.57	5.00	91	65 - 135	
Carbon disulfide	4.46	5.00	89	65 - 135	
Carbon tetrachloride	4.83	5.00	97	65 - 135	
Chloroform	4.36	5.00	87	65 - 135	
Cyclohexane	5.31	5.00	106	65 - 135	
1,4-dioxane	5.06	5.00	101	65 - 135	
Ethanol	4.94	5.00	99	65 - 135	
Ethyl acetate	4.51	5.00	90	65 - 135	
Ethylbenzene	3.63	5.00	73	65 - 135	
Hexane	5.11	5.00	102	65 - 135	
Isopropanol	4.11	5.00	82	65 - 135	
MEK	4.23	5.00	85	65 - 135	
Methylene chloride	4.28	5.00	86	65 - 135	
Styrene	4.23	5.00	85	65 - 135	
Toluene	3.27	5.00	65	65 - 135	
1,2,4-trimethylbenzene	4.54	5.00	91	65 - 135	
1,3,5-trimethylbenzene	4.29	5.00	86	65 - 135	
m,p-Xylenes	7.61	10.00	76	65 - 135	
o-xylene	3.91	5.00	78	65 - 135	

Data Qualifiers and Flags

- MDL – Method Detection Limit
- MQL – Method Quantitation Limit
- SDL – Sample Detection Limit
- SQL – Sample Quantitation Limit
- RPD - Relative Percent Difference
- J – Target analyte is between the MDL and SQL values.
- L – Target analyte recovered below the recovery limits.
- H – Target analyte recovered above the recovery limits.
- B – Target analyte identified in blank run.
- F – RPD/RSD is outside the control limits.
- NC – Not calculated due to division by zero, or negative spike recovery.
- M – Target analyte reported outside control limit due to matrix interference.
- E – Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in narrative.
- ND - Non-detect; analyte is below the MDL value, or TIC not detected in GC/MS scan.
- A - Sample analyzed outside holding time.
- C - Sample analyzed by FTIR; results estimated.
- I - Internal standard outside acceptable response range.

Laboratory Report

Absolute Resource associates
124 Heritage Avenue Portsmouth NH 03801

Jenifer Milam
Engineer Research & Development Center
3909 Halls Ferry Road
Vicksburg, MS 39180

PO Number: W912HZ-15-A-0043
Job ID: 47702
Date Received: 3/1/19

Project: Order ID: 1091

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, the analyses performed met the requirements of Absolute Resource Associates' Quality Assurance Plan. The Standard Operating Procedures are based upon USEPA SW-846, USEPA Methods for Chemical Analysis of Water and Wastewater, Standard Methods for the Examination of Water and Wastewater and other recognized methodologies. The results contained in this report pertain only to the samples as indicated on the chain of custody.

Absolute Resource Associates maintains certification with the agencies listed below.

We appreciate the opportunity to provide laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be glad to assist you.

Sincerely,
Absolute Resource Associates

(for)

Jennifer Lowe
Laboratory Manager

Date of Approval: 3/19/2019
Total number of pages: 29

Absolute Resource Associates Certifications

New Hampshire	1732	Massachusetts	M-NH902
Maine	NH903		

Project ID: Order ID: 1091

Sample Association Table

Field ID	Matrix	Date-Time Sampled	Lab#	Analysis
Site #1 Condensate	Water	2/26/2019 0:00	47702-001	VOCs in water by 8260
Site #2	Water	2/26/2019 12:45	47702-002	VOCs in water by 8260
Site #3 Vial 1	Water	2/27/2019 0:00	47702-003	VOCs in water by 8260
Site #3 Vial 2	Water	2/27/2019 0:00	47702-004	VOCs in water by 8260
VOA Blank	Water	2/26/2019 0:00	47702-005	VOCs in water by 8260

Project ID: Order ID: 1091
Job ID: 47702
Sample#: 47702-001
Sample ID: Site #1 Condensate
Matrix: Water
Sampled: 2/26/19 0:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
dichlorodifluoromethane	U	100	24	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
chloromethane	U	100	36	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
vinyl chloride	U	100	38	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
bromomethane	U	100	94	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
chloroethane	U	100	25	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
trichlorofluoromethane	U	100	28	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
diethyl ether	U	250	33	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
acetone	1000 J	2500	170	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,1-dichloroethene	U	50	35	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
methylene chloride	U	250	34	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
carbon disulfide	U	100	38	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
methyl t-butyl ether (MTBE)	U	100	30	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
trans-1,2-dichloroethene	U	100	31	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,1-dichloroethane	U	100	33	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
2-butanone (MEK)	U	500	91	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
2,2-dichloropropane	U	100	26	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
cis-1,2-dichloroethene	U	100	38	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
chloroform	U	100	29	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
bromochloromethane	U	100	27	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
tetrahydrofuran (THF)	U	500	62	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,1,1-trichloroethane	U	100	29	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,1-dichloropropene	U	100	33	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
carbon tetrachloride	U	100	30	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,2-dichloroethane	U	100	32	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
benzene	U	100	33	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
trichloroethene	U	100	30	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,2-dichloropropane	U	100	33	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
bromodichloromethane	U	30	25	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
dibromomethane	U	100	34	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
4-methyl-2-pentanone (MIBK)	U	500	41	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
cis-1,3-dichloropropene	U	100	32	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
toluene	U	100	32	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
trans-1,3-dichloropropene	U	100	28	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
2-hexanone	U	500	32	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,1,2-trichloroethane	U	100	36	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,3-dichloropropane	U	100	35	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
tetrachloroethene	U	100	24	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
dibromochloromethane	U	100	29	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,2-dibromoethane (EDB)	U	100	35	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
chlorobenzene	U	100	33	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,1,1,2-tetrachloroethane	U	100	38	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
ethylbenzene	U	100	36	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C

Project ID: Order ID: 1091
Job ID: 47702
Sample#: 47702-001
Sample ID: Site #1 Condensate
Matrix: Water
Sampled: 2/26/19 0:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
m&p-xylenes	U	100	71	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
o-xylene	U	100	31	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
styrene	**14000**	100	30	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
bromoform	U	100	32	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
isopropylbenzene	U	100	30	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,1,2,2-tetrachloroethane	U	100	31	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,2,3-trichloropropane	U	100	33	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
n-propylbenzene	U	100	26	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
bromobenzene	U	100	43	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,3,5-trimethylbenzene	U	100	33	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
2-chlorotoluene	U	100	40	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
4-chlorotoluene	U	100	37	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
tert-butylbenzene	U	100	37	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,2,4-trimethylbenzene	U	100	31	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
sec-butylbenzene	U	100	30	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,3-dichlorobenzene	U	100	32	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
4-isopropyltoluene	U	100	25	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,4-dichlorobenzene	U	100	24	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,2-dichlorobenzene	U	100	28	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
n-butylbenzene	U	100	30	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,2-dibromo-3-chloropropane (DBCP)	U	100	50	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,2,4-trichlorobenzene	U	100	26	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
hexachlorobutadiene	U	25	20	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
naphthalene	U	250	29	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
1,2,3-trichlorobenzene	U	100	30	ug/L	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
Surrogate Recovery		**Limits**										
dibromofluoromethane SUR	**96**	78-114		%	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
toluene-D8 SUR	**92**	88-110		%	50	LMM			1900476	3/6/19	18:05	SW5030C8260C
4-bromofluorobenzene SUR	**113**	86-115		%	50	LMM			1900476	3/6/19	18:05	SW5030C8260C

Project ID: Order ID: 1091
Job ID: 47702
Sample#: 47702-002
Sample ID: Site #2
Matrix: Water
Sampled: 2/26/19 12:45

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
dichlorodifluoromethane	U	400	95	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
chloromethane	U	400	140	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
vinyl chloride	U	400	150	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
bromomethane	U	400	370	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
chloroethane	U	400	100	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
trichlorofluoromethane	U	400	110	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
diethyl ether	U	1000	130	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
acetone	2000 J	10000	690	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,1-dichloroethene	U	200	140	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
methylene chloride	U	1000	140	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
carbon disulfide	U	400	150	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
methyl t-butyl ether (MTBE)	U	400	120	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
trans-1,2-dichloroethene	U	400	120	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,1-dichloroethane	U	400	130	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
2-butanone (MEK)	U	2000	360	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
2,2-dichloropropane	U	400	100	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
cis-1,2-dichloroethene	U	400	150	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
chloroform	U	400	120	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
bromochloromethane	U	400	110	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
tetrahydrofuran (THF)	U	2000	250	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,1,1-trichloroethane	U	400	110	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,1-dichloropropene	U	400	130	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
carbon tetrachloride	U	400	120	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,2-dichloroethane	U	400	130	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
benzene	U	400	130	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
trichloroethene	U	400	120	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,2-dichloropropane	U	400	130	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
bromodichloromethane	U	120	100	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
dibromomethane	U	400	140	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
4-methyl-2-pentanone (MIBK)	U	2000	160	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
cis-1,3-dichloropropene	U	400	130	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
toluene	U	400	130	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
trans-1,3-dichloropropene	U	400	110	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
2-hexanone	U	2000	130	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,1,2-trichloroethane	U	400	140	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,3-dichloropropane	U	400	140	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
tetrachloroethene	U	400	95	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
dibromochloromethane	U	400	120	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,2-dibromoethane (EDB)	U	400	140	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
chlorobenzene	U	400	130	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,1,1,2-tetrachloroethane	U	400	150	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
ethylbenzene	U	400	150	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C

Project ID: Order ID: 1091
Job ID: 47702
Sample#: 47702-002
Sample ID: Site #2
Matrix: Water
Sampled: 2/26/19 12:45

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
m&p-xylenes	U	400	280	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
o-xylene	U	400	120	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
styrene	**94000**	400	120	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
bromoform	U	400	130	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
isopropylbenzene	U	400	120	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,1,2,2-tetrachloroethane	U	400	120	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,2,3-trichloropropane	U	400	130	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
n-propylbenzene	U	400	100	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
bromobenzene	U	400	170	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,3,5-trimethylbenzene	U	400	130	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
2-chlorotoluene	U	400	160	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
4-chlorotoluene	U	400	150	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
tert-butylbenzene	U	400	150	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,2,4-trimethylbenzene	U	400	130	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
sec-butylbenzene	U	400	120	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,3-dichlorobenzene	U	400	130	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
4-isopropyltoluene	U	400	100	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,4-dichlorobenzene	U	400	96	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,2-dichlorobenzene	U	400	110	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
n-butylbenzene	U	400	120	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,2-dibromo-3-chloropropane (DBCP)	U	400	200	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,2,4-trichlorobenzene	U	400	100	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
hexachlorobutadiene	U	100	79	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
naphthalene	U	1000	120	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
1,2,3-trichlorobenzene	U	400	120	ug/L	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
Surrogate Recovery		**Limits**										
dibromofluoromethane SUR	**93**	78-114		%	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
toluene-D8 SUR	**91**	88-110		%	200	LMM			1900476	3/6/19	18:56	SW5030C8260C
4-bromofluorobenzene SUR	**118** *	86-115		%	200	LMM			1900476	3/6/19	18:56	SW5030C8260C

**** The surrogate showed recovery outside the acceptance limits. Matrix interference suspected. No additional sample remains for re-analysis.***

Project ID: Order ID: 1091
Job ID: 47702
Sample#: 47702-003
Sample ID: Site #3 Vial 1
Matrix: Water
Sampled: 2/27/19 0:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
dichlorodifluoromethane	U	20000	4800	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
chloromethane	U	20000	7200	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
vinyl chloride	U	20000	7600	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
bromomethane	U	20000	19000	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
chloroethane	U	20000	5000	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
trichlorofluoromethane	U	20000	5600	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
diethyl ether	U	50000	6600	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
acetone	40000 J	500000	35000	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,1-dichloroethene	U	10000	7100	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
methylene chloride	U	50000	6900	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
carbon disulfide	U	20000	7500	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
methyl t-butyl ether (MTBE)	U	20000	5900	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
trans-1,2-dichloroethene	U	20000	6100	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,1-dichloroethane	U	20000	6500	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
2-butanone (MEK)	U	100000	18000	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
2,2-dichloropropane	U	20000	5100	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
cis-1,2-dichloroethene	U	20000	7700	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
chloroform	U	20000	5800	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
bromochloromethane	U	20000	5300	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
tetrahydrofuran (THF)	U	100000	12000	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,1,1-trichloroethane	U	20000	5700	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,1-dichloropropene	U	20000	6500	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
carbon tetrachloride	U	20000	6000	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,2-dichloroethane	U	20000	6500	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
benzene	U	20000	6600	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
trichloroethene	U	20000	6000	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,2-dichloropropane	U	20000	6600	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
bromodichloromethane	U	6000	5000	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
dibromomethane	U	20000	6800	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
4-methyl-2-pentanone (MIBK)	U	100000	8200	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
cis-1,3-dichloropropene	U	20000	6300	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
toluene	U	20000	6500	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
trans-1,3-dichloropropene	U	20000	5700	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
2-hexanone	U	100000	6400	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,1,2-trichloroethane	U	20000	7100	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,3-dichloropropane	U	20000	6900	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
tetrachloroethene	U	20000	4800	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
dibromochloromethane	U	20000	5800	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,2-dibromoethane (EDB)	U	20000	7000	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
chlorobenzene	U	20000	6500	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,1,1,2-tetrachloroethane	U	20000	7500	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
ethylbenzene	U	20000	7300	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C

Project ID: Order ID: 1091
Job ID: 47702
Sample#: 47702-003
Sample ID: Site #3 Vial 1
Matrix: Water
Sampled: 2/27/19 0:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
m&p-xylenes	U	20000	14000	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
o-xylene	U	20000	6200	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
styrene	**3900000**	20000	6100	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
bromoform	U	20000	6300	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
isopropylbenzene	U	20000	6000	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,1,2,2-tetrachloroethane	U	20000	6200	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,2,3-trichloropropane	U	20000	6700	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
n-propylbenzene	U	20000	5100	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
bromobenzene	U	20000	8700	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,3,5-trimethylbenzene	U	20000	6600	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
2-chlorotoluene	U	20000	8000	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
4-chlorotoluene	U	20000	7500	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
tert-butylbenzene	U	20000	7300	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,2,4-trimethylbenzene	U	20000	6300	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
sec-butylbenzene	U	20000	6100	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,3-dichlorobenzene	U	20000	6400	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
4-isopropyltoluene	U	20000	5000	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,4-dichlorobenzene	U	20000	4800	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,2-dichlorobenzene	U	20000	5500	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
n-butylbenzene	U	20000	5900	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,2-dibromo-3-chloropropane (DBCP)	U	20000	10000	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,2,4-trichlorobenzene	U	20000	5200	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
hexachlorobutadiene	U	5000	4000	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
naphthalene	U	50000	5800	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
1,2,3-trichlorobenzene	U	20000	6100	ug/L	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
Surrogate Recovery		**Limits**										
dibromofluoromethane SUR	**98**	78-114		%	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
toluene-D8 SUR	**92**	88-110		%	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C
4-bromofluorobenzene SUR	**113**	86-115		%	10000	LMM			1900476	3/6/19	18:31	SW5030C8260C

Project ID: Order ID: 1091
Job ID: 47702
Sample#: 47702-004
Sample ID: Site #3 Vial 2
Matrix: Water
Sampled: 2/27/19 0:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
dichlorodifluoromethane	U	100	24	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
chloromethane	U	100	36	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
vinyl chloride	U	100	38	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
bromomethane	U	100	94	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
chloroethane	U	100	25	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
trichlorofluoromethane	U	100	28	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
diethyl ether	U	250	33	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
acetone	**8000**	2500	170	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,1-dichloroethene	U	50	35	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
methylene chloride	U	250	34	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
carbon disulfide	**220**	100	38	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
methyl t-butyl ether (MTBE)	U	100	30	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
trans-1,2-dichloroethene	U	100	31	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,1-dichloroethane	U	100	33	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
2-butanone (MEK)	300 J	500	91	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
2,2-dichloropropane	U	100	26	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
cis-1,2-dichloroethene	U	100	38	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
chloroform	U	100	29	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
bromochloromethane	U	100	27	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
tetrahydrofuran (THF)	U	500	62	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,1,1-trichloroethane	U	100	29	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,1-dichloropropene	U	100	33	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
carbon tetrachloride	U	100	30	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,2-dichloroethane	U	100	32	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
benzene	U	100	33	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
trichloroethene	U	100	30	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,2-dichloropropane	U	100	33	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
bromodichloromethane	U	30	25	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
dibromomethane	U	100	34	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
4-methyl-2-pentanone (MIBK)	U	500	41	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
cis-1,3-dichloropropene	U	100	32	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
toluene	U	100	32	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
trans-1,3-dichloropropene	U	100	28	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
2-hexanone	U	500	32	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,1,2-trichloroethane	U	100	36	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,3-dichloropropane	U	100	35	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
tetrachloroethene	U	100	24	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
dibromochloromethane	U	100	29	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,2-dibromoethane (EDB)	U	100	35	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
chlorobenzene	U	100	33	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,1,1,2-tetrachloroethane	U	100	38	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
ethylbenzene	U	100	36	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C

Project ID: Order ID: 1091
Job ID: 47702
Sample#: 47702-004
Sample ID: Site #3 Vial 2
Matrix: Water
Sampled: 2/27/19 0:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
m&p-xylenes	U	100	71	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
o-xylene	U	100	31	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
styrene	**13000**	100	30	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
bromoform	U	100	32	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
isopropylbenzene	U	100	30	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,1,2,2-tetrachloroethane	U	100	31	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,2,3-trichloropropane	U	100	33	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
n-propylbenzene	U	100	26	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
bromobenzene	U	100	43	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,3,5-trimethylbenzene	U	100	33	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
2-chlorotoluene	U	100	40	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
4-chlorotoluene	U	100	37	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
tert-butylbenzene	U	100	37	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,2,4-trimethylbenzene	U	100	31	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
sec-butylbenzene	U	100	30	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,3-dichlorobenzene	U	100	32	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
4-isopropyltoluene	U	100	25	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,4-dichlorobenzene	U	100	24	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,2-dichlorobenzene	U	100	28	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
n-butylbenzene	U	100	30	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,2-dibromo-3-chloropropane (DBCP)	U	100	50	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,2,4-trichlorobenzene	U	100	26	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
hexachlorobutadiene	U	25	20	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
naphthalene	U	250	29	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
1,2,3-trichlorobenzene	U	100	30	ug/L	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
Surrogate Recovery		**Limits**										
dibromofluoromethane SUR	**96**	78-114		%	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
toluene-D8 SUR	**92**	88-110		%	50	LMM			1900476	3/6/19	19:48	SW5030C8260C
4-bromofluorobenzene SUR	**115**	86-115		%	50	LMM			1900476	3/6/19	19:48	SW5030C8260C

Project ID: Order ID: 1091
Job ID: 47702
Sample#: 47702-005
Sample ID: VOA Blank
Matrix: Water
Sampled: 2/26/19 0:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
dichlorodifluoromethane	U	2	0.48	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
chloromethane	U	2	0.72	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
vinyl chloride	U	2	0.76	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
bromomethane	U	2	1.9	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
chloroethane	U	2	0.50	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
trichlorofluoromethane	U	2	0.56	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
diethyl ether	U	5	0.66	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
acetone	U	50	3.5	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,1-dichloroethene	U	1	0.71	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
methylene chloride	1.0 J	5	0.69	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
carbon disulfide	U	2	0.75	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
methyl t-butyl ether (MTBE)	U	2	0.59	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
trans-1,2-dichloroethene	U	2	0.61	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,1-dichloroethane	U	2	0.65	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
2-butanone (MEK)	U	10	1.8	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
2,2-dichloropropane	U	2	0.51	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
cis-1,2-dichloroethene	U	2	0.77	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
chloroform	U	2	0.58	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
bromochloromethane	U	2	0.53	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
tetrahydrofuran (THF)	U	10	1.2	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,1,1-trichloroethane	U	2	0.57	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,1-dichloropropene	U	2	0.65	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
carbon tetrachloride	U	2	0.60	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,2-dichloroethane	U	2	0.65	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
benzene	U	2	0.66	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
trichloroethene	U	2	0.60	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,2-dichloropropane	U	2	0.66	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
bromodichloromethane	U	1	0.50	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
dibromomethane	U	2	0.68	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
4-methyl-2-pentanone (MIBK)	U	10	0.82	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
cis-1,3-dichloropropene	U	2	0.63	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
toluene	U	2	0.65	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
trans-1,3-dichloropropene	U	2	0.57	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
2-hexanone	U	10	0.64	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,1,2-trichloroethane	U	2	0.71	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,3-dichloropropane	U	2	0.69	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
tetrachloroethene	U	2	0.48	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
dibromochloromethane	U	2	0.58	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,2-dibromoethane (EDB)	U	2	0.70	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
chlorobenzene	U	2	0.65	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,1,1,2-tetrachloroethane	U	2	0.75	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
ethylbenzene	U	2	0.73	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C

Project ID: Order ID: 1091
Job ID: 47702
Sample#: 47702-005
Sample ID: VOA Blank
Matrix: Water
Sampled: 2/26/19 0:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
m&p-xylenes	U	2	1.4	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
o-xylene	U	2	0.62	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
styrene	**3**	2	0.61	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
bromoform	U	2	0.63	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
isopropylbenzene	U	2	0.60	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,1,2,2-tetrachloroethane	U	2	0.62	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,2,3-trichloropropane	U	2	0.67	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
n-propylbenzene	U	2	0.51	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
bromobenzene	U	2	0.87	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,3,5-trimethylbenzene	U	2	0.66	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
2-chlorotoluene	U	2	0.80	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
4-chlorotoluene	U	2	0.75	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
tert-butylbenzene	U	2	0.73	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,2,4-trimethylbenzene	U	2	0.63	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
sec-butylbenzene	U	2	0.61	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,3-dichlorobenzene	U	2	0.64	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
4-isopropyltoluene	U	2	0.50	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,4-dichlorobenzene	U	2	0.48	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,2-dichlorobenzene	U	2	0.55	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
n-butylbenzene	U	2	0.59	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,2-dibromo-3-chloropropane (DBCP)	U	2	1.0	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,2,4-trichlorobenzene	U	2	0.52	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
hexachlorobutadiene	U	0.5	0.40	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
naphthalene	U	5	0.58	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
1,2,3-trichlorobenzene	U	2	0.61	ug/L	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
Surrogate Recovery		**Limits**										
dibromofluoromethane SUR	**98**	78-114		%	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
toluene-D8 SUR	**90**	88-110		%	1	LMM			1900480	3/7/19	19:04	SW5030C8260C
4-bromofluorobenzene SUR	**102**	86-115		%	1	LMM			1900480	3/7/19	19:04	SW5030C8260C

Quality Control Report

124 Heritage Avenue Unit 16
Portsmouth, NH 03801
www.absoluteresourceassociates.com

Sample Integrity Table

Parameter	Method	Matrix	Minimum Volume	Recommended Container(s)	Required Preservation	Holding Time
Volatile Organics	EPA 8260	Aqueous	40mL	2 x 40mL VOA Vials with Teflon lined septa	Cool to ≤6°C 1:1 HCl to pH <2	14 Days
Volatile Organics	EPA 8260	Solid	40mL	1 x 40mL VOA Vial with 10mLs Methanol and 1 unpreserved container for percent moisture	Cool to ≤6°C Methanol	14 Days
Semivolatile Organics	EPA 8270	Aqueous	1L	1L Amber Glass Bottle w/Teflon liner	Cool to ≤6°C	7 Days
Semivolatile Organics	EPA 8270	Solid	20g	4oz Amber Glass Jar w/Teflon liner	Cool to ≤6°C	14 Days
Organochlorine Pesticides	EPA 8081	Aqueous	1L	1L Amber Glass Bottle w/Teflon liner	Cool to ≤6°C	7 Days
Organochlorine Pesticides	EPA 8081	Solid	20g	4oz Glass Jar w/Teflon liner	Cool to ≤6°C	14 Days
PCBs	EPA 8082	Aqueous	1L	1L Amber Glass Bottle w/Teflon liner	Cool to ≤6°C	365 Days
PCBs	EPA 8082	Solid	20g	4oz Glass Jar w/Teflon liner	Cool to ≤6°C	365 Days
Herbicides (subcontracted)	EPA 8151	Aqueous	1L	1L Amber Glass Bottle w/Teflon liner	Cool to ≤6°C	7 Days
Herbicides (subcontracted)	EPA 8151	Solid	30g	4oz Glass Jar w/Teflon liner	Cool to ≤6°C	14 Days
MA DEP VPH	MADEP VPH	Aqueous	40mL	2 x 40mL VOA Vials with Teflon lined septa	Cool to ≤6°C 1:1 HCl to pH <2	14 Days
MA DEP VPH	MADEP VPH	Solid	40mL	1 x 40mL VOA Vial with 10mLs Methanol and 1 unpreserved container for percent moisture	Cool to ≤6°C Methanol	28 Days
MA DEP EPH	MADEP EPH	Aqueous	1L	1L Amber Glass Bottle w/Teflon liner	Cool to ≤6°C 1:1 HCl to pH <2	14 Days
MA DEP EPH	MADEP EPH	Solid	30g	4oz Amber Glass Jar w/Teflon liner	Cool to ≤6°C	14 Days
Total Metals	EPA 6010	Aqueous	100mL	250mL Polyethylene Bottle	1:1 HNO_3 to pH <2	180 Days
Dissolved Metals	EPA 6010	Aqueous	100mL	250mL Polyethylene Bottle	Filter First 1:1 HNO_3 to pH <2	180 Days
Total Metals	EPA 6010	Solid	15g	4oz Glass Jar w/Teflon liner	Cool to ≤6°C	180 Days
Total Mercury (may be combined with Total Metals)	EPA 7470	Aqueous	100mL	125mL Polyethylene Bottle	1:1 HNO_3 to pH <2	28 Days
Total Mercury (may be combined with Total Metals)	EPA 7471	Solid	15g	4oz Glass Jar w/Teflon liner	Cool to ≤6°C	28 Days
Chromium, Hexavalent	EPA 7196	Aqueous	100mL	125mL Polyethylene Bottle	Cool to ≤6°C (NH4)2SO4 buffer	28 Days
Chromium, Hexavalent (subcontract)	EPA 7196	Solid	15g	4oz Glass Jar w/Teflon liner	Cool to ≤6°C	30 Days
Cyanide, Total	EPA 9014	Aqueous	125mL	125mL Polyethylene Bottle	Cool to ≤6°C 1:1 NaOH to pH >8	14 Days
Cyanide, Total	EPA 9014	Solid	15g	4oz Glass Jar w/Teflon liner	Cool to ≤6°C	14 Days

Absolute Resource Associates
124 Heritage Avenue Unit 16
Portsmouth, NH 03801
www.absoluteresourceassociates.com

Case Narrative
Lab # 47702

Sample Receiving and Chain of Custody Discrepancies

Samples were received in acceptable condition, at 2 degrees C, on ice, and in accordance with sample handling, preservation and integrity guidelines.
Samples were received with small air bubbles in all sample vials.

Calibration

No exceptions noted.

Method Blank

No exceptions noted.

Surrogate Recoveries

VOC: The surrogate for sample 47702-002 was above the acceptance limits. Matrix interference suspected. No additional sample was available for re-analysis.

Laboratory Control Sample Results

VOC: The LCS/D1900476 did not meet the acceptance criteria for bromomethane. This compound showed high recovery. There is no impact to the data as this analyte was not detected in the associated samples.

VOC: The LCS/D1900480 did not meet the acceptance criteria for bromomethane. This compound showed high recovery. There is no impact to the data as this analyte was not detected in the associated samples.

Matrix Spike/Matrix Spike Duplicate/Duplicate Results

Not requested for this project.

Other

Reporting Limits: Dilutions performed during the analysis are noted on the result pages.

No other exceptions noted.

Data Qualifiers

U = This compound was analyzed for, but not detected above the associated method detection limit.
J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

GLOSSARY

%R	Percent Recovery
BLK	Blank (Method Blank, Preparation Blank)
CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification
Dil'n	Dilution
DL	Detection Limit
DUP	Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantitation
MB	Methanol Blank (associated with solid VOC samples)
MLCS	Methanol Laboratory Control Sample (associated with solid VOC samples)
MLCSD	Methanol Laboratory Control Sample Duplicate (associated with solid VOC samples)
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PB	Preparation Blank
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference
SUR	Surrogate

- QC Report -

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits	RPD	RPD Limit
SW5030C8260C	BLK1900476	dichlorodifluoromethane		< 2	ug/L					
		chloromethane		< 2	ug/L					
		vinyl chloride		< 2	ug/L					
		bromomethane		< 2	ug/L					
		chloroethane		< 2	ug/L					
		trichlorofluoromethane		< 2	ug/L					
		diethyl ether		< 2	ug/L					
		acetone		< 10	ug/L					
		1,1-dichloroethene		< 1	ug/L					
		methylene chloride		< 2	ug/L					
		carbon disulfide		< 2	ug/L					
		methyl t-butyl ether (MTBE)		< 2	ug/L					
		trans-1,2-dichloroethene		< 2	ug/L					
		1,1-dichloroethane		< 2	ug/L					
		2-butanone (MEK)		< 10	ug/L					
		2,2-dichloropropane		< 2	ug/L					
		cis-1,2-dichloroethene		< 2	ug/L					
		chloroform		< 2	ug/L					
		bromochloromethane		< 2	ug/L					
		tetrahydrofuran (THF)		< 2	ug/L					
		1,1,1-trichloroethane		< 2	ug/L					
		1,1-dichloropropene		< 2	ug/L					
		carbon tetrachloride		< 2	ug/L					
		1,2-dichloroethane		< 2	ug/L					
		benzene		< 2	ug/L					
		trichloroethene		< 2	ug/L					
		1,2-dichloropropane		< 2	ug/L					
		bromodichloromethane		< 0.6	ug/L					
		dibromomethane		< 2	ug/L					
		4-methyl-2-pentanone (MIBK)		< 10	ug/L					
		cis-1,3-dichloropropene		< 2	ug/L					
		toluene		< 2	ug/L					
		trans-1,3-dichloropropene		< 2	ug/L					
		2-hexanone		< 10	ug/L					
		1,1,2-trichloroethane		< 2	ug/L					
		1,3-dichloropropane		< 2	ug/L					
		tetrachloroethene		< 2	ug/L					
		dibromochloromethane		< 2	ug/L					
		1,2-dibromoethane (EDB)		< 2	ug/L					
		chlorobenzene		< 2	ug/L					
		1,1,1,2-tetrachloroethane		< 2	ug/L					
		ethylbenzene		< 2	ug/L					
		m&p-xylenes		< 2	ug/L					
		o-xylene		< 2	ug/L					
		styrene		< 2	ug/L					
		bromoform		< 2	ug/L					
		isopropylbenzene		< 2	ug/L					
		1,1,2,2-tetrachloroethane		< 2	ug/L					
		1,2,3-trichloropropane		< 2	ug/L					
		n-propylbenzene		< 2	ug/L					

Absolute Resource associates

Method	QC ID	Parameter	Associated Sample		Result	Units Amt Added	%R	Limits		RPD	RPD Limit
SW5030C8260C	BLK1900476	bromobenzene		<	2	ug/L					
		1,3,5-trimethylbenzene		<	2	ug/L					
		2-chlorotoluene		<	2	ug/L					
		4-chlorotoluene		<	2	ug/L					
		tert-butylbenzene		<	2	ug/L					
		1,2,4-trimethylbenzene		<	2	ug/L					
		sec-butylbenzene		<	2	ug/L					
		1,3-dichlorobenzene		<	2	ug/L					
		4-isopropyltoluene		<	2	ug/L					
		1,4-dichlorobenzene		<	2	ug/L					
		1,2-dichlorobenzene		<	2	ug/L					
		n-butylbenzene		<	2	ug/L					
		1,2-dibromo-3-chloropropane (DBCP)		<	2	ug/L					
		1,2,4-trichlorobenzene		<	2	ug/L					
		hexachlorobutadiene		<	0.5	ug/L					
		naphthalene		<	2	ug/L					
		1,2,3-trichlorobenzene		<	2	ug/L					
		dibromofluoromethane SUR			102	%		78	114		
		toluene-D8 SUR			93	%		88	110		
		4-bromofluorobenzene SUR			103	%		86	115		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R		Limits		RPD	RPD Limit
SW5030C8260C	LCS1900476	dichlorodifluoromethane		16	ug/L	20	78		70	130		
		chloromethane		20	ug/L	20	98		70	130		
		vinyl chloride		16	ug/L	20	81		70	130		
		bromomethane		39	ug/L	20	196	*	70	130		
		chloroethane		20	ug/L	20	100		70	130		
		trichlorofluoromethane		19	ug/L	20	95		70	130		
		diethyl ether		22	ug/L	20	112		70	130		
		acetone		23	ug/L	20	114		70	130		
		1,1-dichloroethene		19	ug/L	20	94		70	130		
		methylene chloride		20	ug/L	20	99		70	130		
		carbon disulfide		19	ug/L	20	93		70	130		
		methyl t-butyl ether (MTBE)		18	ug/L	20	91		70	130		
		trans-1,2-dichloroethene		18	ug/L	20	92		70	130		
		1,1-dichloroethane		19	ug/L	20	95		70	130		
		2-butanone (MEK)		21	ug/L	20	107		70	130		
		2,2-dichloropropane		15	ug/L	20	74		70	130		
		cis-1,2-dichloroethene		19	ug/L	20	94		70	130		
		chloroform		18	ug/L	20	90		70	130		
		bromochloromethane		20	ug/L	20	100		70	130		
		tetrahydrofuran (THF)		24	ug/L	20	119		70	130		
		1,1,1-trichloroethane		18	ug/L	20	91		70	130		
		1,1-dichloropropene		19	ug/L	20	96		70	130		
		carbon tetrachloride		18	ug/L	20	91		70	130		
		1,2-dichloroethane		19	ug/L	20	93		70	130		
		benzene		20	ug/L	20	100		70	130		
		trichloroethene		18	ug/L	20	90		70	130		
		1,2-dichloropropane		20	ug/L	20	99		70	130		
		bromodichloromethane		18	ug/L	20	91		70	130		
		dibromomethane		20	ug/L	20	99		70	130		
		4-methyl-2-pentanone (MIBK)		20	ug/L	20	100		70	130		
		cis-1,3-dichloropropene		19	ug/L	20	97		70	130		
		toluene		20	ug/L	20	100		70	130		
		trans-1,3-dichloropropene		18	ug/L	20	92		70	130		
		2-hexanone		19	ug/L	20	94		70	130		
		1,1,2-trichloroethane		20	ug/L	20	102		70	130		
		1,3-dichloropropane		18	ug/L	20	91		70	130		
		tetrachloroethene		19	ug/L	20	93		70	130		
		dibromochloromethane		16	ug/L	20	81		70	130		
		1,2-dibromoethane (EDB)		19	ug/L	20	94		70	130		
		chlorobenzene		17	ug/L	20	83		70	130		
		1,1,1,2-tetrachloroethane		19	ug/L	20	93		70	130		
		ethylbenzene		18	ug/L	20	89		70	130		
		m&p-xylenes		39	ug/L	40	97		70	130		
		o-xylene		19	ug/L	20	95		70	130		
		styrene		18	ug/L	20	92		70	130		
		bromoform		18	ug/L	20	88		70	130		
		isopropylbenzene		18	ug/L	20	92		70	130		
		1,1,2,2-tetrachloroethane		16	ug/L	20	81		70	130		
		1,2,3-trichloropropane		18	ug/L	20	89		70	130		
		n-propylbenzene		16	ug/L	20	82		70	130		
		bromobenzene		18	ug/L	20	89		70	130		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW5030C8260C	LCS1900476	1,3,5-trimethylbenzene		17	ug/L	20	85	70	130		
		2-chlorotoluene		16	ug/L	20	81	70	130		
		4-chlorotoluene		17	ug/L	20	85	70	130		
		tert-butylbenzene		16	ug/L	20	82	70	130		
		1,2,4-trimethylbenzene		15	ug/L	20	77	70	130		
		sec-butylbenzene		16	ug/L	20	80	70	130		
		1,3-dichlorobenzene		18	ug/L	20	89	70	130		
		4-isopropyltoluene		15	ug/L	20	76	70	130		
		1,4-dichlorobenzene		16	ug/L	20	82	70	130		
		1,2-dichlorobenzene		16	ug/L	20	82	70	130		
		n-butylbenzene		17	ug/L	20	85	70	130		
		1,2-dibromo-3-chloropropane (DBCP)		14	ug/L	20	70	70	130		
		1,2,4-trichlorobenzene		18	ug/L	20	90	70	130		
		hexachlorobutadiene		20	ug/L	20	99	70	130		
		naphthalene		18	ug/L	20	90	70	130		
		1,2,3-trichlorobenzene		18	ug/L	20	92	70	130		
		dibromofluoromethane SUR		102	%			78	114		
		toluene-D8 SUR		94	%			88	110		
		4-bromofluorobenzene SUR		112	%			86	115		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R		Limits		RPD	RPD Limit
SW5030C8260C	LCSD1900476	dichlorodifluoromethane		15	ug/L	20	77		70	130	1	20
		chloromethane		19	ug/L	20	94		70	130	3	20
		vinyl chloride		16	ug/L	20	82		70	130	2	20
		bromomethane		41	ug/L	20	205	*	70	130	5	20
		chloroethane		20	ug/L	20	100		70	130	0	20
		trichlorofluoromethane		19	ug/L	20	95		70	130	1	20
		diethyl ether		22	ug/L	20	110		70	130	1	20
		acetone		22	ug/L	20	111		70	130	3	20
		1,1-dichloroethene		19	ug/L	20	94		70	130	0	20
		methylene chloride		20	ug/L	20	99		70	130	1	20
		carbon disulfide		19	ug/L	20	97		70	130	4	20
		methyl t-butyl ether (MTBE)		18	ug/L	20	91		70	130	0	20
		trans-1,2-dichloroethene		18	ug/L	20	91		70	130	1	20
		1,1-dichloroethane		19	ug/L	20	95		70	130	0	20
		2-butanone (MEK)		22	ug/L	20	108		70	130	1	20
		2,2-dichloropropane		15	ug/L	20	75		70	130	1	20
		cis-1,2-dichloroethene		19	ug/L	20	93		70	130	2	20
		chloroform		18	ug/L	20	91		70	130	1	20
		bromochloromethane		20	ug/L	20	101		70	130	1	20
		tetrahydrofuran (THF)		24	ug/L	20	119		70	130	0	20
		1,1,1-trichloroethane		18	ug/L	20	90		70	130	1	20
		1,1-dichloropropene		19	ug/L	20	95		70	130	1	20
		carbon tetrachloride		18	ug/L	20	91		70	130	1	20
		1,2-dichloroethane		19	ug/L	20	93		70	130	0	20
		benzene		20	ug/L	20	99		70	130	0	20
		trichloroethene		18	ug/L	20	90		70	130	1	20
		1,2-dichloropropane		20	ug/L	20	98		70	130	1	20
		bromodichloromethane		18	ug/L	20	91		70	130	0	20
		dibromomethane		20	ug/L	20	100		70	130	1	20
		4-methyl-2-pentanone (MIBK)		20	ug/L	20	99		70	130	0	20
		cis-1,3-dichloropropene		20	ug/L	20	99		70	130	2	20
		toluene		20	ug/L	20	100		70	130	0	20
		trans-1,3-dichloropropene		18	ug/L	20	92		70	130	0	20
		2-hexanone		19	ug/L	20	96		70	130	1	20
		1,1,2-trichloroethane		21	ug/L	20	104		70	130	2	20
		1,3-dichloropropane		18	ug/L	20	92		70	130	2	20
		tetrachloroethene		19	ug/L	20	93		70	130	0	20
		dibromochloromethane		17	ug/L	20	84		70	130	4	20
		1,2-dibromoethane (EDB)		19	ug/L	20	95		70	130	2	20
		chlorobenzene		17	ug/L	20	83		70	130	0	20
		1,1,1,2-tetrachloroethane		19	ug/L	20	94		70	130	1	20
		ethylbenzene		18	ug/L	20	88		70	130	1	20
		m&p-xylenes		38	ug/L	40	96		70	130	1	20
		o-xylene		19	ug/L	20	94		70	130	0	20
		styrene		18	ug/L	20	91		70	130	0	20
		bromoform		19	ug/L	20	93		70	130	6	20
		isopropylbenzene		18	ug/L	20	91		70	130	1	20
		1,1,2,2-tetrachloroethane		16	ug/L	20	82		70	130	0	20
		1,2,3-trichloropropane		18	ug/L	20	88		70	130	0	20
		n-propylbenzene		16	ug/L	20	81		70	130	1	20
		bromobenzene		18	ug/L	20	88		70	130	1	20

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW5030C8260C	LCSD1900476	1,3,5-trimethylbenzene		17	ug/L	20	83	70	130	2	20
		2-chlorotoluene		16	ug/L	20	81	70	130	0	20
		4-chlorotoluene		17	ug/L	20	84	70	130	1	20
		tert-butylbenzene		16	ug/L	20	82	70	130	0	20
		1,2,4-trimethylbenzene		15	ug/L	20	77	70	130	1	20
		sec-butylbenzene		16	ug/L	20	80	70	130	0	20
		1,3-dichlorobenzene		18	ug/L	20	89	70	130	1	20
		4-isopropyltoluene		15	ug/L	20	77	70	130	1	20
		1,4-dichlorobenzene		16	ug/L	20	82	70	130	0	20
		1,2-dichlorobenzene		16	ug/L	20	82	70	130	1	20
		n-butylbenzene		17	ug/L	20	86	70	130	2	20
		1,2-dibromo-3-chloropropane (DBCP)		15	ug/L	20	73	70	130	4	20
		1,2,4-trichlorobenzene		19	ug/L	20	93	70	130	2	20
		hexachlorobutadiene		20	ug/L	20	102	70	130	3	20
		naphthalene		19	ug/L	20	93	70	130	3	20
		1,2,3-trichlorobenzene		19	ug/L	20	95	70	130	3	20
		dibromofluoromethane SUR		100	%			78	114		
		toluene-D8 SUR		92	%			88	110		
		4-bromofluorobenzene SUR		112	%			86	115		

Method	QC ID	Parameter	Associated Sample		Result	Units Amt Added	%R	Limits	RPD	RPD Limit
SW5030C8260C	BLK1900480	dichlorodifluoromethane		<	2	ug/L				
		chloromethane		<	2	ug/L				
		vinyl chloride		<	2	ug/L				
		bromomethane		<	2	ug/L				
		chloroethane		<	2	ug/L				
		trichlorofluoromethane		<	2	ug/L				
		diethyl ether		<	2	ug/L				
		acetone		<	10	ug/L				
		1,1-dichloroethene		<	1	ug/L				
		methylene chloride		<	2	ug/L				
		carbon disulfide		<	2	ug/L				
		methyl t-butyl ether (MTBE)		<	2	ug/L				
		trans-1,2-dichloroethene		<	2	ug/L				
		1,1-dichloroethane		<	2	ug/L				
		2-butanone (MEK)		<	10	ug/L				
		2,2-dichloropropane		<	2	ug/L				
		cis-1,2-dichloroethene		<	2	ug/L				
		chloroform		<	2	ug/L				
		bromochloromethane		<	2	ug/L				
		tetrahydrofuran (THF)		<	2	ug/L				
		1,1,1-trichloroethane		<	2	ug/L				
		1,1-dichloropropene		<	2	ug/L				
		carbon tetrachloride		<	2	ug/L				
		1,2-dichloroethane		<	2	ug/L				
		benzene		<	2	ug/L				
		trichloroethene		<	2	ug/L				
		1,2-dichloropropane		<	2	ug/L				
		bromodichloromethane		<	0.6	ug/L				
		dibromomethane		<	2	ug/L				
		4-methyl-2-pentanone (MIBK)		<	10	ug/L				
		cis-1,3-dichloropropene		<	2	ug/L				
		toluene		<	2	ug/L				
		trans-1,3-dichloropropene		<	2	ug/L				
		2-hexanone		<	10	ug/L				
		1,1,2-trichloroethane		<	2	ug/L				
		1,3-dichloropropane		<	2	ug/L				
		tetrachloroethene		<	2	ug/L				
		dibromochloromethane		<	2	ug/L				
		1,2-dibromoethane (EDB)		<	2	ug/L				
		chlorobenzene		<	2	ug/L				
		1,1,1,2-tetrachloroethane		<	2	ug/L				
		ethylbenzene		<	2	ug/L				
		m&p-xylenes		<	2	ug/L				
		o-xylene		<	2	ug/L				
		styrene		<	2	ug/L				
		bromoform		<	2	ug/L				
		isopropylbenzene		<	2	ug/L				
		1,1,2,2-tetrachloroethane		<	2	ug/L				
		1,2,3-trichloropropane		<	2	ug/L				
		n-propylbenzene		<	2	ug/L				
		bromobenzene		<	2	ug/L				

Method	QC ID	Parameter	Associated Sample		Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW5030C8260C	BLK1900480	1,3,5-trimethylbenzene		<	2	ug/L						
		2-chlorotoluene		<	2	ug/L						
		4-chlorotoluene		<	2	ug/L						
		tert-butylbenzene		<	2	ug/L						
		1,2,4-trimethylbenzene		<	2	ug/L						
		sec-butylbenzene		<	2	ug/L						
		1,3-dichlorobenzene		<	2	ug/L						
		4-isopropyltoluene		<	2	ug/L						
		1,4-dichlorobenzene		<	2	ug/L						
		1,2-dichlorobenzene		<	2	ug/L						
		n-butylbenzene		<	2	ug/L						
		1,2-dibromo-3-chloropropane (DBCP)		<	2	ug/L						
		1,2,4-trichlorobenzene		<	2	ug/L						
		hexachlorobutadiene		<	0.5	ug/L						
		naphthalene		<	2	ug/L						
		1,2,3-trichlorobenzene		<	2	ug/L						
		dibromofluoromethane SUR			99	%			78	114		
		toluene-D8 SUR			92	%			88	110		
		4-bromofluorobenzene SUR			103	%			86	115		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R		Limits		RPD	RPD Limit
SW5030C8260C	LCS1900480	dichlorodifluoromethane		16	ug/L	20	81		70	130		
		chloromethane		19	ug/L	20	96		70	130		
		vinyl chloride		17	ug/L	20	86		70	130		
		bromomethane		49	ug/L	20	243	*	70	130		
		chloroethane		21	ug/L	20	107		70	130		
		trichlorofluoromethane		20	ug/L	20	101		70	130		
		diethyl ether		23	ug/L	20	113		70	130		
		acetone		25	ug/L	20	123		70	130		
		1,1-dichloroethene		20	ug/L	20	100		70	130		
		methylene chloride		21	ug/L	20	104		70	130		
		carbon disulfide		22	ug/L	20	111		70	130		
		methyl t-butyl ether (MTBE)		19	ug/L	20	95		70	130		
		trans-1,2-dichloroethene		20	ug/L	20	100		70	130		
		1,1-dichloroethane		20	ug/L	20	102		70	130		
		2-butanone (MEK)		23	ug/L	20	116		70	130		
		2,2-dichloropropane		17	ug/L	20	86		70	130		
		cis-1,2-dichloroethene		20	ug/L	20	102		70	130		
		chloroform		19	ug/L	20	95		70	130		
		bromochloromethane		21	ug/L	20	106		70	130		
		tetrahydrofuran (THF)		26	ug/L	20	128		70	130		
		1,1,1-trichloroethane		20	ug/L	20	99		70	130		
		1,1-dichloropropene		21	ug/L	20	105		70	130		
		carbon tetrachloride		20	ug/L	20	101		70	130		
		1,2-dichloroethane		20	ug/L	20	98		70	130		
		benzene		21	ug/L	20	106		70	130		
		trichloroethene		19	ug/L	20	96		70	130		
		1,2-dichloropropane		21	ug/L	20	104		70	130		
		bromodichloromethane		20	ug/L	20	99		70	130		
		dibromomethane		21	ug/L	20	105		70	130		
		4-methyl-2-pentanone (MIBK)		21	ug/L	20	106		70	130		
		cis-1,3-dichloropropene		21	ug/L	20	105		70	130		
		toluene		21	ug/L	20	106		70	130		
		trans-1,3-dichloropropene		20	ug/L	20	98		70	130		
		2-hexanone		21	ug/L	20	104		70	130		
		1,1,2-trichloroethane		22	ug/L	20	108		70	130		
		1,3-dichloropropane		19	ug/L	20	96		70	130		
		tetrachloroethene		20	ug/L	20	99		70	130		
		dibromochloromethane		18	ug/L	20	92		70	130		
		1,2-dibromoethane (EDB)		20	ug/L	20	99		70	130		
		chlorobenzene		17	ug/L	20	87		70	130		
		1,1,1,2-tetrachloroethane		20	ug/L	20	100		70	130		
		ethylbenzene		19	ug/L	20	94		70	130		
		m&p-xylenes		41	ug/L	40	102		70	130		
		o-xylene		20	ug/L	20	99		70	130		
		styrene		20	ug/L	20	98		70	130		
		bromoform		20	ug/L	20	100		70	130		
		isopropylbenzene		20	ug/L	20	98		70	130		
		1,1,2,2-tetrachloroethane		17	ug/L	20	86		70	130		
		1,2,3-trichloropropane		18	ug/L	20	91		70	130		
		n-propylbenzene		17	ug/L	20	86		70	130		
		bromobenzene		18	ug/L	20	89		70	130		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW5030C8260C	LCS1900480	1,3,5-trimethylbenzene		18	ug/L	20	88	70	130		
		2-chlorotoluene		17	ug/L	20	85	70	130		
		4-chlorotoluene		18	ug/L	20	89	70	130		
		tert-butylbenzene		17	ug/L	20	87	70	130		
		1,2,4-trimethylbenzene		16	ug/L	20	81	70	130		
		sec-butylbenzene		17	ug/L	20	85	70	130		
		1,3-dichlorobenzene		18	ug/L	20	91	70	130		
		4-isopropyltoluene		16	ug/L	20	82	70	130		
		1,4-dichlorobenzene		17	ug/L	20	85	70	130		
		1,2-dichlorobenzene		17	ug/L	20	85	70	130		
		n-butylbenzene		19	ug/L	20	93	70	130		
		1,2-dibromo-3-chloropropane (DBCP)		16	ug/L	20	81	70	130		
		1,2,4-trichlorobenzene		19	ug/L	20	93	70	130		
		hexachlorobutadiene		21	ug/L	20	104	70	130		
		naphthalene		18	ug/L	20	91	70	130		
		1,2,3-trichlorobenzene		18	ug/L	20	91	70	130		
		dibromofluoromethane SUR		101	%			78	114		
		toluene-D8 SUR		95	%			88	110		
		4-bromofluorobenzene SUR		114	%			86	115		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R		Limits		RPD		RPD Limit
SW5030C8260C	LCSD1900480	dichlorodifluoromethane		17	ug/L	20	83		70	130	1		20
		chloromethane		18	ug/L	20	91		70	130	5		20
		vinyl chloride		17	ug/L	20	87		70	130	1		20
		bromomethane		27	ug/L	20	137	*	70	130	56	*	20
		chloroethane		21	ug/L	20	107		70	130	0		20
		trichlorofluoromethane		21	ug/L	20	104		70	130	3		20
		diethyl ether		23	ug/L	20	115		70	130	2		20
		acetone		23	ug/L	20	116		70	130	6		20
		1,1-dichloroethene		22	ug/L	20	108		70	130	7		20
		methylene chloride		21	ug/L	20	107		70	130	3		20
		carbon disulfide		23	ug/L	20	113		70	130	3		20
		methyl t-butyl ether (MTBE)		19	ug/L	20	97		70	130	1		20
		trans-1,2-dichloroethene		21	ug/L	20	104		70	130	4		20
		1,1-dichloroethane		21	ug/L	20	105		70	130	3		20
		2-butanone (MEK)		22	ug/L	20	110		70	130	6		20
		2,2-dichloropropane		17	ug/L	20	83		70	130	4		20
		cis-1,2-dichloroethene		20	ug/L	20	102		70	130	0		20
		chloroform		20	ug/L	20	99		70	130	4		20
		bromochloromethane		21	ug/L	20	107		70	130	1		20
		tetrahydrofuran (THF)		23	ug/L	20	116		70	130	10		20
		1,1,1-trichloroethane		20	ug/L	20	101		70	130	2		20
		1,1-dichloropropene		22	ug/L	20	110		70	130	5		20
		carbon tetrachloride		21	ug/L	20	104		70	130	3		20
		1,2-dichloroethane		20	ug/L	20	99		70	130	1		20
		benzene		22	ug/L	20	110		70	130	4		20
		trichloroethene		21	ug/L	20	104		70	130	7		20
		1,2-dichloropropane		21	ug/L	20	107		70	130	2		20
		bromodichloromethane		20	ug/L	20	100		70	130	1		20
		dibromomethane		21	ug/L	20	107		70	130	2		20
		4-methyl-2-pentanone (MIBK)		21	ug/L	20	103		70	130	3		20
		cis-1,3-dichloropropene		21	ug/L	20	106		70	130	1		20
		toluene		22	ug/L	20	108		70	130	2		20
		trans-1,3-dichloropropene		20	ug/L	20	100		70	130	1		20
		2-hexanone		19	ug/L	20	97		70	130	7		20
		1,1,2-trichloroethane		22	ug/L	20	109		70	130	2		20
		1,3-dichloropropane		19	ug/L	20	95		70	130	1		20
		tetrachloroethene		20	ug/L	20	101		70	130	3		20
		dibromochloromethane		18	ug/L	20	89		70	130	4		20
		1,2-dibromoethane (EDB)		19	ug/L	20	97		70	130	2		20
		chlorobenzene		17	ug/L	20	87		70	130	1		20
		1,1,1,2-tetrachloroethane		20	ug/L	20	98		70	130	2		20
		ethylbenzene		19	ug/L	20	94		70	130	0		20
		m&p-xylenes		41	ug/L	40	103		70	130	1		20
		o-xylene		20	ug/L	20	99		70	130	0		20
		styrene		19	ug/L	20	96		70	130	2		20
		bromoform		19	ug/L	20	95		70	130	4		20
		isopropylbenzene		20	ug/L	20	99		70	130	1		20
		1,1,2,2-tetrachloroethane		16	ug/L	20	81		70	130	6		20
		1,2,3-trichloropropane		18	ug/L	20	90		70	130	2		20
		n-propylbenzene		18	ug/L	20	89		70	130	3		20
		bromobenzene		18	ug/L	20	91		70	130	2		20

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW5030C8260C	LCSD1900480	1,3,5-trimethylbenzene		18	ug/L	20	90	70	130	2	20
		2-chlorotoluene		17	ug/L	20	87	70	130	2	20
		4-chlorotoluene		18	ug/L	20	89	70	130	1	20
		tert-butylbenzene		18	ug/L	20	90	70	130	4	20
		1,2,4-trimethylbenzene		17	ug/L	20	83	70	130	2	20
		sec-butylbenzene		18	ug/L	20	88	70	130	4	20
		1,3-dichlorobenzene		19	ug/L	20	93	70	130	2	20
		4-isopropyltoluene		17	ug/L	20	84	70	130	2	20
		1,4-dichlorobenzene		17	ug/L	20	87	70	130	2	20
		1,2-dichlorobenzene		17	ug/L	20	86	70	130	1	20
		n-butylbenzene		19	ug/L	20	95	70	130	2	20
		1,2-dibromo-3-chloropropane (DBCP)		15	ug/L	20	74	70	130	9	20
		1,2,4-trichlorobenzene		19	ug/L	20	95	70	130	2	20
		hexachlorobutadiene		22	ug/L	20	108	70	130	4	20
		naphthalene		19	ug/L	20	95	70	130	5	20
		1,2,3-trichlorobenzene		19	ug/L	20	97	70	130	6	20
		dibromofluoromethane SUR		102	%			78	114		
		toluene-D8 SUR		94	%			88	110		
		4-bromofluorobenzene SUR		109	%			86	115		

Site 6 (Aurora, Colorado)

Laboratory Narrative

Accreditation:

The Colorado Department of Public Health and Environment does not currently offer accreditation for air testing.

TO-17 Sorbent Tubes:

TO-17 sorbent tube samples were thermally desorbed for analysis into 500ml deactivated glass vacuum bottles, and raw data from sample analyses represent the analyzed concentration present in the glass vacuum bottles. TO-17 final results are calculated based on the total mass of analyte, the total volume of air sampled in each tube, the total length of time each tube was open for sampling, and the uptake rate of the target analyte. Results for passive sampling tube(s) collected without using a diffusion cap are calculated assuming the uptake rate is unaffected, although the actual uptake rate without a diffusion cap is unknown.

Data Qualifiers and Flags:

Due to extreme analyte concentrations and corresponding analyzer problems, several data flags and qualifiers are present in this report:

-Several sample results which are above the instrument's calibration range after significant dilution are reported with 'E' flags.
-Several surrogate results which are outside the control limits are reported with 'H' or 'L' flags.
-Several laboratory control sample results which are outside the control limits are reported with 'L' flags.

Respectfully,

James Haynes
Operations Manager

ENTHALPY ANALYTICAL

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**EA_190424-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1030**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/3/2019 at 03:23 PM
QC Batch ID:	QC_09914	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone	0.50	3.14	1.57	297.04 E	67-64-1
Benzene	0.50	3.14	1.57	< 1.57	71-43-2
1,3-Butadiene	0.50	3.14	1.57	< 1.57	106-99-0
Carbon disulfide	0.50	3.14	1.57	6.44	75-15-0
Carbon tetrachloride	0.50	3.14	1.57	< 1.57	56-23-5
Chloroform	0.50	3.14	1.57	< 1.57	67-66-3
Cyclohexane	0.50	3.14	1.57	< 1.57	110-82-7
1,4-Dioxane	0.50	3.14	1.57	< 1.57	123-91-1
Ethanol	0.50	3.14	1.57	41.57	64-17-5
Ethyl Acetate	0.50	3.14	1.57	< 1.57	141-78-6
Ethylbenzene	0.50	3.14	1.57	< 1.57	100-41-4
Hexane	0.50	3.14	1.57	61.83	110-54-3
Isopropanol	0.50	3.14	1.57	< 1.57	67-63-0
MEK	0.50	3.14	1.57	13.78	78-93-3
Methylene Chloride	0.50	3.14	1.57	16.89	75-09-2
Styrene	0.50	3.14	1.57	< 1.57	100-42-5
Toluene	0.50	3.14	1.57	5.78	108-88-3
1,2,4-Trimethylbenzene	0.50	3.14	1.57	< 1.57	95-63-6
1,3,5-Trimethylbenzene	0.50	3.14	1.57	< 1.57	108-67-8
m,p-Xylenes	1.00	3.14	3.14	< 3.14	108-38-3, 106-42-3
o-Xylene	0.50	3.14	1.57	< 1.57	95-47-6

ENTHALPY ANALYTICAL

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**EA_190424-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1030**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/3/2019 at 03:23 PM
QC Batch ID:	QC_09914	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.50	3.14	1.57	ND	76-13-1
2-methyl-2-butanol	0.50	3.14	1.57	ND	75-85-4
2-methylbutane	0.50	3.14	1.57	25.12	78-78-4
2-methylnaphthalene	0.50	3.14	1.57	ND	91-57-6
Benzaldehyde	0.50	3.14	1.57	ND	100-52-7
Benzoic acid	0.50	3.14	1.57	ND	65-85-0
Ethylene glycol	0.50	3.14	1.57	ND	107-21-1
Isopropylbenzene	0.50	3.14	1.57	ND	98-82-8
Naphthalene	0.50	3.14	1.57	ND	91-20-3
n-propyl benzene	0.50	3.14	1.57	ND	103-65-1
p-isopropyltoluene	0.50	3.14	1.57	ND	99-87-6
Propionitrile	0.50	3.14	1.57	ND	107-12-0
Trans-1,3-dichloropropene	0.50	3.14	1.57	ND	542-75-6

ENTHALPY ANALYTICAL

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**EA_190424-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**L5765**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/3/2019 at 01:34 PM
QC Batch ID:	QC_09914	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone	0.50	24.60	12.30	< 12.30	67-64-1
Benzene	0.50	24.60	12.30	< 12.30	71-43-2
1,3-Butadiene	0.50	24.60	12.30	< 12.30	106-99-0
Carbon disulfide	0.50	24.60	12.30	< 12.30	75-15-0
Carbon tetrachloride	0.50	24.60	12.30	< 12.30	56-23-5
Chloroform	0.50	24.60	12.30	< 12.30	67-66-3
Cyclohexane	0.50	24.60	12.30	< 12.30	110-82-7
1,4-Dioxane	0.50	24.60	12.30	< 12.30	123-91-1
Ethanol	0.50	24.60	12.30	< 12.30	64-17-5
Ethyl Acetate	0.50	24.60	12.30	< 12.30	141-78-6
Ethylbenzene	0.50	24.60	12.30	< 12.30	100-41-4
Hexane	0.50	24.60	12.30	< 12.30	110-54-3
Isopropanol	0.50	24.60	12.30	< 12.30	67-63-0
MEK	0.50	24.60	12.30	< 12.30	78-93-3
Methylene Chloride	0.50	24.60	12.30	< 12.30	75-09-2
Styrene	0.50	24.60	12.30	25,445.75 E	100-42-5
Toluene	0.50	24.60	12.30	< 12.30	108-88-3
1,2,4-Trimethylbenzene	0.50	24.60	12.30	< 12.30	95-63-6
1,3,5-Trimethylbenzene	0.50	24.60	12.30	< 12.30	108-67-8
m,p-Xylenes	1.00	24.60	24.60	< 24.60	108-38-3, 106-42-3
o-Xylene	0.50	24.60	12.30	< 12.30	95-47-6

ENTHALPY ANALYTICAL

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**EA_190424-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**L5765**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/3/2019 at 01:34 PM
QC Batch ID:	QC_09914	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.50	24.60	12.30	ND	76-13-1
2-methyl-2-butanol	0.50	24.60	12.30	ND	75-85-4
2-methylbutane	0.50	24.60	12.30	ND	78-78-4
2-methylnaphthalene	0.50	24.60	12.30	ND	91-57-6
Benzaldehyde	0.50	24.60	12.30	ND	100-52-7
Benzoic acid	0.50	24.60	12.30	ND	65-85-0
Ethylene glycol	0.50	24.60	12.30	ND	107-21-1
Isopropylbenzene	0.50	24.60	12.30	ND	98-82-8
Naphthalene	0.50	24.60	12.30	ND	91-20-3
n-propyl benzene	0.50	24.60	12.30	ND	103-65-1
p-isopropyltoluene	0.50	24.60	12.30	ND	99-87-6
Propionitrile	0.50	24.60	12.30	ND	107-12-0
Trans-1,3-dichloropropene	0.50	24.60	12.30	ND	542-75-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**EA_190424-003**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1099**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/3/2019 at 04:19 PM
QC Batch ID:	QC_09914	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone	0.50	16.70	8.35	297.59	67-64-1
Benzene	0.50	3.34	1.67	< 1.67	71-43-2
1,3-Butadiene	0.50	3.34	1.67	< 1.67	106-99-0
Carbon disulfide	0.50	3.34	1.67	24.55	75-15-0
Carbon tetrachloride	0.50	3.34	1.67	< 1.67	56-23-5
Chloroform	0.50	3.34	1.67	< 1.67	67-66-3
Cyclohexane	0.50	3.34	1.67	< 1.67	110-82-7
1,4-Dioxane	0.50	3.34	1.67	< 1.67	123-91-1
Ethanol	0.50	3.34	1.67	66.03	64-17-5
Ethyl Acetate	0.50	3.34	1.67	< 1.67	141-78-6
Ethylbenzene	0.50	3.34	1.67	< 1.67	100-41-4
Hexane	0.50	3.34	1.67	58.28	110-54-3
Isopropanol	0.50	3.34	1.67	< 1.67	67-63-0
MEK	0.50	3.34	1.67	25.58	78-93-3
Methylene Chloride	0.50	3.34	1.67	16.67	75-09-2
Styrene	0.50	3.34	1.67	< 1.67	100-42-5
Toluene	0.50	3.34	1.67	3.87	108-88-3
1,2,4-Trimethylbenzene	0.50	3.34	1.67	< 1.67	95-63-6
1,3,5-Trimethylbenzene	0.50	3.34	1.67	< 1.67	108-67-8
m,p-Xylenes	1.00	3.34	3.34	< 3.34	108-38-3, 106-42-3
o-Xylene	0.50	3.34	1.67	< 1.67	95-47-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**EA_190424-003**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**1099**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/3/2019 at 04:19 PM
QC Batch ID:	QC_09914	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.50	3.34	1.67	ND	76-13-1
2-methyl-2-butanol	0.50	3.34	1.67	ND	75-85-4
2-methylbutane	0.50	3.34	1.67	ND	78-78-4
2-methylnaphthalene	0.50	3.34	1.67	ND	91-57-6
Benzaldehyde	0.50	3.34	1.67	ND	100-52-7
Benzoic acid	0.50	3.34	1.67	ND	65-85-0
Ethylene glycol	0.50	3.34	1.67	ND	107-21-1
Isopropylbenzene	0.50	3.34	1.67	ND	98-82-8
Naphthalene	0.50	3.34	1.67	ND	91-20-3
n-propyl benzene	0.50	3.34	1.67	ND	103-65-1
p-isopropyltoluene	0.50	3.34	1.67	ND	99-87-6
Propionitrile	0.50	3.34	1.67	ND	107-12-0
Trans-1,3-dichloropropene	0.50	3.34	1.67	ND	542-75-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**EA_190425-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**0107**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/3/2019 at 07:01 PM
QC Batch ID:	QC_09914	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone	0.50	18.80	9.40	165.25	67-64-1
Benzene	0.50	3.76	1.88	< 1.88	71-43-2
1,3-Butadiene	0.50	3.76	1.88	< 1.88	106-99-0
Carbon disulfide	0.50	3.76	1.88	6.73	75-15-0
Carbon tetrachloride	0.50	3.76	1.88	< 1.88	56-23-5
Chloroform	0.50	3.76	1.88	< 1.88	67-66-3
Cyclohexane	0.50	3.76	1.88	< 1.88	110-82-7
1,4-Dioxane	0.50	3.76	1.88	< 1.88	123-91-1
Ethanol	0.50	3.76	1.88	36.92	64-17-5
Ethyl Acetate	0.50	3.76	1.88	< 1.88	141-78-6
Ethylbenzene	0.50	3.76	1.88	4.85	100-41-4
Hexane	0.50	3.76	1.88	< 1.88	110-54-3
Isopropanol	0.50	3.76	1.88	< 1.88	67-63-0
MEK	0.50	3.76	1.88	5.60	78-93-3
Methylene Chloride	0.50	3.76	1.88	< 1.88	75-09-2
Styrene	0.50	18.80	9.40	8,740.31 E	100-42-5
Toluene	0.50	3.76	1.88	< 1.88	108-88-3
1,2,4-Trimethylbenzene	0.50	3.76	1.88	< 1.88	95-63-6
1,3,5-Trimethylbenzene	0.50	3.76	1.88	< 1.88	108-67-8
m,p-Xylenes	1.00	3.76	3.76	13.87	108-38-3, 106-42-3
o-Xylene	0.50	3.76	1.88	8.80	95-47-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**EA_190425-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**0107**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/3/2019 at 07:01 PM
QC Batch ID:	QC_09914	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.50	3.76	1.88	ND	76-13-1
2-methyl-2-butanol	0.50	3.76	1.88	ND	75-85-4
2-methylbutane	0.50	3.76	1.88	ND	78-78-4
2-methylnaphthalene	0.50	3.76	1.88	ND	91-57-6
Benzaldehyde	0.50	3.76	1.88	ND	100-52-7
Benzoic acid	0.50	3.76	1.88	ND	65-85-0
Ethylene glycol	0.50	3.76	1.88	ND	107-21-1
Isopropylbenzene	0.50	3.76	1.88	ND	98-82-8
Naphthalene	0.50	3.76	1.88	ND	91-20-3
n-propyl benzene	0.50	3.76	1.88	ND	103-65-1
p-isopropyltoluene	0.50	3.76	1.88	ND	99-87-6
Propionitrile	0.50	3.76	1.88	ND	107-12-0
Trans-1,3-dichloropropene	0.50	3.76	1.88	ND	542-75-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-15		
Client Name:	U.S. Army		
Sample Number:	**EA_190426-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**L5761**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/3/2019 at 07:57 PM
QC Batch ID:	QC_09914	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
Acetone	0.50	19.70	9.85	626.46 E	67-64-1
Benzene	0.50	3.94	1.97	< 1.97	71-43-2
1,3-Butadiene	0.50	3.94	1.97	< 1.97	106-99-0
Carbon disulfide	0.50	3.94	1.97	< 1.97	75-15-0
Carbon tetrachloride	0.50	3.94	1.97	< 1.97	56-23-5
Chloroform	0.50	3.94	1.97	< 1.97	67-66-3
Cyclohexane	0.50	3.94	1.97	10.13	110-82-7
1,4-Dioxane	0.50	3.94	1.97	< 1.97	123-91-1
Ethanol	0.50	3.94	1.97	66.31	64-17-5
Ethyl Acetate	0.50	3.94	1.97	< 1.97	141-78-6
Ethylbenzene	0.50	3.94	1.97	33.88	100-41-4
Hexane	0.50	3.94	1.97	< 1.97	110-54-3
Isopropanol	0.50	3.94	1.97	< 1.97	67-63-0
MEK	0.50	3.94	1.97	< 1.97	78-93-3
Methylene Chloride	0.50	3.94	1.97	< 1.97	75-09-2
Styrene	0.50	19.70	9.85	1,824,975.10 E	100-42-5
Toluene	0.50	3.94	1.97	< 1.97	108-88-3
1,2,4-Trimethylbenzene	0.50	3.94	1.97	< 1.97	95-63-6
1,3,5-Trimethylbenzene	0.50	3.94	1.97	< 1.97	108-67-8
m,p-Xylenes	1.00	3.94	3.94	< 3.94	108-38-3, 106-42-3
o-Xylene	0.50	3.94	1.97	< 1.97	95-47-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**EA_190426-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**L5761**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/3/2019 at 07:57 PM
QC Batch ID:	QC_09914	**Matrix:**	Air

Parameter	MQL (ppbv)	DF	SQL (ppbv)	Result (ppbv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.50	3.94	1.97	ND	76-13-1
2-methyl-2-butanol	0.50	3.94	1.97	ND	75-85-4
2-methylbutane	0.50	3.94	1.97	ND	78-78-4
2-methylnaphthalene	0.50	3.94	1.97	ND	91-57-6
Benzaldehyde	0.50	3.94	1.97	ND	100-52-7
Benzoic acid	0.50	3.94	1.97	ND	65-85-0
Ethylene glycol	0.50	3.94	1.97	ND	107-21-1
Isopropylbenzene	0.50	3.94	1.97	ND	98-82-8
Naphthalene	0.50	3.94	1.97	ND	91-20-3
n-propyl benzene	0.50	3.94	1.97	ND	103-65-1
p-isopropyltoluene	0.50	3.94	1.97	ND	99-87-6
Propionitrile	0.50	3.94	1.97	ND	107-12-0
Trans-1,3-dichloropropene	0.50	3.94	1.97	ND	542-75-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**EA_190424-004**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B15258**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:37 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 03:45 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0029	10.00	0.0293	5.5231 E	2.2954 E	67-64-1
Benzene	0.0029	10.00	0.0294	< 0.0294	< 0.0091	71-43-2
1,3-Butadiene	0.0022	10.00	0.0223	< 0.0223	< 0.0100	106-99-0
Carbon Disulfide	0.0038	10.00	0.0384	< 0.0384	< 0.0122	75-15-0
Carbon tetrachloride	0.0076	10.00	0.0760	< 0.0760	< 0.0119	56-23-5
Chloroform	0.0060	10.00	0.0602	< 0.0602	< 0.0122	67-66-3
Cyclohexane	0.0042	10.00	0.0424	< 0.0424	< 0.0122	110-82-7
1,4-Dioxane	0.0044	10.00	0.0444	< 0.0444	< 0.0122	123-91-1
Ethanol	0.0023	10.00	0.0232	0.0878	0.0460	64-17-5
Ethyl acetate	0.0044	10.00	0.0444	< 0.0444	< 0.0122	141-78-6
Ethylbenzene	0.0058	10.00	0.0582	< 0.0582	< 0.0132	100-41-4
Hexane	0.0043	10.00	0.0434	< 0.0434	< 0.0122	110-54-3
Isopropanol	0.0030	10.00	0.0303	< 0.0303	< 0.0122	67-63-0
MEK	0.0036	10.00	0.0363	< 0.0363	< 0.0122	78-93-3
Methylene chloride	0.0043	10.00	0.0428	< 0.0428	< 0.0122	75-09-2
Styrene	0.0052	10.00	0.0525	6.2727 E	1.4538 E	100-42-5
Toluene	0.0045	10.00	0.0447	< 0.0447	< 0.0117	108-88-3
1,2,4-Trimethylbenzene	0.0061	10.00	0.0606	< 0.0606	< 0.0122	95-63-6
1,3,5-Trimethylbenzene	0.0074	10.00	0.0739	< 0.0739	< 0.0148	108-67-8
m,p-Xylenes	0.0116	10.00	0.1163	< 0.1163	< 0.0264	108-38-3, 106-42-3
o-Xylene	0.0058	10.00	0.0582	< 0.0582	< 0.0132	95-47-6

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Laboratory Analysis Report

Sample Results

Test: Analysis by GC/MS, TICs Search
Client Name: U.S. Army
Sample Number: **EA_190424-004**
Analytical SOP: GSL_TM004
Analysis Location: Deer Park, TX
Instrument ID: GC/MS #1 - Agilent
Sample Analyst: Dhan Yeddula
QC Batch ID: QC_09929
Source Sampled: **Aurora CO**
Client Sample ID: **B15258**
Date Sampled: 5/14/2019 at 04:37 PM
Date Analyzed: 6/12/2019 at 03:45 PM
Matrix: Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0108	10.00	0.1082	< 0.1082	< 0.0139	76-13-1
2-methyl-2-butanol	0.0047	10.00	0.0468	< 0.0468	< 0.0128	75-85-4
2-methylbutane	0.0038	10.00	0.0383	< 0.0383	< 0.0128	78-78-4
2-methylnaphthalene	0.0076	10.00	0.0756	< 0.0756	< 0.0128	91-57-6
Benzaldehyde	0.0056	10.00	0.0564	< 0.0564	< 0.0128	100-52-7
Benzoic acid	0.0065	10.00	0.0649	< 0.0649	< 0.0128	65-85-0
Ethylene glycol	0.0033	10.00	0.0330	< 0.0330	< 0.0128	107-21-1
Isopropylbenzene	0.0064	10.00	0.0639	< 0.0639	< 0.0128	98-82-8
Naphthalene	0.0068	10.00	0.0681	< 0.0681	< 0.0128	91-20-3
n-propyl benzene	0.0064	10.00	0.0639	< 0.0639	< 0.0128	103-65-1
p-isopropyltoluene	0.0071	10.00	0.0713	< 0.0713	< 0.0128	99-87-6
Propionitrile	0.0029	10.00	0.0293	< 0.0293	< 0.0128	107-12-0
Trans-1,3-dichloropropene	0.0059	10.00	0.0590	< 0.0590	< 0.0128	542-75-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**EA_190424-005**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B15221**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:37 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 04:41 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0029	10.00	0.0293	0.4332	0.1800	67-64-1
Benzene	0.0029	10.00	0.0294	< 0.0294	< 0.0091	71-43-2
1,3-Butadiene	0.0022	10.00	0.0223	< 0.0223	< 0.0100	106-99-0
Carbon Disulfide	0.0038	10.00	0.0384	< 0.0384	< 0.0122	75-15-0
Carbon tetrachloride	0.0076	10.00	0.0760	< 0.0760	< 0.0119	56-23-5
Chloroform	0.0060	10.00	0.0602	< 0.0602	< 0.0122	67-66-3
Cyclohexane	0.0042	10.00	0.0424	< 0.0424	< 0.0122	110-82-7
1,4-Dioxane	0.0044	10.00	0.0444	< 0.0444	< 0.0122	123-91-1
Ethanol	0.0023	10.00	0.0232	< 0.0232	< 0.0122	64-17-5
Ethyl acetate	0.0044	10.00	0.0444	< 0.0444	< 0.0122	141-78-6
Ethylbenzene	0.0058	10.00	0.0582	< 0.0582	< 0.0132	100-41-4
Hexane	0.0043	10.00	0.0434	< 0.0434	< 0.0122	110-54-3
Isopropanol	0.0030	10.00	0.0303	< 0.0303	< 0.0122	67-63-0
MEK	0.0036	10.00	0.0363	< 0.0363	< 0.0122	78-93-3
Methylene chloride	0.0043	10.00	0.0428	0.0514	0.0146	75-09-2
Styrene	0.0052	10.00	0.0525	0.3181	0.0737	100-42-5
Toluene	0.0045	10.00	0.0447	0.0679	0.0178	108-88-3
1,2,4-Trimethylbenzene	0.0061	10.00	0.0606	< 0.0606	< 0.0122	95-63-6
1,3,5-Trimethylbenzene	0.0074	10.00	0.0739	< 0.0739	< 0.0148	108-67-8
m,p-Xylenes	0.0116	10.00	0.1163	< 0.1163	< 0.0264	108-38-3, 106-42-3
o-Xylene	0.0058	10.00	0.0582	< 0.0582	< 0.0132	95-47-6

ENTHALPY ANALYTICAL

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**EA_190424-005**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B15221**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:37 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 04:41 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0108	10.00	0.1082	< 0.1082	< 0.0139	76-13-1
2-methyl-2-butanol	0.0047	10.00	0.0468	< 0.0468	< 0.0128	75-85-4
2-methylbutane	0.0038	10.00	0.0383	< 0.0383	< 0.0128	78-78-4
2-methylnaphthalene	0.0076	10.00	0.0756	< 0.0756	< 0.0128	91-57-6
Benzaldehyde	0.0056	10.00	0.0564	< 0.0564	< 0.0128	100-52-7
Benzoic acid	0.0065	10.00	0.0649	< 0.0649	< 0.0128	65-85-0
Ethylene glycol	0.0033	10.00	0.0330	< 0.0330	< 0.0128	107-21-1
Isopropylbenzene	0.0064	10.00	0.0639	< 0.0639	< 0.0128	98-82-8
Naphthalene	0.0068	10.00	0.0681	< 0.0681	< 0.0128	91-20-3
n-propyl benzene	0.0064	10.00	0.0639	< 0.0639	< 0.0128	103-65-1
p-isopropyltoluene	0.0071	10.00	0.0713	< 0.0713	< 0.0128	99-87-6
Propionitrile	0.0029	10.00	0.0293	< 0.0293	< 0.0128	107-12-0
Trans-1,3-dichloropropene	0.0059	10.00	0.0590	< 0.0590	< 0.0128	542-75-6

ENTHALPY ANALYTICAL

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**EA_190424-006**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B15237**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:37 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 05:37 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0029	10.00	0.0293	< 0.0293	< 0.0122	67-64-1
Benzene	0.0029	10.00	0.0294	0.1140	0.0352	71-43-2
1,3-Butadiene	0.0022	10.00	0.0223	< 0.0223	< 0.0100	106-99-0
Carbon Disulfide	0.0038	10.00	0.0384	< 0.0384	< 0.0122	75-15-0
Carbon tetrachloride	0.0076	10.00	0.0760	< 0.0760	< 0.0119	56-23-5
Chloroform	0.0060	10.00	0.0602	< 0.0602	< 0.0122	67-66-3
Cyclohexane	0.0042	10.00	0.0424	< 0.0424	< 0.0122	110-82-7
1,4-Dioxane	0.0044	10.00	0.0444	< 0.0444	< 0.0122	123-91-1
Ethanol	0.0023	10.00	0.0232	0.7481	0.3920	64-17-5
Ethyl acetate	0.0044	10.00	0.0444	< 0.0444	< 0.0122	141-78-6
Ethylbenzene	0.0058	10.00	0.0582	0.0838	0.0190	100-41-4
Hexane	0.0043	10.00	0.0434	0.1242	0.0348	110-54-3
Isopropanol	0.0030	10.00	0.0303	< 0.0303	< 0.0122	67-63-0
MEK	0.0036	10.00	0.0363	< 0.0363	< 0.0122	78-93-3
Methylene chloride	0.0043	10.00	0.0428	< 0.0428	< 0.0122	75-09-2
Styrene	0.0052	10.00	0.0525	< 0.0525	< 0.0122	100-42-5
Toluene	0.0045	10.00	0.0447	0.6600	0.1729	108-88-3
1,2,4-Trimethylbenzene	0.0061	10.00	0.0606	< 0.0606	< 0.0122	95-63-6
1,3,5-Trimethylbenzene	0.0074	10.00	0.0739	< 0.0739	< 0.0148	108-67-8
m,p-Xylenes	0.0116	10.00	0.1163	0.1605	0.0365	108-38-3, 106-42-3
o-Xylene	0.0058	10.00	0.0582	< 0.0582	< 0.0132	95-47-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**EA_190424-006**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B15237**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:37 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 05:37 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0108	10.00	0.1082	< 0.1082	< 0.0139	76-13-1
2-methyl-2-butanol	0.0047	10.00	0.0468	< 0.0468	< 0.0128	75-85-4
2-methylbutane	0.0038	10.00	0.0383	< 0.0383	< 0.0128	78-78-4
2-methylnaphthalene	0.0076	10.00	0.0756	< 0.0756	< 0.0128	91-57-6
Benzaldehyde	0.0056	10.00	0.0564	< 0.0564	< 0.0128	100-52-7
Benzoic acid	0.0065	10.00	0.0649	< 0.0649	< 0.0128	65-85-0
Ethylene glycol	0.0033	10.00	0.0330	< 0.0330	< 0.0128	107-21-1
Isopropylbenzene	0.0064	10.00	0.0639	< 0.0639	< 0.0128	98-82-8
Naphthalene	0.0068	10.00	0.0681	< 0.0681	< 0.0128	91-20-3
n-propyl benzene	0.0064	10.00	0.0639	< 0.0639	< 0.0128	103-65-1
p-isopropyltoluene	0.0071	10.00	0.0713	< 0.0713	< 0.0128	99-87-6
Propionitrile	0.0029	10.00	0.0293	< 0.0293	< 0.0128	107-12-0
Trans-1,3-dichloropropene	0.0059	10.00	0.0590	< 0.0590	< 0.0128	542-75-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**EA_190424-007**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B15219**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:50 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 06:33 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0033	10.00	0.0331	< 0.0331	< 0.0137	67-64-1
Benzene	0.0033	10.00	0.0332	< 0.0332	< 0.0103	71-43-2
1,3-Butadiene	0.0025	10.00	0.0252	< 0.0252	< 0.0113	106-99-0
Carbon Disulfide	0.0043	10.00	0.0433	< 0.0433	< 0.0137	75-15-0
Carbon tetrachloride	0.0086	10.00	0.0858	< 0.0858	< 0.0135	56-23-5
Chloroform	0.0068	10.00	0.0680	< 0.0680	< 0.0137	67-66-3
Cyclohexane	0.0048	10.00	0.0479	< 0.0479	< 0.0137	110-82-7
1,4-Dioxane	0.0050	10.00	0.0502	< 0.0502	< 0.0137	123-91-1
Ethanol	0.0026	10.00	0.0262	< 0.0262	< 0.0137	64-17-5
Ethyl acetate	0.0050	10.00	0.0502	< 0.0502	< 0.0137	141-78-6
Ethylbenzene	0.0066	10.00	0.0657	< 0.0657	< 0.0149	100-41-4
Hexane	0.0049	10.00	0.0491	< 0.0491	< 0.0137	110-54-3
Isopropanol	0.0034	10.00	0.0342	< 0.0342	< 0.0137	67-63-0
MEK	0.0041	10.00	0.0410	< 0.0410	< 0.0137	78-93-3
Methylene chloride	0.0048	10.00	0.0483	< 0.0483	< 0.0137	75-09-2
Styrene	0.0059	10.00	0.0593	0.2585	0.0599	100-42-5
Toluene	0.0050	10.00	0.0504	< 0.0504	< 0.0132	108-88-3
1,2,4-Trimethylbenzene	0.0068	10.00	0.0684	< 0.0684	< 0.0137	95-63-6
1,3,5-Trimethylbenzene	0.0083	10.00	0.0834	< 0.0834	< 0.0168	108-67-8
m,p-Xylenes	0.0131	10.00	0.1314	< 0.1314	< 0.0299	108-38-3, 106-42-3
o-Xylene	0.0066	10.00	0.0657	< 0.0657	< 0.0149	95-47-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**EA_190424-007**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B15219**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:50 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 06:33 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0122	10.00	0.1222	< 0.1222	< 0.0157	76-13-1
2-methyl-2-butanol	0.0053	10.00	0.0529	< 0.0529	< 0.0145	75-85-4
2-methylbutane	0.0043	10.00	0.0433	< 0.0433	< 0.0145	78-78-4
2-methylnaphthalene	0.0085	10.00	0.0853	< 0.0853	< 0.0145	91-57-6
Benzaldehyde	0.0064	10.00	0.0637	< 0.0637	< 0.0145	100-52-7
Benzoic acid	0.0073	10.00	0.0733	< 0.0733	< 0.0145	65-85-0
Ethylene glycol	0.0037	10.00	0.0373	< 0.0373	< 0.0145	107-21-1
Isopropylbenzene	0.0072	10.00	0.0721	< 0.0721	< 0.0145	98-82-8
Naphthalene	0.0077	10.00	0.0769	< 0.0769	< 0.0145	91-20-3
n-propyl benzene	0.0072	10.00	0.0721	< 0.0721	< 0.0145	103-65-1
p-isopropyltoluene	0.0081	10.00	0.0805	< 0.0805	< 0.0145	99-87-6
Propionitrile	0.0033	10.00	0.0331	< 0.0331	< 0.0145	107-12-0
Trans-1,3-dichloropropene	0.0067	10.00	0.0666	< 0.0666	< 0.0145	542-75-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**EA_190425-003**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B15285**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:47 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 07:29 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0033	10.00	0.0331	0.0928	0.0386	67-64-1
Benzene	0.0033	10.00	0.0333	< 0.0333	< 0.0103	71-43-2
1,3-Butadiene	0.0025	10.00	0.0253	< 0.0253	< 0.0113	106-99-0
Carbon Disulfide	0.0043	10.00	0.0434	< 0.0434	< 0.0138	75-15-0
Carbon tetrachloride	0.0086	10.00	0.0860	< 0.0860	< 0.0135	56-23-5
Chloroform	0.0068	10.00	0.0681	< 0.0681	< 0.0138	67-66-3
Cyclohexane	0.0048	10.00	0.0480	< 0.0480	< 0.0138	110-82-7
1,4-Dioxane	0.0050	10.00	0.0503	< 0.0503	< 0.0138	123-91-1
Ethanol	0.0026	10.00	0.0263	< 0.0263	< 0.0138	64-17-5
Ethyl acetate	0.0050	10.00	0.0503	< 0.0503	< 0.0138	141-78-6
Ethylbenzene	0.0066	10.00	0.0658	< 0.0658	< 0.0150	100-41-4
Hexane	0.0049	10.00	0.0492	< 0.0492	< 0.0138	110-54-3
Isopropanol	0.0034	10.00	0.0343	0.0617	0.0248	67-63-0
MEK	0.0041	10.00	0.0411	< 0.0411	< 0.0138	78-93-3
Methylene chloride	0.0048	10.00	0.0485	< 0.0485	< 0.0138	75-09-2
Styrene	0.0059	10.00	0.0594	2.3529	0.5453	100-42-5
Toluene	0.0051	10.00	0.0505	< 0.0505	< 0.0132	108-88-3
1,2,4-Trimethylbenzene	0.0069	10.00	0.0686	< 0.0686	< 0.0138	95-63-6
1,3,5-Trimethylbenzene	0.0084	10.00	0.0836	< 0.0836	< 0.0168	108-67-8
m,p-Xylenes	0.0132	10.00	0.1317	< 0.1317	< 0.0299	108-38-3, 106-42-3
o-Xylene	0.0066	10.00	0.0658	< 0.0658	< 0.0150	95-47-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**EA_190425-003**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B15285**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:47 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 07:29 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0122	10.00	0.1225	< 0.1225	< 0.0158	76-13-1
2-methyl-2-butanol	0.0053	10.00	0.0530	< 0.0530	< 0.0145	75-85-4
2-methylbutane	0.0043	10.00	0.0434	< 0.0434	< 0.0145	78-78-4
2-methylnaphthalene	0.0086	10.00	0.0855	< 0.0855	< 0.0145	91-57-6
Benzaldehyde	0.0064	10.00	0.0638	< 0.0638	< 0.0145	100-52-7
Benzoic acid	0.0073	10.00	0.0734	< 0.0734	< 0.0145	65-85-0
Ethylene glycol	0.0037	10.00	0.0373	< 0.0373	< 0.0145	107-21-1
Isopropylbenzene	0.0072	10.00	0.0723	< 0.0723	< 0.0145	98-82-8
Naphthalene	0.0077	10.00	0.0771	< 0.0771	< 0.0145	91-20-3
n-propyl benzene	0.0072	10.00	0.0723	< 0.0723	< 0.0145	103-65-1
p-isopropyltoluene	0.0081	10.00	0.0807	< 0.0807	< 0.0145	99-87-6
Propionitrile	0.0033	10.00	0.0331	< 0.0331	< 0.0145	107-12-0
Trans-1,3-dichloropropene	0.0067	10.00	0.0667	< 0.0667	< 0.0145	542-75-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**EA_190425-004**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B14895**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:47 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 08:25 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0033	10.00	0.0331	< 0.0331	< 0.0138	67-64-1
Benzene	0.0033	10.00	0.0333	< 0.0333	< 0.0103	71-43-2
1,3-Butadiene	0.0025	10.00	0.0253	< 0.0253	< 0.0113	106-99-0
Carbon Disulfide	0.0043	10.00	0.0434	< 0.0434	< 0.0138	75-15-0
Carbon tetrachloride	0.0086	10.00	0.0860	< 0.0860	< 0.0135	56-23-5
Chloroform	0.0068	10.00	0.0681	< 0.0681	< 0.0138	67-66-3
Cyclohexane	0.0048	10.00	0.0480	< 0.0480	< 0.0138	110-82-7
1,4-Dioxane	0.0050	10.00	0.0503	< 0.0503	< 0.0138	123-91-1
Ethanol	0.0026	10.00	0.0263	< 0.0263	< 0.0138	64-17-5
Ethyl acetate	0.0050	10.00	0.0503	< 0.0503	< 0.0138	141-78-6
Ethylbenzene	0.0066	10.00	0.0658	< 0.0658	< 0.0150	100-41-4
Hexane	0.0049	10.00	0.0492	< 0.0492	< 0.0138	110-54-3
Isopropanol	0.0034	10.00	0.0343	< 0.0343	< 0.0138	67-63-0
MEK	0.0041	10.00	0.0411	< 0.0411	< 0.0138	78-93-3
Methylene chloride	0.0048	10.00	0.0485	< 0.0485	< 0.0138	75-09-2
Styrene	0.0059	10.00	0.0594	1.8989	0.4401	100-42-5
Toluene	0.0051	10.00	0.0505	< 0.0505	< 0.0132	108-88-3
1,2,4-Trimethylbenzene	0.0069	10.00	0.0686	< 0.0686	< 0.0138	95-63-6
1,3,5-Trimethylbenzene	0.0084	10.00	0.0836	< 0.0836	< 0.0168	108-67-8
m,p-Xylenes	0.0132	10.00	0.1317	< 0.1317	< 0.0299	108-38-3, 106-42-3
o-Xylene	0.0066	10.00	0.0658	< 0.0658	< 0.0150	95-47-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**EA_190425-004**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B14895**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:47 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 08:25 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0122	10.00	0.1225	< 0.1225	< 0.0158	76-13-1
2-methyl-2-butanol	0.0053	10.00	0.0530	< 0.0530	< 0.0145	75-85-4
2-methylbutane	0.0043	10.00	0.0434	< 0.0434	< 0.0145	78-78-4
2-methylnaphthalene	0.0086	10.00	0.0855	< 0.0855	< 0.0145	91-57-6
Benzaldehyde	0.0064	10.00	0.0638	< 0.0638	< 0.0145	100-52-7
Benzoic acid	0.0073	10.00	0.0734	< 0.0734	< 0.0145	65-85-0
Ethylene glycol	0.0037	10.00	0.0373	< 0.0373	< 0.0145	107-21-1
Isopropylbenzene	0.0072	10.00	0.0723	< 0.0723	< 0.0145	98-82-8
Naphthalene	0.0077	10.00	0.0771	< 0.0771	< 0.0145	91-20-3
n-propyl benzene	0.0072	10.00	0.0723	< 0.0723	< 0.0145	103-65-1
p-isopropyltoluene	0.0081	10.00	0.0807	< 0.0807	< 0.0145	99-87-6
Propionitrile	0.0033	10.00	0.0331	< 0.0331	< 0.0145	107-12-0
Trans-1,3-dichloropropene	0.0067	10.00	0.0667	< 0.0667	< 0.0145	542-75-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**EA_190425-006**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B14576**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:47 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 09:21 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0033	10.00	0.0331	< 0.0331	< 0.0138	67-64-1
Benzene	0.0033	10.00	0.0333	< 0.0333	< 0.0103	71-43-2
1,3-Butadiene	0.0025	10.00	0.0253	< 0.0253	< 0.0113	106-99-0
Carbon Disulfide	0.0043	10.00	0.0434	< 0.0434	< 0.0138	75-15-0
Carbon tetrachloride	0.0086	10.00	0.0860	< 0.0860	< 0.0135	56-23-5
Chloroform	0.0068	10.00	0.0681	< 0.0681	< 0.0138	67-66-3
Cyclohexane	0.0048	10.00	0.0480	< 0.0480	< 0.0138	110-82-7
1,4-Dioxane	0.0050	10.00	0.0503	< 0.0503	< 0.0138	123-91-1
Ethanol	0.0026	10.00	0.0263	< 0.0263	< 0.0138	64-17-5
Ethyl acetate	0.0050	10.00	0.0503	< 0.0503	< 0.0138	141-78-6
Ethylbenzene	0.0066	10.00	0.0658	< 0.0658	< 0.0150	100-41-4
Hexane	0.0049	10.00	0.0492	< 0.0492	< 0.0138	110-54-3
Isopropanol	0.0034	10.00	0.0343	< 0.0343	< 0.0138	67-63-0
MEK	0.0041	10.00	0.0411	< 0.0411	< 0.0138	78-93-3
Methylene chloride	0.0048	10.00	0.0485	< 0.0485	< 0.0138	75-09-2
Styrene	0.0059	10.00	0.0594	2.5561 E	0.5924 E	100-42-5
Toluene	0.0051	10.00	0.0505	< 0.0505	< 0.0132	108-88-3
1,2,4-Trimethylbenzene	0.0069	10.00	0.0686	< 0.0686	< 0.0138	95-63-6
1,3,5-Trimethylbenzene	0.0084	10.00	0.0836	< 0.0836	< 0.0168	108-67-8
m,p-Xylenes	0.0132	10.00	0.1317	< 0.1317	< 0.0299	108-38-3, 106-42-3
o-Xylene	0.0066	10.00	0.0658	< 0.0658	< 0.0150	95-47-6

ENTHALPY ANALYTICAL

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**EA_190425-006**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B14576**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:47 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 09:21 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0122	10.00	0.1225	< 0.1225	< 0.0158	76-13-1
2-methyl-2-butanol	0.0053	10.00	0.0530	< 0.0530	< 0.0145	75-85-4
2-methylbutane	0.0043	10.00	0.0434	< 0.0434	< 0.0145	78-78-4
2-methylnaphthalene	0.0086	10.00	0.0855	< 0.0855	< 0.0145	91-57-6
Benzaldehyde	0.0064	10.00	0.0638	< 0.0638	< 0.0145	100-52-7
Benzoic acid	0.0073	10.00	0.0734	< 0.0734	< 0.0145	65-85-0
Ethylene glycol	0.0037	10.00	0.0373	< 0.0373	< 0.0145	107-21-1
Isopropylbenzene	0.0072	10.00	0.0723	< 0.0723	< 0.0145	98-82-8
Naphthalene	0.0077	10.00	0.0771	< 0.0771	< 0.0145	91-20-3
n-propyl benzene	0.0072	10.00	0.0723	< 0.0723	< 0.0145	103-65-1
p-isopropyltoluene	0.0081	10.00	0.0807	< 0.0807	< 0.0145	99-87-6
Propionitrile	0.0033	10.00	0.0331	< 0.0331	< 0.0145	107-12-0
Trans-1,3-dichloropropene	0.0067	10.00	0.0667	< 0.0667	< 0.0145	542-75-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**EA_190427-001**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B15289**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:50 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 10:17 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0033	10.00	0.0331	0.3088	0.1283	67-64-1
Benzene	0.0033	10.00	0.0332	< 0.0332	< 0.0103	71-43-2
1,3-Butadiene	0.0025	10.00	0.0252	< 0.0252	< 0.0113	106-99-0
Carbon Disulfide	0.0043	10.00	0.0433	< 0.0433	< 0.0137	75-15-0
Carbon tetrachloride	0.0086	10.00	0.0858	< 0.0858	< 0.0135	56-23-5
Chloroform	0.0068	10.00	0.0680	< 0.0680	< 0.0137	67-66-3
Cyclohexane	0.0048	10.00	0.0479	< 0.0479	< 0.0137	110-82-7
1,4-Dioxane	0.0050	10.00	0.0502	< 0.0502	< 0.0137	123-91-1
Ethanol	0.0026	10.00	0.0262	< 0.0262	< 0.0137	64-17-5
Ethyl acetate	0.0050	10.00	0.0502	< 0.0502	< 0.0137	141-78-6
Ethylbenzene	0.0066	10.00	0.0657	< 0.0657	< 0.0149	100-41-4
Hexane	0.0049	10.00	0.0491	< 0.0491	< 0.0137	110-54-3
Isopropanol	0.0034	10.00	0.0342	< 0.0342	< 0.0137	67-63-0
MEK	0.0041	10.00	0.0410	< 0.0410	< 0.0137	78-93-3
Methylene chloride	0.0048	10.00	0.0483	0.0493	0.0140	75-09-2
Styrene	0.0059	10.00	0.0593	< 0.0593	< 0.0137	100-42-5
Toluene	0.0050	10.00	0.0504	0.0585	0.0153	108-88-3
1,2,4-Trimethylbenzene	0.0068	10.00	0.0684	< 0.0684	< 0.0137	95-63-6
1,3,5-Trimethylbenzene	0.0083	10.00	0.0834	< 0.0834	< 0.0168	108-67-8
m,p-Xylenes	0.0131	10.00	0.1314	< 0.1314	< 0.0299	108-38-3, 106-42-3
o-Xylene	0.0066	10.00	0.0657	< 0.0657	< 0.0149	95-47-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**EA_190427-001**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B15289**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:50 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 10:17 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0122	10.00	0.1222	< 0.1222	< 0.0157	76-13-1
2-methyl-2-butanol	0.0053	10.00	0.0529	< 0.0529	< 0.0145	75-85-4
2-methylbutane	0.0043	10.00	0.0433	< 0.0433	< 0.0145	78-78-4
2-methylnaphthalene	0.0085	10.00	0.0853	< 0.0853	< 0.0145	91-57-6
Benzaldehyde	0.0064	10.00	0.0637	< 0.0637	< 0.0145	100-52-7
Benzoic acid	0.0073	10.00	0.0733	< 0.0733	< 0.0145	65-85-0
Ethylene glycol	0.0037	10.00	0.0373	< 0.0373	< 0.0145	107-21-1
Isopropylbenzene	0.0072	10.00	0.0721	< 0.0721	< 0.0145	98-82-8
Naphthalene	0.0077	10.00	0.0769	< 0.0769	< 0.0145	91-20-3
n-propyl benzene	0.0072	10.00	0.0721	< 0.0721	< 0.0145	103-65-1
p-isopropyltoluene	0.0081	10.00	0.0805	< 0.0805	< 0.0145	99-87-6
Propionitrile	0.0033	10.00	0.0331	< 0.0331	< 0.0145	107-12-0
Trans-1,3-dichloropropene	0.0067	10.00	0.0666	< 0.0666	< 0.0145	542-75-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**EA_190427-002**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B15278 (No cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:50 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 11:14 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0033	10.00	0.0331	0.0390	0.0162	67-64-1
Benzene	0.0033	10.00	0.0332	< 0.0332	< 0.0103	71-43-2
1,3-Butadiene	0.0025	10.00	0.0252	< 0.0252	< 0.0113	106-99-0
Carbon Disulfide	0.0043	10.00	0.0433	< 0.0433	< 0.0137	75-15-0
Carbon tetrachloride	0.0086	10.00	0.0858	< 0.0858	< 0.0135	56-23-5
Chloroform	0.0068	10.00	0.0680	< 0.0680	< 0.0137	67-66-3
Cyclohexane	0.0048	10.00	0.0479	< 0.0479	< 0.0137	110-82-7
1,4-Dioxane	0.0050	10.00	0.0502	< 0.0502	< 0.0137	123-91-1
Ethanol	0.0026	10.00	0.0262	< 0.0262	< 0.0137	64-17-5
Ethyl acetate	0.0050	10.00	0.0502	< 0.0502	< 0.0137	141-78-6
Ethylbenzene	0.0066	10.00	0.0657	< 0.0657	< 0.0149	100-41-4
Hexane	0.0049	10.00	0.0491	< 0.0491	< 0.0137	110-54-3
Isopropanol	0.0034	10.00	0.0342	< 0.0342	< 0.0137	67-63-0
MEK	0.0041	10.00	0.0410	< 0.0410	< 0.0137	78-93-3
Methylene chloride	0.0048	10.00	0.0483	< 0.0483	< 0.0137	75-09-2
Styrene	0.0059	10.00	0.0593	3.0913 E	0.7165 E	100-42-5
Toluene	0.0050	10.00	0.0504	< 0.0504	< 0.0132	108-88-3
1,2,4-Trimethylbenzene	0.0068	10.00	0.0684	< 0.0684	< 0.0137	95-63-6
1,3,5-Trimethylbenzene	0.0083	10.00	0.0834	< 0.0834	< 0.0168	108-67-8
m,p-Xylenes	0.0131	10.00	0.1314	< 0.1314	< 0.0299	108-38-3, 106-42-3
o-Xylene	0.0066	10.00	0.0657	< 0.0657	< 0.0149	95-47-6

ENTHALPY ANALYTICAL

Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**EA_190427-002**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B15278 (No cap)**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:50 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/12/2019 at 11:14 PM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0122	10.00	0.1222	< 0.1222	< 0.0157	76-13-1
2-methyl-2-butanol	0.0053	10.00	0.0529	< 0.0529	< 0.0145	75-85-4
2-methylbutane	0.0043	10.00	0.0433	< 0.0433	< 0.0145	78-78-4
2-methylnaphthalene	0.0085	10.00	0.0853	< 0.0853	< 0.0145	91-57-6
Benzaldehyde	0.0064	10.00	0.0637	< 0.0637	< 0.0145	100-52-7
Benzoic acid	0.0073	10.00	0.0733	< 0.0733	< 0.0145	65-85-0
Ethylene glycol	0.0037	10.00	0.0373	< 0.0373	< 0.0145	107-21-1
Isopropylbenzene	0.0072	10.00	0.0721	< 0.0721	< 0.0145	98-82-8
Naphthalene	0.0077	10.00	0.0769	< 0.0769	< 0.0145	91-20-3
n-propyl benzene	0.0072	10.00	0.0721	< 0.0721	< 0.0145	103-65-1
p-isopropyltoluene	0.0081	10.00	0.0805	< 0.0805	< 0.0145	99-87-6
Propionitrile	0.0033	10.00	0.0331	< 0.0331	< 0.0145	107-12-0
Trans-1,3-dichloropropene	0.0067	10.00	0.0666	< 0.0666	< 0.0145	542-75-6

ENTHALPY ANALYTICAL

Laboratory Analysis Report

Sample Results

Test:	Analysis by Method TO-17		
Client Name:	U.S. Army		
Sample Number:	**EA_190427-007**		
Analytical SOP:	GSL_TM012	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B15268**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:37 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/13/2019 at 12:11 AM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
Acetone	0.0029	10.00	0.0293	< 0.0293	< 0.0122	67-64-1
Benzene	0.0029	10.00	0.0294	< 0.0294	< 0.0091	71-43-2
1,3-Butadiene	0.0022	10.00	0.0223	< 0.0223	< 0.0100	106-99-0
Carbon Disulfide	0.0038	10.00	0.0384	< 0.0384	< 0.0122	75-15-0
Carbon tetrachloride	0.0076	10.00	0.0760	< 0.0760	< 0.0119	56-23-5
Chloroform	0.0060	10.00	0.0602	< 0.0602	< 0.0122	67-66-3
Cyclohexane	0.0042	10.00	0.0424	< 0.0424	< 0.0122	110-82-7
1,4-Dioxane	0.0044	10.00	0.0444	< 0.0444	< 0.0122	123-91-1
Ethanol	0.0023	10.00	0.0232	0.0241	0.0127	64-17-5
Ethyl acetate	0.0044	10.00	0.0444	< 0.0444	< 0.0122	141-78-6
Ethylbenzene	0.0058	10.00	0.0582	< 0.0582	< 0.0132	100-41-4
Hexane	0.0043	10.00	0.0434	< 0.0434	< 0.0122	110-54-3
Isopropanol	0.0030	10.00	0.0303	< 0.0303	< 0.0122	67-63-0
MEK	0.0036	10.00	0.0363	< 0.0363	< 0.0122	78-93-3
Methylene chloride	0.0043	10.00	0.0428	< 0.0428	< 0.0122	75-09-2
Styrene	0.0052	10.00	0.0525	1.8508	0.4290	100-42-5
Toluene	0.0045	10.00	0.0447	< 0.0447	< 0.0117	108-88-3
1,2,4-Trimethylbenzene	0.0061	10.00	0.0606	< 0.0606	< 0.0122	95-63-6
1,3,5-Trimethylbenzene	0.0074	10.00	0.0739	< 0.0739	< 0.0148	108-67-8
m,p-Xylenes	0.0116	10.00	0.1163	< 0.1163	< 0.0264	108-38-3, 106-42-3
o-Xylene	0.0058	10.00	0.0582	< 0.0582	< 0.0132	95-47-6

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Laboratory Analysis Report

Sample Results

Test:	Analysis by GC/MS, TICs Search		
Client Name:	U.S. Army		
Sample Number:	**EA_190427-007**		
Analytical SOP:	GSL_TM004	**Source Sampled:**	**Aurora CO**
Analysis Location:	Deer Park, TX	**Client Sample ID:**	**B15268**
Instrument ID:	GC/MS #1 - Agilent	**Date Sampled:**	5/14/2019 at 04:37 PM
Sample Analyst:	Dhan Yeddula	**Date Analyzed:**	6/13/2019 at 12:11 AM
QC Batch ID:	QC_09929	**Matrix:**	Air

Parameter	MQL (mg/m3)	DF	SQL (mg/m3)	Result (mg/m3)	Result (ppmv)	CAS #
1,1,2-trichloro-1,2,2-trifluoroethane	0.0108	10.00	0.1082	< 0.1082	< 0.0139	76-13-1
2-methyl-2-butanol	0.0047	10.00	0.0468	< 0.0468	< 0.0128	75-85-4
2-methylbutane	0.0038	10.00	0.0383	< 0.0383	< 0.0128	78-78-4
2-methylnaphthalene	0.0076	10.00	0.0756	< 0.0756	< 0.0128	91-57-6
Benzaldehyde	0.0056	10.00	0.0564	< 0.0564	< 0.0128	100-52-7
Benzoic acid	0.0065	10.00	0.0649	< 0.0649	< 0.0128	65-85-0
Ethylene glycol	0.0033	10.00	0.0330	< 0.0330	< 0.0128	107-21-1
Isopropylbenzene	0.0064	10.00	0.0639	< 0.0639	< 0.0128	98-82-8
Naphthalene	0.0068	10.00	0.0681	< 0.0681	< 0.0128	91-20-3
n-propyl benzene	0.0064	10.00	0.0639	< 0.0639	< 0.0128	103-65-1
p-isopropyltoluene	0.0071	10.00	0.0713	< 0.0713	< 0.0128	99-87-6
Propionitrile	0.0029	10.00	0.0293	< 0.0293	< 0.0128	107-12-0
Trans-1,3-dichloropropene	0.0059	10.00	0.0590	< 0.0590	< 0.0128	542-75-6

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Laboratory Analysis Report

Quality Control Information

Surrogate Recovery

Test: Analysis by Method TO-15
Date Analyzed: 6/3/2019
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09914

Sample Number	Parameter	Analysis Time	Spike Amount (ppbv)	Surrogate Result (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
CCV	Bromofluorobenzene	8:28 AM	10.00	9.05	90	60 - 140	
LCS	Bromofluorobenzene	9:24 AM	10.00	9.76	98	60 - 140	
BLANK	Bromofluorobenzene	10:21 AM	10.00	11.60	116	60 - 140	
EA_190424-002DL	Bromofluorobenzene	1:34 PM	10.00	29.94	299	60 - 140	H
EA_190424-003DL	Bromofluorobenzene	2:28 PM	10.00	14.47	145	60 - 140	H
EA_190424-001	Bromofluorobenzene	3:23 PM	10.00	12.42	124	60 - 140	
EA_190424-003	Bromofluorobenzene	4:19 PM	10.00	11.31	113	60 - 140	
EA_190425-001DL	Bromofluorobenzene	5:13 PM	10.00	18.10	181	60 - 140	H
EA_190426-001DL	Bromofluorobenzene	6:06 PM	10.00	23.58	236	60 - 140	H
EA_190425-001	Bromofluorobenzene	7:01 PM	10.00	25.73	257	60 - 140	H
EA_190426-001	Bromofluorobenzene	7:57 PM	10.00	0.76	8	60 - 140	L

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Laboratory Analysis Report

Quality Control Information

Surrogate Recovery

Test: Analysis by Method TO-17
Date Analyzed: 6/12/2019
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09929

Sample Number	Parameter	Analysis Time	Spike Amount (ppbv)	Surrogate Result (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
CCV	Bromofluorobenzene	10:58 AM	10.00	10.79	108	60 - 140	
BLANK	Bromofluorobenzene	12:54 PM	10.00	11.07	111	60 - 140	
LCS	Bromofluorobenzene	2:49 PM	10.00	13.74	137	60 - 140	
EA_190424-004 (10x)	Bromofluorobenzene	3:45 PM	10.00	13.93	139	60 - 140	
EA_190424-005 (10x)	Bromofluorobenzene	4:41 PM	10.00	11.70	117	60 - 140	
EA_190424-006 (10x)	Bromofluorobenzene	5:37 PM	10.00	11.51	115	60 - 140	
EA_190424-007 (10x)	Bromofluorobenzene	6:33 PM	10.00	12.04	120	60 - 140	
EA_190425-003 (10x)	Bromofluorobenzene	7:29 PM	10.00	12.56	126	60 - 140	
EA_190425-004 (10x)	Bromofluorobenzene	8:25 PM	10.00	13.52	135	60 - 140	
EA_190425-006 (10x)	Bromofluorobenzene	9:21 PM	10.00	11.87	119	60 - 140	
EA_190427-001 (10x)	Bromofluorobenzene	10:17 PM	10.00	10.97	110	60 - 140	
EA_190427-002 (10x)	Bromofluorobenzene	11:14 PM	10.00	12.43	124	60 - 140	

ENTHALPY ANALYTICAL

Laboratory Analysis Report

Quality Control Information

Surrogate Recovery

Test: Analysis by Method TO-17
Date Analyzed: 6/13/2019
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09929

Sample Number	Parameter	Analysis Time	Spike Amount (ppbv)	Surrogate Result (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
EA_190427-007 (10x)	Bromofluorobenzene	12:11 AM	10.00	12.30	123	60 - 140	
Duplicate	Bromofluorobenzene	1:07 AM	10.00	11.69	117	60 - 140	

ENTHALPY ANALYTICAL

Laboratory Analysis Report

Quality Control Information

Sample Duplicate Recovery

Test: Analysis by Method TO-15
Duplicate Sample Number: EA_190424-001
Duplicate Sample Dilution: 15.70x
Date Analyzed: 6/3/2019 at 12:40 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09914

Parameter	SQL (ppbv)	Sample Result (ppbv)	Duplicate Result (ppbv)	RPD (%)	RPD Limit (%)	Flag
1,3-Butadiene	7.85	< 7.85	< 7.85	NC	20	
Ethanol	7.85	< 7.85	< 7.85	NC	20	
Acetone	7.85	217.29	249.47	14	20	
Isopropanol	7.85	< 7.85	< 7.85	NC	20	
Methylene Chloride	7.85	18.21	20.41	11	20	
Carbon disulfide	7.85	< 7.85	< 7.85	NC	20	
MEK	7.85	< 7.85	< 7.85	NC	20	
Hexane	7.85	65.78	62.49	5	20	
Chloroform	7.85	< 7.85	< 7.85	NC	20	
Ethyl Acetate	7.85	< 7.85	< 7.85	NC	20	
Benzene	7.85	< 7.85	< 7.85	NC	20	
Carbon tetrachloride	7.85	< 7.85	< 7.85	NC	20	
Cyclohexane	7.85	< 7.85	< 7.85	NC	20	
1,4-Dioxane	7.85	< 7.85	< 7.85	NC	20	
Toluene	7.85	< 7.85	< 7.85	NC	20	
Ethylbenzene	7.85	< 7.85	< 7.85	NC	20	
m,p-Xylenes	15.70	< 15.70	< 15.70	NC	20	
Styrene	7.85	< 7.85	< 7.85	NC	20	
o-Xylene	7.85	< 7.85	< 7.85	NC	20	
1,3,5-Trimethylbenzene	7.85	< 7.85	< 7.85	NC	20	
1,2,4-Trimethylbenzene	7.85	< 7.85	< 7.85	NC	20	

ENTHALPY ANALYTICAL

Laboratory Analysis Report

Quality Control Information

Sample Duplicate Recovery

Test: Analysis by Method TO-17
Duplicate Sample Number: EA_190427-007
Duplicate Sample Dilution: 10.00x
Date Analyzed: 6/13/2019 at 01:07 AM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09929

Parameter	SQL (ppbv)	Sample Result (ppbv)	Duplicate Result (ppbv)	RPD (%)	RPD Limit (%)	Flag
Acetone	5.00	< 5.00	< 5.00	NC	20	
Benzene	5.00	< 5.00	< 5.00	NC	20	
1,3-butadiene	5.00	< 5.00	< 5.00	NC	20	
Carbon disulfide	5.00	< 5.00	< 5.00	NC	20	
Carbon tetrachloride	5.00	< 5.00	< 5.00	NC	20	
Chloroform	5.00	< 5.00	< 5.00	NC	20	
Cyclohexane	5.00	< 5.00	< 5.00	NC	20	
1,4-dioxane	5.00	< 5.00	< 5.00	NC	20	
Ethanol	5.00	5.20	< 5.00	NC	20	
Ethyl acetate	5.00	< 5.00	< 5.00	NC	20	
Ethylbenzene	5.00	< 5.00	< 5.00	NC	20	
Hexane	5.00	< 5.00	< 5.00	NC	20	
Isopropanol	5.00	< 5.00	< 5.00	NC	20	
MEK	5.00	< 5.00	< 5.00	NC	20	
Methylene chloride	5.00	< 5.00	< 5.00	NC	20	
Styrene	5.00	176.30	186.90	6	20	
Toluene	5.00	< 5.00	< 5.00	NC	20	
1,2,4-trimethylbenzene	5.00	< 5.00	< 5.00	NC	20	
1,3,5-trimethylbenzene	5.00	< 5.00	< 5.00	NC	20	
m,p-Xylenes	10.00	< 10.00	< 10.00	NC	20	
o-xylene	5.00	< 5.00	< 5.00	NC	20	

ENTHALPY ANALYTICAL

Laboratory Analysis Report

Quality Control Information

Blank Analysis

Test: Analysis by Method TO-15
Date Analyzed: 6/3/2019 at 10:21 AM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09914

Parameter	CAS #	MQL (ppbv)	Blank Result (ppbv)	Flag
1,3-Butadiene	106-99-0	0.50	< 0.50	
Ethanol	64-17-5	0.50	< 0.50	
Acetone	67-64-1	0.50	< 0.50	
Isopropanol	67-63-0	0.50	< 0.50	
Methylene Chloride	75-09-2	0.50	< 0.50	
Carbon disulfide	75-15-0	0.50	< 0.50	
MEK	78-93-3	0.50	< 0.50	
Hexane	110-54-3	0.50	< 0.50	
Chloroform	67-66-3	0.50	< 0.50	
Ethyl Acetate	141-78-6	0.50	< 0.50	
Benzene	71-43-2	0.50	< 0.50	
Carbon tetrachloride	56-23-5	0.50	< 0.50	
Cyclohexane	110-82-7	0.50	< 0.50	
1,4-Dioxane	123-91-1	0.50	< 0.50	
Toluene	108-88-3	0.50	< 0.50	
Ethylbenzene	100-41-4	0.50	< 0.50	
m,p-Xylenes	108-38-3, 106-42-3	1.00	< 1.00	
Styrene	100-42-5	0.50	< 0.50	
o-Xylene	95-47-6	0.50	< 0.50	
1,3,5-Trimethylbenzene	108-67-8	0.50	< 0.50	
1,2,4-Trimethylbenzene	95-63-6	0.50	< 0.50	

ENTHALPY ANALYTICAL

Laboratory Analysis Report

Quality Control Information

Blank Analysis

Test: Analysis by Method TO-17
Date Analyzed: 6/12/2019 at 12:54 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09929

Parameter	CAS #	MQL (ppbv)	Blank Result (ppbv)	Flag
Acetone	67-64-1	0.50	< 0.50	
Benzene	71-43-2	0.50	< 0.50	
1,3-butadiene	106-99-0	0.50	< 0.50	
Carbon disulfide	75-15-0	0.50	< 0.50	
Carbon tetrachloride	56-23-5	0.50	< 0.50	
Chloroform	67-66-3	0.50	< 0.50	
Cyclohexane	110-82-7	0.50	< 0.50	
1,4-dioxane	123-91-1	0.50	< 0.50	
Ethanol	64-17-5	0.50	< 0.50	
Ethyl acetate	141-78-6	0.50	< 0.50	
Ethylbenzene	100-41-4	0.50	< 0.50	
Hexane	110-54-3	0.50	< 0.50	
Isopropanol	67-63-0	0.50	< 0.50	
MEK	78-93-3	0.50	< 0.50	
Methylene chloride	75-09-2	0.50	< 0.50	
Styrene	100-42-5	0.50	< 0.50	
Toluene	108-88-3	0.50	< 0.50	
1,2,4-trimethylbenzene	95-63-6	0.50	< 0.50	
1,3,5-trimethylbenzene	108-67-8	0.50	< 0.50	
m,p-Xylenes	108-38-3, 106-42-3	1.00	< 1.00	
o-xylene	95-47-6	0.50	< 0.50	

ENTHALPY ANALYTICAL

Laboratory Analysis Report

Quality Control Information

Laboratory Control Sample

Test: Analysis by Method TO-15
Date Analyzed: 6/3/2019 at 09:24 AM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09914

Parameter	LCS Result (ppbv)	Spike Amount (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
1,3-Butadiene	3.69	5.00	74	65 - 135	
Ethanol	4.29	5.00	86	65 - 135	
Acetone	3.07	5.00	61	65 - 135	L
Isopropanol	3.24	5.00	65	65 - 135	
Methylene Chloride	3.66	5.00	73	65 - 135	
Carbon disulfide	3.99	5.00	80	65 - 135	
MEK	3.50	5.00	70	65 - 135	
Hexane	4.18	5.00	84	65 - 135	
Chloroform	3.76	5.00	75	65 - 135	
Ethyl Acetate	3.38	5.00	68	65 - 135	
Benzene	3.86	5.00	77	65 - 135	
Carbon tetrachloride	4.26	5.00	85	65 - 135	
Cyclohexane	4.05	5.00	81	65 - 135	
1,4-Dioxane	3.98	5.00	80	65 - 135	
Toluene	3.30	5.00	66	65 - 135	
Ethylbenzene	3.08	5.00	62	65 - 135	L
m,p-Xylenes	5.73	10.00	57	65 - 135	L
Styrene	3.29	5.00	66	65 - 135	
o-Xylene	2.67	5.00	53	65 - 135	L
1,3,5-Trimethylbenzene	2.79	5.00	56	65 - 135	L
1,2,4-Trimethylbenzene	2.69	5.00	54	65 - 135	L

ENTHALPY ANALYTICAL

Laboratory Analysis Report

Quality Control Information

Laboratory Control Sample

Test: Analysis by Method TO-17
Date Analyzed: 6/12/2019 at 02:49 PM
Matrix: Air
Instrument ID: GC/MS #1 - Agilent
Analyst: Dhan Yeddula
QC Batch ID: QC_09929

Parameter	LCS Result (ppbv)	Spike Amount (ppbv)	Percent Recovery	Percent Recovery Limit	Flag
Acetone	4.10	5.00	82	65 - 135	
Benzene	5.42	5.00	108	65 - 135	
1,3-butadiene	4.90	5.00	98	65 - 135	
Carbon disulfide	6.00	5.00	120	65 - 135	
Carbon tetrachloride	5.89	5.00	118	65 - 135	
Chloroform	5.28	5.00	106	65 - 135	
Cyclohexane	5.74	5.00	115	65 - 135	
1,4-dioxane	5.42	5.00	108	65 - 135	
Ethanol	5.51	5.00	110	65 - 135	
Ethyl acetate	4.43	5.00	89	65 - 135	
Ethylbenzene	4.77	5.00	95	65 - 135	
Hexane	5.61	5.00	112	65 - 135	
Isopropanol	4.45	5.00	89	65 - 135	
MEK	4.78	5.00	96	65 - 135	
Methylene chloride	4.41	5.00	88	65 - 135	
Styrene	5.54	5.00	111	65 - 135	
Toluene	5.18	5.00	104	65 - 135	
1,2,4-trimethylbenzene	5.16	5.00	103	65 - 135	
1,3,5-trimethylbenzene	4.79	5.00	96	65 - 135	
m,p-Xylenes	9.34	10.00	93	65 - 135	
o-xylene	5.09	5.00	102	65 - 135	

Data Qualifiers and Flags

- MDL – Method Detection Limit
- MQL – Method Quantitation Limit
- SDL – Sample Detection Limit
- SQL – Sample Quantitation Limit
- RPD - Relative Percent Difference
- J – Target analyte is between the MDL and SQL values.
- L – Target analyte recovered below the recovery limits.
- H – Target analyte recovered above the recovery limits.
- B – Target analyte identified in blank run.
- F – RPD/RSD is outside the control limits.
- NC – Not calculated due to division by zero, or negative spike recovery.
- M – Target analyte reported outside control limit due to matrix interference.
- E – Estimated; Target analyte is above the Upper Quantitation Limit, or estimated due to other issue(s) noted in narrative.
- ND - Non-detect; analyte is below the MDL value, or TIC not detected in GC/MS scan.
- A - Sample analyzed outside holding time.
- C - Sample analyzed by FTIR; results estimated.
- I - Internal standard outside acceptable response range.

Enthalpy Analytical, LLC
Houston

931 Seaco Court
Deer Park, TX 77536

USACE

Aurora, CO
Client Project # EA_190424-427

Analytical Report
(0419-152)

EPA Method TO-15

TO-15 Target Compound List

Compound Identification by GC/MS

2-Methyl-2-butanol, 2-Methylbutane, 2-Methylnaphthalene,
Benzaldehyde, Benzoic acid, Ethylene glycol,
p-Isopropyltoluene, Propionitrile

Enthalpy Analytical, LLC
Phone: (919) 850 - 4392 / Fax: (919) 850 - 9012 / www.enthalpy.com
800-1 Capitola Dr. Durham, NC 27713

I certify that to the best of my knowledge all analytical data presented in this report:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized in the appropriate narrative(s)

This analytical report was prepared in Portable Document Format (.PDF) and contains 45 pages.

Kristen H Bounds

QA Reviewed by – Kristen H. Bounds

Report Issued: 06/03/2019

ENTHALPY ANALYTICAL

Results

Sample Name	: Dup-1620-Truck
Sample Info	: 0419-152; xfer #1620 to Can#3851; *500=1mL; MP#2
Data File	: X1901617.D
Dilution	: 500
Pressurization Factor	: 37.503
Acquisition Date	: 2019-05-29 13:58:07
Instrument Method	: TO15-SCN.M
Matrix	: AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
1,3-Butadiene	ND	733	656	ND	1,621	1,452	
Ethanol	ND	1,875	1,875	ND	3,533	3,533	
Freon 113 (C2Cl3F3)	ND	746	656	ND	5,719	5,030	
Acetone	1,483	754	656	3,523	1,791	1,559	
Carbon disulfide	ND	753	656	ND	2,345	2,044	
Isopropyl alcohol	ND	753	656	ND	1,851	1,613	
Methylene chloride	712	759	656	2,474	2,638	2,280	J
Hexane	ND	758	656	ND	2,673	2,313	
Methyl ethyl ketone (2-Butanone)	ND	762	656	ND	2,247	1,936	
Ethyl acetate	ND	755	656	ND	2,722	2,365	
Chloroform	ND	758	656	ND	3,702	3,204	
Cyclohexane	ND	763	656	ND	2,626	2,259	
Carbon tetrachloride	ND	759	656	ND	4,775	4,129	
Benzene	ND	749	656	ND	2,391	2,097	
1,4-Dioxane	ND	758	656	ND	2,733	2,365	
Toluene	ND	762	656	ND	2,872	2,473	
trans-1,3-Dichloropropene	ND	762	656	ND	3,459	2,979	
Ethylbenzene	ND	738	656	ND	3,205	2,850	
m-/p-Xylenes	ND	760	656	ND	3,299	2,850	
o-Xylene	ND	749	656	ND	3,254	2,850	
Styrene	315,709	731	656	1,344,820	3,112	2,796	
1,3,5-Trimethylbenzene	ND	752	656	ND	3,698	3,226	
1,2,4-Trimethylbenzene	ND	746	656	ND	3,665	3,226	
Naphthalene	ND	776	656	ND	4,070	3,440	
Isopropylbenzene	ND	761	656	ND	3,743	3,226	
n-Propylbenzene	ND	763	656	ND	3,750	3,226	

Internal Standards	Response	Retention Time (min)	Concentration (PPBV)	Flag *
Bromochloromethane (IS)	845,886	11.93	5.00	PASS
1,4-Difluorobenzene (IS)	3,268,415	13.70	5.04	PASS
Chlorobenzene-d5 (IS)	2,599,572	17.87	4.80	PASS

(ND) = Not Detected
*** (J) = Below Calibration Range, (E) = Above Calibration Range, (m) = Manual Integration**
IS Acceptance Criteria: RT +/- 20 sec, Response +/- 40%

Sample Name	: Dup-1075-Manhole
Sample Info	: 0419-152; xfer #1075 to Can#4036; *2=250mL load; MP#2
Data File	: X1901619.D
Dilution	: 2
Pressurization Factor	: 72.465
Acquisition Date	: 2019-05-29 15:38:41
Instrument Method	: TO15-SCN.M
Matrix	: AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
1,3-Butadiene	ND	5.66	5.07	ND	12.5	11.2	
Ethanol	ND	14.5	14.5	ND	27.3	27.3	
Freon 113 (C2Cl3F3)	ND	5.77	5.07	ND	44.2	38.9	
Acetone	145	5.83	5.07	344	13.8	12.0	
Carbon disulfide	20.9	5.82	5.07	65.0	18.1	15.8	
Isopropyl alcohol	ND	5.82	5.07	ND	14.3	12.5	
Methylene chloride	6.80	5.87	5.07	23.6	20.4	17.6	
Hexane	ND	5.86	5.07	ND	20.7	17.9	
Methyl ethyl ketone (2-Butanone)	ND	5.89	5.07	ND	17.4	15.0	
Ethyl acetate	ND	5.84	5.07	ND	21.0	18.3	
Chloroform	ND	5.86	5.07	ND	28.6	24.8	
Cyclohexane	ND	5.90	5.07	ND	20.3	17.5	
Carbon tetrachloride	ND	5.87	5.07	ND	36.9	31.9	
Benzene	ND	5.79	5.07	ND	18.5	16.2	
1,4-Dioxane	ND	5.86	5.07	ND	21.1	18.3	
Toluene	ND	5.89	5.07	ND	22.2	19.1	
trans-1,3-Dichloropropene	ND	5.89	5.07	ND	26.7	23.0	
Ethylbenzene	8.92	5.70	5.07	38.8	24.8	22.0	
m-/p-Xylenes	14.1	5.87	5.07	61.3	25.5	22.0	
o-Xylene	7.53	5.79	5.07	32.7	25.1	22.0	
Styrene	1,311	5.65	5.07	5,583	24.1	21.6	
1,3,5-Trimethylbenzene	ND	5.81	5.07	ND	28.6	24.9	
1,2,4-Trimethylbenzene	ND	5.76	5.07	ND	28.3	24.9	
Naphthalene	ND	6.00	5.07	ND	31.5	26.6	
Isopropylbenzene	ND	5.88	5.07	ND	28.9	24.9	
n-Propylbenzene	ND	5.90	5.07	ND	29.0	24.9	

Internal Standards	Response	Retention Time (min)	Concentration (PPBV)	Flag *
Bromochloromethane (IS)	865,659	11.94	5.00	PASS
1,4-Difluorobenzene (IS)	3,315,258	13.70	5.04	PASS
Chlorobenzene-d5 (IS)	2,670,032	17.87	4.80	PASS

(ND) = Not Detected
*** (J) = Below Calibration Range, (E) = Above Calibration Range, (m) = Manual Integration**
IS Acceptance Criteria: RT +/- 20 sec, Response +/- 40%

Company	Enthalpy - Houston
Analyst	TDD
Parameters	GC/MS VOA Scan

Client #	EA_190424-427
Job #	0419-152
# Samples	2 Canisters

Sample ID: **Dup-1620-Truck** DF: 500
Data File: X1901617.D Tank DF: 37.503
Tank/Misc ID: 0419-152; xfer #1620 to Can#3851; *500=1mL loop load

Compound	CAS#	MW	Ret. Time (min)	Area	MDL (ppbv)	Sample Conc. (ppbv)
2-Methyl-2-butanol	75-85-4	88.15			1,875	ND
2-Methylbutane	78-78-4	72.15			1,875	ND
2-Methylnaphthalene	91-57-6	142.2			1,875	ND
Benzaldehyde	100-52-7	106.1			1,875	ND
Benzoic acid	65-85-0	122.1			1,875	ND
Ethylene glycol	107-21-1	62.07			1,875	ND
p-Isopropyltoluene	99-87-6	134.2			1,875	ND
Propionitrile	107-12-0	55.08			1,875	ND

Company	Enthalpy - Houston
Analyst	TDD
Parameters	GC/MS VOA Scan

Client #	EA_190424-427
Job #	0419-152
# Samples	2 Canisters

Sample ID: **Dup-1075-Manhole** DF: 2.00
Data File: X1901619.D Tank DF: 72.465
Tank/Misc ID: 0419-152; xfer #1075 to Can#4036; *2=250mL load

Compound	CAS#	MW	Ret. Time (min)	Area	MDL (ppbv)	Sample Conc. (ppbv)
2-Methyl-2-butanol	75-85-4	88.15			14.5	ND
2-Methylbutane	78-78-4	72.15			14.5	ND
2-Methylnaphthalene	91-57-6	142.2			14.5	ND
Benzaldehyde	100-52-7	106.1			14.5	ND
Benzoic acid	65-85-0	122.1			14.5	ND
Ethylene glycol	107-21-1	62.07			14.5	ND
p-Isopropyltoluene	99-87-6	134.2			14.5	ND
Propionitrile	107-12-0	55.08			14.5	ND

Lab QC

Sample Name	: Dup-1075-Manhole LD
Sample Info	: 0419-152; xfer #1075 to Can#4036; *2=250mL load; MP#2
Data File	: X1901620.D
Dilution	: 2
Pressurization Factor	: 72.465
Acquisition Date	: 2019-05-29 16:28:39
Instrument Method	: TO15-SCN.M
Matrix	: AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
1,3-Butadiene	ND	5.66	5.07	ND	12.5	11.2	
Ethanol	ND	14.5	14.5	ND	27.3	27.3	
Freon 113 (C2Cl3F3)	ND	5.77	5.07	ND	44.2	38.9	
Acetone	148	5.83	5.07	350	13.8	12.0	
Carbon disulfide	22.1	5.82	5.07	68.7	18.1	15.8	
Isopropyl alcohol	ND	5.82	5.07	ND	14.3	12.5	
Methylene chloride	7.51	5.87	5.07	26.1	20.4	17.6	
Hexane	ND	5.86	5.07	ND	20.7	17.9	
Methyl ethyl ketone (2-Butanone)	ND	5.89	5.07	ND	17.4	15.0	
Ethyl acetate	ND	5.84	5.07	ND	21.0	18.3	
Chloroform	ND	5.86	5.07	ND	28.6	24.8	
Cyclohexane	ND	5.90	5.07	ND	20.3	17.5	
Carbon tetrachloride	ND	5.87	5.07	ND	36.9	31.9	
Benzene	ND	5.79	5.07	ND	18.5	16.2	
1,4-Dioxane	ND	5.86	5.07	ND	21.1	18.3	
Toluene	ND	5.89	5.07	ND	22.2	19.1	
trans-1,3-Dichloropropene	ND	5.89	5.07	ND	26.7	23.0	
Ethylbenzene	8.36	5.70	5.07	36.3	24.8	22.0	
m-/p-Xylenes	14.0	5.87	5.07	60.8	25.5	22.0	
o-Xylene	7.61	5.79	5.07	33.0	25.1	22.0	
Styrene	1,325	5.65	5.07	5,645	24.1	21.6	
1,3,5-Trimethylbenzene	ND	5.81	5.07	ND	28.6	24.9	
1,2,4-Trimethylbenzene	ND	5.76	5.07	ND	28.3	24.9	
Naphthalene	ND	6.00	5.07	ND	31.5	26.6	
Isopropylbenzene	ND	5.88	5.07	ND	28.9	24.9	
n-Propylbenzene	ND	5.90	5.07	ND	29.0	24.9	

Internal Standards	Response	Retention Time (min)	Concentration (PPBV)	Flag *
Bromochloromethane (IS)	862,829	11.94	5.00	PASS
1,4-Difluorobenzene (IS)	3,321,880	13.70	5.04	PASS
Chlorobenzene-d5 (IS)	2,617,305	17.87	4.80	PASS

(ND) = Not Detected
*** (J) = Below Calibration Range, (E) = Above Calibration Range, (m) = Manual Integration**
IS Acceptance Criteria: RT +/- 20 sec, Response +/- 40%

Sample Name	: Humid Blank
Sample Info	: Can#0702; 500mL load; MP#3
Data File	: X1901613.D
Dilution	: 1
Pressurization Factor	: 1.000
Acquisition Date	: 2019-05-29 10:24:03
Instrument Method	: TO15-SCN.M
Matrix	: AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
1,3-Butadiene	ND	0.0391	0.0350	ND	0.0865	0.0774	
Ethanol	ND	0.100	0.100	ND	0.188	0.188	
Freon 113 (C2Cl3F3)	ND	0.0398	0.0350	ND	0.305	0.268	
Acetone	0.0357	0.0402	0.0350	0.0847	0.0955	0.0831	m J
Carbon disulfide	ND	0.0402	0.0350	ND	0.125	0.109	
Isopropyl alcohol	ND	0.0402	0.0350	ND	0.0987	0.0860	
Methylene chloride	0.0431	0.0405	0.0350	0.150	0.141	0.122	
Hexane	ND	0.0404	0.0350	ND	0.143	0.123	
Methyl ethyl ketone (2-Butanone)	ND	0.0406	0.0350	ND	0.120	0.103	
Ethyl acetate	ND	0.0403	0.0350	ND	0.145	0.126	
Chloroform	ND	0.0404	0.0350	ND	0.197	0.171	
Cyclohexane	ND	0.0407	0.0350	ND	0.140	0.120	
Carbon tetrachloride	ND	0.0405	0.0350	ND	0.255	0.220	
Benzene	ND	0.0399	0.0350	ND	0.128	0.112	
1,4-Dioxane	ND	0.0404	0.0350	ND	0.146	0.126	
Toluene	ND	0.0406	0.0350	ND	0.153	0.132	
trans-1,3-Dichloropropene	ND	0.0406	0.0350	ND	0.184	0.159	
Ethylbenzene	ND	0.0394	0.0350	ND	0.171	0.152	
m-/p-Xylenes	ND	0.0405	0.0350	ND	0.176	0.152	
o-Xylene	ND	0.0400	0.0350	ND	0.174	0.152	
Styrene	ND	0.0390	0.0350	ND	0.166	0.149	
1,3,5-Trimethylbenzene	ND	0.0401	0.0350	ND	0.197	0.172	
1,2,4-Trimethylbenzene	ND	0.0398	0.0350	ND	0.195	0.172	
Naphthalene	0.0381	0.0414	0.0350	0.200	0.217	0.183	J
Isopropylbenzene	ND	0.0406	0.0350	ND	0.200	0.172	
n-Propylbenzene	ND	0.0407	0.0350	ND	0.200	0.172	

Internal Standards	Response	Retention Time (min)	Concentration (PPBV)	Flag *
Bromochloromethane (IS)	856,904	11.94	5.00	PASS
1,4-Difluorobenzene (IS)	3,283,424	13.70	5.04	PASS
Chlorobenzene-d5 (IS)	2,630,691	17.87	4.80	PASS

(ND) = Not Detected
*** (J) = Below Calibration Range, (E) = Above Calibration Range, (m) = Manual Integration**
IS Acceptance Criteria: RT +/- 20 sec, Response +/- 40%

Sample Name : 5ppbv TO-15 LCS
Sample Info : Can#000035; 125mL Load; GCMSPrepPg745
Data File : X1901611.D
Dilution : 1
Pressurization Factor : 1.000
Acquisition Date : 2019-05-29 08:31:58
Instrument Method : TO15-SCN.M
Matrix : AIR

Target Compound	Response	Concentration (PPBV)	Tag Value (PPBV)	% Recovery	Flag
1,3-Butadiene	511,605	4.99	4.89	102.0	PASS
Ethanol	328,801	5.15	5.00	103.0	PASS
Freon 113 (C2Cl3F3)	1,239,667	4.74	4.98	95.4	PASS
Acetone	1,116,596	5.05	5.03	100.4	PASS
Isopropyl alcohol	1,381,246	5.51	5.02	109.7	PASS
Carbon disulfide	2,339,818	4.52	5.02	90.0	PASS
Methylene chloride	1,076,635	4.87	5.07	96.2	PASS
Hexane	1,277,792	5.08	5.06	100.5	PASS
Methyl ethyl ketone (2-Butanone)	391,366	4.84	5.08	95.2	PASS
Ethyl acetate	272,188	5.35	5.04	106.2	PASS
Chloroform	1,689,722	5.10	5.06	101.0	PASS
Cyclohexane	1,344,865	5.31	5.09	104.3	PASS
Carbon tetrachloride	1,702,839	5.21	5.06	103.1	PASS
Benzene	2,309,037	4.81	4.99	96.4	PASS
1,4-Dioxane	544,874	4.84	5.06	95.8	PASS
Toluene	2,762,786	4.71	5.08	92.8	PASS
trans-1,3-Dichloropropene	1,376,994	5.23	5.08	103.0	PASS
Ethylbenzene	3,305,221	4.59	4.92	93.3	PASS
m-/p-Xylenes	2,860,850	4.84	5.07	95.6	PASS
o-Xylene	2,807,998	4.73	5.00	94.6	PASS
Styrene	2,133,077	4.79	4.87	98.4	PASS
Isopropylbenzene	3,926,415	4.74	5.08	93.5	PASS
n-Propylbenzene	4,550,544	4.96	5.09	97.6	PASS
1,3,5-Trimethylbenzene	3,216,717	4.50	5.02	89.8	PASS
1,2,4-Trimethylbenzene	3,271,509	4.64	4.97	93.3	PASS
Naphthalene	3,042,271	6.45	5.18	124.7	PASS

Sample Name	: 5ppbv TO-15 LCS
Sample Info	: Can#000035; 125mL Load; GCMSPrepPg745
Data File	: X1901611.D
Dilution	: 1
Pressurization Factor	: 1.000
Acquisition Date	: 2019-05-29 08:31:58
Instrument Method	: TO15-SCN.M
Matrix	: AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
1,3-Butadiene	4.99	0.0391	0.0350	11.0	0.0865	0.0774	
Ethanol	5.15	0.100	0.100	9.70	0.188	0.188	
Freon 113 (C2Cl3F3)	4.74	0.0398	0.0350	36.4	0.305	0.268	
Acetone	5.05	0.0402	0.0350	12.0	0.0955	0.0831	
Carbon disulfide	4.52	0.0402	0.0350	14.1	0.125	0.109	
Isopropyl alcohol	5.51	0.0402	0.0350	13.5	0.0987	0.0860	
Methylene chloride	4.87	0.0405	0.0350	16.9	0.141	0.122	
Hexane	5.08	0.0404	0.0350	17.9	0.143	0.123	
Methyl ethyl ketone (2-Butanone)	4.84	0.0406	0.0350	14.3	0.120	0.103	
Ethyl acetate	5.35	0.0403	0.0350	19.3	0.145	0.126	
Chloroform	5.10	0.0404	0.0350	24.9	0.197	0.171	
Cyclohexane	5.31	0.0407	0.0350	18.3	0.140	0.120	
Carbon tetrachloride	5.21	0.0405	0.0350	32.8	0.255	0.220	
Benzene	4.81	0.0399	0.0350	15.4	0.128	0.112	
1,4-Dioxane	4.84	0.0404	0.0350	17.4	0.146	0.126	
Toluene	4.71	0.0406	0.0350	17.8	0.153	0.132	
trans-1,3-Dichloropropene	5.23	0.0406	0.0350	23.7	0.184	0.159	
Ethylbenzene	4.59	0.0394	0.0350	19.9	0.171	0.152	
m-/p-Xylenes	4.84	0.0405	0.0350	21.0	0.176	0.152	
o-Xylene	4.73	0.0400	0.0350	20.5	0.174	0.152	
Styrene	4.79	0.0390	0.0350	20.4	0.166	0.149	
1,3,5-Trimethylbenzene	4.50	0.0401	0.0350	22.1	0.197	0.172	
1,2,4-Trimethylbenzene	4.64	0.0398	0.0350	22.8	0.195	0.172	
Naphthalene	6.45	0.0414	0.0350	33.8	0.217	0.183	
Isopropylbenzene	4.74	0.0406	0.0350	23.3	0.200	0.172	
n-Propylbenzene	4.96	0.0407	0.0350	24.4	0.200	0.172	

Internal Standards	Response	Retention Time (min)	Concentration (PPBV)	Flag *
Bromochloromethane (IS)	849,560	11.94	5.00	PASS
1,4-Difluorobenzene (IS)	3,287,933	13.70	5.04	PASS
Chlorobenzene-d5 (IS)	2,723,769	17.87	4.80	PASS

(ND) = Not Detected
*** (J) = Below Calibration Range, (E) = Above Calibration Range, (m) = Manual Integration**
IS Acceptance Criteria: RT +/- 20 sec, Response +/- 40%

Company	Enthalpy - Houston
Analyst	TDD
Parameters	GC/MS VOA Scan

Client #	EA_190424-427
Job #	0419-152
# Samples	2 Canisters

Sample ID: **Humid Blank** DF: 1.00
Data File: X1901613.D Tank DF: 1.00
Tank/Misc ID: Can#0702; 500mL load; MP#3

Compound	CAS#	MW	Ret. Time (min)	Area	MDL (ppbv)	Sample Conc. (ppbv)
2-Methyl-2-butanol	75-85-4	88.15			0.100	ND
2-Methylbutane	78-78-4	72.15			0.100	ND
2-Methylnaphthalene	91-57-6	142.2			0.100	ND
Benzaldehyde	100-52-7	106.1			0.100	ND
Benzoic acid	65-85-0	122.1			0.100	ND
Ethylene glycol	107-21-1	62.07			0.100	ND
p-Isopropyltoluene	99-87-6	134.2			0.100	ND
Propionitrile	107-12-0	55.08			0.100	ND

Client Name: Enthalpy - Houston
Client #: EA_190424-427
Enthalpy Job #: 0419-152

Canister Data

Canister ID	Sample ID	Canister Pressure Pre-Sample (mmHg)	Canister Pressure Post-Sample (mmHg)	Canister Pressure Final (mmHg)	Canister Pressurization Factor
1075	DUP-1075-Manhole	-755	-129	752	2.384
4036 (transfer from 1075)	X1901613	-757	-708	745	30.396
Final Pressurization Factor					72.465

1620	DUP-1620-Truck	-755	-140	739	2.405
3851 (transfer from 1620)	X1901613	-757	-641	1,058	15.593
Final Pressurization Factor					37.503

Date Prepared: 4/10/19 Prepared By:
Date Received: 5/21/19 Received By: DSM

Narrative Summary

Enthalpy Analytical Narrative Summary

Company	Enthalpy Analytical, LLC – Houston	**Client #**	EA_190424-427
Analyst	TDD	**Job #**	0419-152
Parameters	EPA Method TO-15	**# Samples**	2 (6L) Canisters

Custody

David Myers received the samples on 5/21/19 after being relinquished by Enthalpy Analytical, LLC – Houston. The samples were received at ambient temperature and in good condition.

Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.

Analysis

The samples were analyzed for the client requested TO-15 Target compound list as well as manually searched for specified compounds using the analytical procedures in EPA Method TO-15, *Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*.

Upon receipt, the canister pressures were measured and recorded. The canisters were then pressurized with UHP nitrogen and a dilution ratio was calculated. Due to high concentrations, the samples were transferred into a second canister then pressurized for analysis. See the Canister and Controller Data Sheet in the Lab QC Section of this report.

The samples were analyzed at a dilution to bring target analytes within the instrument's calibrated range and to reduce matrix interference and detector saturation. Dilution factors are displayed in the sample header information.

The Agilent Technologies Model 6890N, Gas Chromatograph "Xavier" (S/N US10721018) was equipped with a 5975C VL Mass Selective Detector (S/N US71215962) and a Restek Rtx-624 Sil MS, 60 m x 0.32 mm x 1.8 µm capillary column (S/N 1555499) for these analyses. All samples and standards were introduced directly to the analyzer using an Entech 7200 Preconcentrator.

Calibration

The BFB tune analyses associated with the initial and continuing calibrations met method acceptance criteria. The initial calibration ***(X051419A-TO15)*** met the 30% RSD criteria. The initial calibration verification met the 30% recovery criteria. The continuing calibration met the 30% difference criteria.

ENTHALPY ANALYTICAL

Enthalpy Analytical Narrative Summary
(continued)

Chromatographic Conditions	A copy of the acquisition method (***TO15-SCN2.M***) has not been included however is available upon request.
QC Notes	All internal standard area responses and retention time criteria were met for these analyses. The Laboratory Duplicate analyzed with this batch of samples met the 25% difference acceptance criteria. The laboratory humid blank associated with the analysis of these samples did not contain any target compounds at a concentration greater than 3 times the MDL. The Laboratory Control Sample (LCS) met the 70-130% recovery criteria. The samples were analyzed within the 30-day holding time required by the method.
Reporting Notes	The samples were manually searched for the presence of 2-methyl-2-butanol, 2-methylbutane, 2-methylnaphthalene, benzaldehyde, benzoic acid, ethylene glycol, p-isopropyltoluene, and propionitrile by searching the primary and qualifier ions associated with each compound. Both samples were non-detect for the aforementioned compounds at the MDL levels noted on the TIC summary results. On the Tentatively Identified Compounds (TICs) result page, the top part of the page details peaks that had sufficiently good spectral matches to be identified by the IUPAC name and CAS#. The bottom part of the page details peaks whose spectra were not good enough to give positive identification using the instrument software. Labeled as "Operator's Assessments", the section may include both more-generic compound identifications and more-specific compound identifications based on analyst's experience and historical instrument response. Compounds with poor spectral match are identified as "unknown". TICs are searched against an Agilent Technologies G1701DA Version D.00.00.38 compound library. TIC concentrations are calculated using an assumed response factor of 1 for all compounds and responses from the Total Ion Chromatogram.

ENTHALPY ANALYTICAL

Enthalpy Analytical Narrative Summary
(continued)

Reporting Notes (continued)	TIC identification is based upon visual comparison of the sample spectra and best-quality library searches. Relative intensities of major ions in the reference spectrum are compared to those in the sample spectrum. Intensities of the major ions should be within 20% of those in the reference spectrum. In some instances a background subtraction may have been performed on the sample spectrum to remove ions that may be present due to contamination or co-eluting peaks. Therefore, ions present in the sample spectrum may not be present in the reference spectrum. The results presented in this report are representative of the samples as provided to the laboratory.

ENTHALPY
ANALYTICAL

General Reporting Notes

The following are general reporting notes that are applicable to all Enthalpy Analytical, LLC data reports, unless specifically noted otherwise.

- Any analysis which refers to the method as ***"Type"*** represents a planned deviation from the reference method. For instance a Hydrogen Sulfide assay from a Tedlar bag would be labeled as "EPA Method 16-Type" because Tedlar bags are not mentioned as one of the collection options in EPA Method 16.

- The acronym ***MDL*** represents the Minimum Detection Limit. Below this value the laboratory cannot determine the presence of the analyte of interest reliably.

- The acronym ***LOQ*** represents the Limit of Quantification. Below this value the laboratory cannot quantitate the analyte of interest within the criteria of the method.

- The acronym ***ND*** following a value indicates a non-detect or analytical result below the MDL.

- The letter ***J*** in the Qualifier or Flag column in the results indicates that the value is between the MDL and the LOQ. The laboratory can positively identify the analyte of interest as present, but the value should be considered an estimate.

- The letter ***E*** in the Qualifier or Flag column indicates an analytical result exceeding 100% of the highest calibration point. The associated value should be considered as an estimate.

- Sample results are presented 'as measured' for single injection methodologies, or an average value if multiple injections are made. If all injections are below the MDL, the sample is considered non-detect and the ND value is presented. If one, but not all, are below the MDL, the MDL value is used for any injections that are below the MDL. For example, if the MDL is 0.500 and LOQ is 1.00, and the instrument measures 0.355, 0.620, and 0.442 - the result reported is the average of 0.500, 0.620, and 0.500 - - - i.e. 0.540 with a J flag.

- When a spike recovery (Bag Spike, Collocated Spike Train, or liquid matrix spike) is being calculated, the native (unspiked) sample result is used in the calculations, as long as the value is above the MDL. If a sample is ND, then 0 is used as the native amount (not the MDL value).

- The acronym ***DF*** represents Dilution Factor. This number represents dilution of the sample during the preparation and/or analysis process. The analytical result taken from a laboratory instrument is multiplied by the DF to determine the final undiluted sample results.

- The addition of ***MS*** to the Sample ID represents a Matrix Spike. An aliquot of an actual sample is spiked with a known amount of analyte so that a percent recovery value can be determined. The MS analysis indicates what effect the sample matrix may have on the target analyte, i.e. whether or not anything in the sample matrix interferes with the analysis of the analyte(s).

General Reporting Notes
(continued)

- The addition of ***MSD*** to the Sample ID represents a Matrix Spike Duplicate. Prepared in the same manner as a MS, the use of duplicate matrix spikes allows further confirmation of laboratory quality by showing the consistency of results gained by performing the same steps multiple times.

- The addition of ***LD*** to the Sample ID represents a Laboratory Duplicate. The analyst prepares an additional aliquot of sample for testing and the results of the duplicate analysis are compared to the initial result. The result should have a difference value of within 10% of the initial result (if the results of the original analysis are greater than the LOQ).

- The addition of ***AD*** to the Sample ID represents an Alternate Dilution. The analyst prepares an additional aliquot at a different dilution factor (usually double the initial factor). This analysis helps confirm that no additional compound is present and coeluting or sharing absorbance with the analyte of interest, as they would have a different response/absorbance than the analyte of interest.

- The Sample ID ***LCS*** represents a Laboratory Control Sample. Clean matrix, similar to the client sample matrix, prepared and analyzed by the laboratory using the same reagents, spiking standards and procedures used for the client samples. The LCS is used to assess the control of the laboratory's analytical system. Whenever spikes are prepared for our client projects, two spikes are retained as LCSs. The LCSs are labeled with the associated project number and kept in-house at the appropriate temperature conditions. When the project samples are received for analysis, the LCSs are analyzed to confirm that the analyte could be recovered from the media, separate from the samples which were used on the project and which may have been affected by source matrix, sample collection, and/or sample transport.

- **Significant Figures**: Where the reported value is much greater than unity (1.00) in the units expressed, the number is rounded to a whole number of units, rather than to 3 significant figures. For example, a value of 10,456.45 ug catch is rounded to 10,456 ug. There are five significant digits displayed, but no confidence should be placed on more than two significant digits. In the case of small numbers, generally 3 significant figures are presented, but still only 2 should be used with confidence. Many neat materials are only certified to 3 digits, and as the mathematically correct final result is always 1 digit less than all its pre-cursors - 2 significant figures are what are most defensible.

- **Manual Integration**: The data systems used for processing will flag manually integrated peaks with an "M". There are several reasons a peak may be manually integrated. These reasons will be identified by the following two letter designations on sample chromatograms, if provided in the report. The peak was ***not integrated*** by the software **"NI"**, the peak was ***integrated incorrectly*** by the software **"II"** or the ***wrong peak*** was integrated by the software **"WP"**. These codes will accompany the analyst's manual integration stamp placed next to the compound name on the chromatogram.

PRISM Analytical Technologies

Analytical Report

Client: Enthalpy Analytical, LLC
800 Capitola Drive, Suite 1
Durham, NC 27713

Sampled By: Anthony Bednar
Project: EA_190424-427
Location: Various
-

Client Sample ID: Worker
Volume: 1 Unit
Date Sampled: 05/14/2019
Sample Type: TDT B15297

COC: 78816
Laboratory ID: 78816-1

Received Date: 05/21/2019
Approved Date: 05/22/2019
Scanned Date: 06/18/2019
Report Date: 06/28/2019

HSMS TDT Air Scan™ Analysis

Applicable methods for this analytical technique include (with relevant modifications) NIOSH 2549 and ISO 16000-6. A scan was made for all compounds contained in the Air Survey Analysis List (TB503, Quantitative and Semiquantitative List). All compounds detected are listed below.

General Notes

Results were not blank subtracted.

Quantitative Results

		Sample Concentration		Reporting Limit	
Compound	CAS	ng/Unit	ppb	ng/Unit	Additional Information
Ethanol	64-17-5	28	14	10	
Acetone	67-64-1	3500	1400	10	J*
Carbon Disulfide	75-15-0	3.2	1.0	1.0	
Ethylacetate	141-78-6	10	2.8	5.0	
Toluene	108-88-3	19	5.1	5.0	
Styrene	100-42-5	7000	1600	5.0	J*

Semiquantitative Results

		Sample Concentration		Reporting Limit		
Compound	CAS	ng/Unit	ppb	ng/Unit	RI	Additional Information
2-Methyl-1-propene	115-11-7	14	6	13	356	
Acetaldehyde	75-07-0	56	31	13	391	
2-Methylbutane	78-78-4	13	4	13	452	
Pentane (C 5)	109-66-0	39	13	13	500	
Cyclopentane	287-92-3	31	10	13	570	
tert-Butanol	75-65-0	38	12	13	581	

PRISM Analytical Technologies

Client Sample ID: Worker
Laboratory ID: 78816-1

Analytical Report

Semiquantitative Results

Compound	CAS	Sample Concentration ng/Unit	Sample Concentration ppb	Reporting Limit ng/Unit	RI	Additional Information
C7-C9 Hydrocarbon	N/A	14	N/A	13	825	Appears to be 2,4-dimethylheptane (CAS 2213-23-2)
Benzaldehyde	100-52-7	48	11	13	1048	
Phenol	108-95-2	740	190	13	1112	
Tridecane (C 13)	629-50-5	15	2	13	1299	

Compound Notes

J* The accuracy of this determination may be degraded because the reported value exceeded the calibrated range by more than a factor of 10.

These results pertain only to this sample as it was collected and to the items reported.
These results have been reviewed and approved by the Laboratory Director or authorized representative.

Alice E. Delia, Ph.D., Laboratory Director

Prism Analytical Technologies
2625 Denison Dr.
Mt. Pleasant, MI 48858
989-772-5088

PRISM Analytical Technologies

Analytical Report

Client: Enthalpy Analytical, LLC
800 Capitola Drive, Suite 1
Durham, NC 27713

Sampled By: Anthony Bednar
Project: EA_190424-427
Location: Various
-

Client Sample ID: Worker
Volume: 1 Unit
Date Sampled: 05/14/2019
Sample Type: TDT B15282

COC: 78816
Laboratory ID: 78816-2

Received Date: 05/21/2019
Approved Date: 05/22/2019
Scanned Date: 06/18/2019
Report Date: 06/28/2019

HSMS TDT Air Scan™ Analysis

Applicable methods for this analytical technique include (with relevant modifications) NIOSH 2549 and ISO 16000-6. A scan was made for all compounds contained in the Air Survey Analysis List (TB503, Quantitative and Semiquantitative List). All compounds detected are listed below.

General Notes

Results were not blank subtracted.

Quantitative Results

Compound	CAS	Sample Concentration ng/Unit	Sample Concentration ppb	Reporting Limit ng/Unit	Additional Information
Acetone	67-64-1	20	8.3	10	
Toluene	108-88-3	5.1	1.3	5.0	
Styrene	100-42-5	190	44	5.0	

These results pertain only to this sample as it was collected and to the items reported.
These results have been reviewed and approved by the Laboratory Director or authorized representative.

Alice E. Delia, Ph.D., Laboratory Director

Prism Analytical Technologies
2625 Denison Dr.
Mt. Pleasant, MI 48858
989-772-5088

PRISM Analytical Technologies

Analytical Report

Client: Enthalpy Analytical, LLC
800 Capitola Drive, Suite 1
Durham, NC 27713

Sampled By: Anthony Bednar
Project: EA_190424-427
Location: Various
-

Client Sample ID: Blank
Volume: 1 Unit
Date Sampled: 05/14/2019
Sample Type: TDT B15247

COC: 78816
Laboratory ID: 78816-3

Received Date: 05/21/2019
Approved Date: 05/22/2019
Scanned Date: 06/18/2019
Report Date: 06/28/2019

HSMS TDT Air Scan™ Analysis

Applicable methods for this analytical technique include (with relevant modifications) NIOSH 2549 and ISO 16000-6. A scan was made for all compounds contained in the Air Survey Analysis List (TB503, Quantitative and Semiquantitative List). All compounds detected are listed below.

General Notes

Results were not blank subtracted.

Quantitative Results

Compound	CAS	Sample Concentration ng/Unit	Sample Concentration ppb	Reporting Limit ng/Unit	Additional Information
Ethanol	64-17-5	190	99	10	
Acetonitrile	75-05-8	17	9.7	5.0	
Hexane (C 6)	110-54-3	37	10	5.0	
Cyclohexane	110-82-7	15	4.4	5.0	
Isooctane	540-84-1	44	9.2	5.0	2,2,4-Trimethylpentane
Benzene	71-43-2	41	13	5.0	
Toluene	108-88-3	180	46	5.0	
Ethylbenzene	100-41-4	30	6.9	5.0	
m,p-Xylene	108-38-3; 106-42-3	86	20	10	
o-Xylene	95-47-6	31	7.1	5.0	
Styrene	100-42-5	< 5	< 1.2	5.0	
n-Propylbenzene	103-65-1	7.2	1.4	5.0	
4-Ethyltoluene	622-96-8	6.1	1.2	5.0	
1,2,4-Trimethylbenzene	95-63-6	16	3.1	5.0	

PRISM Analytical Technologies

Client Sample ID: Blank
Laboratory ID: 78816-3

Analytical Report

Semiquantitative Results

Compound	CAS	Sample Concentration ng/Unit	Sample Concentration ppb	Reporting Limit ng/Unit	RI	Additional Information
Isobutane	75-28-5	33	14	15	359	
Acetaldehyde	75-07-0	70	38	15	391	
2-Methylbutane	78-78-4	53	18	15	452	
Pentane (C 5)	109-66-0	35	12	15	500	
2-Methylpentane	107-83-5	34	10	15	567	
3-Methylpentane	96-14-0	18	5	15	583	
Methylcyclopentane	96-37-7	23	7	15	635	
2-Methylhexane	591-76-4	23	6	15	668	
C6-C8 Hydrocarbon	N/A	26	N/A	15	677	Appears to be 3-methylhexane (CAS 589-34-4)
Heptane (C 7)	142-82-5	38	9	15	699	
Methylcyclohexane	108-87-2	18	4	15	733	
2,3,4-Trimethylpentane	565-75-3	18	4	15	756	
C7-C9 Hydrocarbon	N/A	22	N/A	15	764	Sum of two overlapping hydrocarbons
2-Butoxyethanol	111-76-2	26	5	15	963	
3-Ethyltoluene	620-14-4	22	5	15	999	
C9-C11 Hydrocarbon	N/A	34	N/A	15	1049	
C10-C12 Hydrocarbon	N/A	21	N/A	15	1070	

These results pertain only to this sample as it was collected and to the items reported.
These results have been reviewed and approved by the Laboratory Director or authorized representative.

Alice E. Delia, Ph.D., Laboratory Director

Prism Analytical Technologies
2625 Denison Dr.
Mt. Pleasant, MI 48858
989-772-5088

PRISM Analytical Technologies

Analytical Report

Client: Enthalpy Analytical, LLC
800 Capitola Drive, Suite 1
Durham, NC 27713

Sampled By: Anthony Bednar
Project: EA_190424-427
Location: Various
-

Client Sample ID: Manhole
Volume: 1 Unit
Date Sampled: 05/14/2019
Sample Type: TDT B14807

COC: 78816
Laboratory ID: 78816-4

Received Date: 05/21/2019
Approved Date: 05/22/2019
Scanned Date: 06/18/2019
Report Date: 06/28/2019

HSMS TDT Air Scan™ Analysis

Applicable methods for this analytical technique include (with relevant modifications) NIOSH 2549 and ISO 16000-6. A scan was made for all compounds contained in the Air Survey Analysis List (TB503, Quantitative and Semiquantitative List). All compounds detected are listed below.

General Notes

Results were not blank subtracted.

Quantitative Results

Compound	CAS	Sample Concentration ng/Unit	Sample Concentration ppb	Reporting Limit ng/Unit	Additional Information
Styrene	100-42-5	670	150	5.0	

Semiquantitative Results

Compound	CAS	Sample Concentration ng/Unit	Sample Concentration ppb	Reporting Limit ng/Unit	RI	Additional Information
Benzaldehyde	100-52-7	29	7	15	1048	

These results pertain only to this sample as it was collected and to the items reported.
These results have been reviewed and approved by the Laboratory Director or authorized representative.

Alice E. Delia, Ph.D., Laboratory Director

Prism Analytical Technologies
2625 Denison Dr.
Mt. Pleasant, MI 48858
989-772-5088

PRISM Analytical Technologies

Analytical Report

Client: Enthalpy Analytical, LLC
800 Capitola Drive, Suite 1
Durham, NC 27713

Sampled By: Anthony Bednar
Project: EA_190424-427
Location: Various
-

Client Sample ID: Manhole
Volume: 1 Unit
Date Sampled: 05/14/2019
Sample Type: TDT B15224

COC: 78816
Laboratory ID: 78816-5

Received Date: 05/21/2019
Approved Date: 05/22/2019
Scanned Date: 06/18/2019
Report Date: 06/28/2019

HSMS TDT Air Scan™ Analysis

Applicable methods for this analytical technique include (with relevant modifications) NIOSH 2549 and ISO 16000-6. A scan was made for all compounds contained in the Air Survey Analysis List (TB503, Quantitative and Semiquantitative List). All compounds detected are listed below.

General Notes

Results were not blank subtracted.

Quantitative Results

		Sample Concentration		Reporting Limit	
Compound	CAS	ng/Unit	ppb	ng/Unit	Additional Information
Acetone	67-64-1	24	9.8	10	
Toluene	108-88-3	6.0	1.6	5.0	
Styrene	100-42-5	100	23	5.0	

Semiquantitative Results

		Sample Concentration		Reporting Limit		
Compound	CAS	ng/Unit	ppb	ng/Unit	RI	Additional Information
Pentane (C 5)	109-66-0	17	6	15	500	
Cyclopentane	287-92-3	18	6	15	570	
Benzaldehyde	100-52-7	15	3	15	1047	
Phenol	108-95-2	48	12	12	1112	

PRISM Analytical Technologies

Client Sample ID: Manhole
Laboratory ID: 78816-5

Analytical Report

These results pertain only to this sample as it was collected and to the items reported.
These results have been reviewed and approved by the Laboratory Director or authorized representative.

Alice E. Delia, Ph.D., Laboratory Director

Prism Analytical Technologies
2625 Denison Dr.
Mt. Pleasant, MI 48858
989-772-5088

PRISM Analytical Technologies

Analytical Report

Client:	Enthalpy Analytical, LLC 800 Capitola Drive, Suite 1 Durham, NC 27713
Sampled By:	Anthony Bednar
Project:	EA_190424-427
Location:	Various -
Client Sample ID:	Manhole
Volume:	1 Unit
Date Sampled:	05/14/2019
Sample Type:	TDT B15231

COC:	**78816**
Laboratory ID:	**78816-6**
Received Date:	05/21/2019
Approved Date:	05/22/2019
Scanned Date:	06/18/2019
Report Date:	06/28/2019

HSMS TDT Air Scan™ Analysis

Applicable methods for this analytical technique include (with relevant modifications) NIOSH 2549 and ISO 16000-6. A scan was made for all compounds contained in the Air Survey Analysis List (TB503, Quantitative and Semiquantitative List). All compounds detected are listed below.

General Notes

Results were not blank subtracted.

Quantitative Results

Compound	CAS	Sample Concentration ng/Unit	Sample Concentration ppb	Reporting Limit ng/Unit	Additional Information
Styrene	100-42-5	250	58	5.0	

These results pertain only to this sample as it was collected and to the items reported.
These results have been reviewed and approved by the Laboratory Director or authorized representative.

Alice E. Delia, Ph.D., Laboratory Director

Prism Analytical Technologies
2625 Denison Dr.
Mt. Pleasant, MI 48858
989-772-5088

PRISM Analytical Technologies

Analytical Report

Client: Enthalpy Analytical, LLC
800 Capitola Drive, Suite 1
Durham, NC 27713

Sampled By: Anthony Bednar
Project: EA_190424-427
Location: Various
-

Client Sample ID: Manhole
Volume: 1 Unit
Date Sampled: 05/14/2019
Sample Type: TDT B15256

COC: 78816
Laboratory ID: 78816-7

Received Date: 05/21/2019
Approved Date: 05/22/2019
Scanned Date: 06/18/2019
Report Date: 06/28/2019

HSMS TDT Air Scan™ Analysis

Applicable methods for this analytical technique include (with relevant modifications) NIOSH 2549 and ISO 16000-6. A scan was made for all compounds contained in the Air Survey Analysis List (TB503, Quantitative and Semiquantitative List). All compounds detected are listed below.

General Notes

Results were not blank subtracted.

Quantitative Results

		Sample Concentration		Reporting Limit	
Compound	CAS	ng/Unit	ppb	ng/Unit	Additional Information
Ethanol	64-17-5	26	13	10	
Acetone	67-64-1	130	56	10	
Methylene Chloride	75-09-2	6.0	1.7	5.0	
Hexane (C 6)	110-54-3	6.8	1.9	5.0	
Ethylacetate	141-78-6	18	5.0	5.0	
Cyclohexane	110-82-7	6.6	1.9	5.0	
Toluene	108-88-3	52	13	5.0	
Ethylmethacrylate	97-63-2	5.3	1.1	5.0	
Styrene	100-42-5	56	13	5.0	

Semiquantitative Results

		Sample Concentration		Reporting Limit		
Compound	CAS	ng/Unit	ppb	ng/Unit	RI	Additional Information
2-Methyl-1-propene	115-11-7	25	11	15	356	
Acetaldehyde	75-07-0	71	39	15	391	
2-Methylbutane	78-78-4	24	8	15	452	

PRISM Analytical Technologies

Client Sample ID: Manhole
Laboratory ID: 78816-7

Analytical Report

Semiquantitative Results

Compound	CAS	Sample Concentration ng/Unit	Sample Concentration ppb	Reporting Limit ng/Unit	RI	Additional Information
Pentane (C 5)	109-66-0	65	22	15	500	
Cyclopentane	287-92-3	32	11	15	570	
tert-Butanol	75-65-0	44	14	15	581	
C7-C9 Hydrocarbon	N/A	18	N/A	15	825	Appears to be 2,4-dimethylheptane (CAS 2213-23-2)
Phenol	108-95-2	720	180	15	1112	
C4-C6 Hydrocarbon	N/A	29	N/A	15	1161	Appears to be propylene carbonate (CAS 108-32-7)

These results pertain only to this sample as it was collected and to the items reported.
These results have been reviewed and approved by the Laboratory Director or authorized representative.

Alice E. Delia, Ph.D., Laboratory Director

Prism Analytical Technologies
2625 Denison Dr.
Mt. Pleasant, MI 48858
989-772-5088

PRISM Analytical Technologies

Analytical Report

Client: Enthalpy Analytical, LLC
800 Capitola Drive, Suite 1
Durham, NC 27713

Sampled By: Anthony Bednar
Project: EA_190424-427
Location: Various
-

Client Sample ID: Manhole
Volume: 1 Unit
Date Sampled: 05/14/2019
Sample Type: TDT B15263

COC: 78816
Laboratory ID: 78816-8

Received Date: 05/21/2019
Approved Date: 05/22/2019
Scanned Date: 06/18/2019
Report Date: 06/28/2019

HSMS TDT Air Scan™ Analysis

Applicable methods for this analytical technique include (with relevant modifications) NIOSH 2549 and ISO 16000-6. A scan was made for all compounds contained in the Air Survey Analysis List (TB503, Quantitative and Semiquantitative List). All compounds detected are listed below.

General Notes

Results were not blank subtracted.

Quantitative Results

Compound	CAS	Sample Concentration ng/Unit	Sample Concentration ppb	Reporting Limit ng/Unit	Additional Information
Ethanol	64-17-5	35	18	10	
Acetone	67-64-1	130	56	10	
Methylene Chloride	75-09-2	9.9	2.8	5.0	
Hexane (C 6)	110-54-3	11	3.1	5.0	
Ethylacetate	141-78-6	16	4.4	5.0	
Cyclohexane	110-82-7	7.5	2.2	5.0	
Toluene	108-88-3	50	13	5.0	
Ethylmethacrylate	97-63-2	5.5	1.2	5.0	
o-Xylene	95-47-6	6.1	1.4	5.0	
Styrene	100-42-5	94	22	5.0	

Semiquantitative Results

Compound	CAS	Sample Concentration ng/Unit	Sample Concentration ppb	Reporting Limit ng/Unit	RI	Additional Information
2-Methyl-1-propene	115-11-7	27	11	15	355	
Acetaldehyde	75-07-0	48	26	15	391	

PRISM Analytical Technologies

Client Sample ID: Manhole
Laboratory ID: 78816-8

Analytical Report

Semiquantitative Results

Compound	CAS	Sample Concentration ng/Unit	Sample Concentration ppb	Reporting Limit ng/Unit	RI	Additional Information
2-Methylbutane	78-78-4	31	10	15	452	
Pentane (C 5)	109-66-0	76	25	15	500	
Cyclopentane	287-92-3	38	13	15	570	
tert-Butanol	75-65-0	68	22	15	581	
Hexamethylcyclotrisiloxane (D3)	541-05-9	21	2	15	817	
C7-C9 Hydrocarbon	N/A	25	N/A	15	825	Appears to be 2,4-dimethylheptane (CAS 2213-23-2)
Benzaldehyde	100-52-7	18	4	15	1047	
Phenol	108-95-2	830	210	15	1112	
C10-C12 Hydrocarbon	N/A	24	N/A	15	1161	
C4-C6 Hydrocarbon	N/A	29	N/A	15	1162	Appears to be propylene carbonate (CAS 108-32-7)

These results pertain only to this sample as it was collected and to the items reported.
These results have been reviewed and approved by the Laboratory Director or authorized representative.

Alice E. Delia, Ph.D., Laboratory Director

Prism Analytical Technologies
2625 Denison Dr.
Mt. Pleasant, MI 48858
989-772-5088

PRISM Analytical Technologies

Analytical Report

Client: Enthalpy Analytical, LLC
800 Capitola Drive, Suite 1
Durham, NC 27713

Sampled By: Anthony Bednar
Project: EA_190424-427
Location: Various
-

Client Sample ID: Manhole--NoCap
Volume: 1 Unit
Date Sampled: 05/14/2019
Sample Type: TDT B15294

COC: 78816
Laboratory ID: 78816-9

Received Date: 05/21/2019
Approved Date: 05/22/2019
Scanned Date: 06/18/2019
Report Date: 06/28/2019

HSMS TDT Air Scan™ Analysis

Applicable methods for this analytical technique include (with relevant modifications) NIOSH 2549 and ISO 16000-6. A scan was made for all compounds contained in the Air Survey Analysis List (TB503, Quantitative and Semiquantitative List). All compounds detected are listed below.

General Notes

Results were not blank subtracted.

Quantitative Results

Compound	CAS	Sample Concentration ng/Unit	Sample Concentration ppb	Reporting Limit ng/Unit	Additional Information
Acetone	67-64-1	20	8.1	10	
Toluene	108-88-3	5.4	1.4	5.0	
Styrene	100-42-5	1100	260	5.0	

Semiquantitative Results

Compound	CAS	Sample Concentration ng/Unit	Sample Concentration ppb	Reporting Limit ng/Unit	RI	Additional Information
Benzaldehyde	100-52-7	74	17	15	1047	

These results pertain only to this sample as it was collected and to the items reported.
These results have been reviewed and approved by the Laboratory Director or authorized representative.

Alice E. Delia, Ph.D., Laboratory Director

Prism Analytical Technologies
2625 Denison Dr.
Mt. Pleasant, MI 48858
989-772-5088

Laboratory Report

Absolute Resource associates
124 Heritage Avenue Portsmouth NH 03801

Jenifer Milam
Engineer Research & Development Center
3909 Halls Ferry Road
Vicksburg, MS 39180

PO Number: W912HZ-15-A-0043
Job ID: 48690
Date Received: 5/16/19

Project: Order ID:1105 19E1501

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, the analyses performed met the requirements of Absolute Resource Associates' Quality Assurance Plan. The Standard Operating Procedures are based upon USEPA SW-846, USEPA Methods for Chemical Analysis of Water and Wastewater, Standard Methods for the Examination of Water and Wastewater and other recognized methodologies. The results contained in this report pertain only to the samples as indicated on the chain of custody.

Absolute Resource Associates maintains certification with the agencies listed below.

We appreciate the opportunity to provide laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be glad to assist you.

Sincerely,
Absolute Resource Associates

(for)

Jennifer Lowe
Laboratory Manager

Date of Approval: 6/6/2019
Total number of pages: 18

Absolute Resource Associates Certifications

New Hampshire	1732	Massachusetts	M-NH902
Maine	NH903		

Project ID: Order ID:1105 19E1501

Sample Association Table

Field ID	Matrix	Date-Time Sampled	Lab#	Analysis
19E1501-01	Water	5/14/2019 12:00	48690-001	VOCs in water by 8260
19E1501-02	Water	5/14/2019 12:00	48690-002	VOCs in water by 8260
19E1501-03	Water	5/14/2019 12:00	48690-003	VOCs in water by 8260

Project ID: Order ID:1105 19E1501
Job ID: 48690
Sample#: 48690-001
Sample ID: 19E1501-01
Matrix: Water
Sampled: 5/14/19 12:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
dichlorodifluoromethane	U	2	0.48	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
chloromethane	U	2	0.72	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
vinyl chloride	U	2	0.76	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
bromomethane	U	2	1.9	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
chloroethane	U	2	0.50	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
trichlorofluoromethane	U	2	0.56	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
diethyl ether	U	5	0.66	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
acetone	4 J	50	3.5	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,1-dichloroethene	U	1	0.71	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
methylene chloride	U	5	0.69	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
carbon disulfide	U	2	0.75	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
methyl t-butyl ether (MTBE)	U	2	0.59	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
trans-1,2-dichloroethene	U	2	0.61	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,1-dichloroethane	U	2	0.65	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
2-butanone (MEK)	U	10	1.8	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
2,2-dichloropropane	U	2	0.51	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
cis-1,2-dichloroethene	U	2	0.77	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
chloroform	1 J	2	0.58	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
bromochloromethane	U	2	0.53	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
tetrahydrofuran (THF)	U	10	1.2	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,1,1-trichloroethane	U	2	0.57	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,1-dichloropropene	U	2	0.65	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
carbon tetrachloride	U	2	0.60	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,2-dichloroethane	U	2	0.65	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
benzene	U	2	0.66	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
trichloroethene	U	2	0.60	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,2-dichloropropane	U	2	0.66	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
bromodichloromethane	U	1	0.50	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
dibromomethane	U	2	0.68	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
4-methyl-2-pentanone (MIBK)	U	10	0.82	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
cis-1,3-dichloropropene	U	2	0.63	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
toluene	U	2	0.65	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
trans-1,3-dichloropropene	U	2	0.57	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
2-hexanone	U	10	0.64	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,1,2-trichloroethane	U	2	0.71	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,3-dichloropropane	U	2	0.69	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
tetrachloroethene	U	2	0.48	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
dibromochloromethane	U	2	0.58	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,2-dibromoethane (EDB)	U	2	0.70	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
chlorobenzene	U	2	0.65	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,1,1,2-tetrachloroethane	U	2	0.75	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
ethylbenzene	U	2	0.73	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C

Project ID: Order ID:1105 19E1501
Job ID: 48690
Sample#: 48690-001
Sample ID: 19E1501-01
Matrix: Water
Sampled: 5/14/19 12:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
m&p-xylenes	U	2	1.4	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
o-xylene	U	2	0.62	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
styrene	U	2	0.61	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
bromoform	U	2	0.63	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
isopropylbenzene	U	2	0.60	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,1,2,2-tetrachloroethane	U	2	0.62	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,2,3-trichloropropane	U	2	0.67	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
n-propylbenzene	U	2	0.51	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
bromobenzene	U	2	0.87	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,3,5-trimethylbenzene	U	2	0.66	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
2-chlorotoluene	U	2	0.80	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
4-chlorotoluene	U	2	0.75	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
tert-butylbenzene	U	2	0.73	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,2,4-trimethylbenzene	U	2	0.63	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
sec-butylbenzene	U	2	0.61	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,3-dichlorobenzene	U	2	0.64	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
4-isopropyltoluene	U	2	0.50	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,4-dichlorobenzene	U	2	0.48	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,2-dichlorobenzene	U	2	0.55	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
n-butylbenzene	U	2	0.59	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,2-dibromo-3-chloropropane (DBCP)	U	2	1.0	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,2,4-trichlorobenzene	U	2	0.52	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
hexachlorobutadiene	U	0.5	0.40	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
naphthalene	U	5	0.58	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
1,2,3-trichlorobenzene	U	2	0.61	ug/L	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
Surrogate Recovery		**Limits**										
dibromofluoromethane SUR	**99**	78-114		%	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
toluene-D8 SUR	**103**	88-110		%	1	LMM			1901335	5/24/19	18:32	SW5030C8260C
4-bromofluorobenzene SUR	**106**	86-115		%	1	LMM			1901335	5/24/19	18:32	SW5030C8260C

Project ID: Order ID:1105 19E1501
Job ID: 48690
Sample#: 48690-002
Sample ID: 19E1501-02
Matrix: Water
Sampled: 5/14/19 12:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
dichlorodifluoromethane	U	1000	240	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
chloromethane	U	1000	360	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
vinyl chloride	U	1000	380	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
bromomethane	U	1000	940	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
chloroethane	U	1000	250	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
trichlorofluoromethane	U	1000	280	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
diethyl ether	U	2500	330	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
acetone	2000 J	25000	1700	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,1-dichloroethene	U	500	350	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
methylene chloride	U	2500	340	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
carbon disulfide	U	1000	380	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
methyl t-butyl ether (MTBE)	U	1000	300	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
trans-1,2-dichloroethene	U	1000	310	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,1-dichloroethane	U	1000	330	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
2-butanone (MEK)	U	5000	910	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
2,2-dichloropropane	U	1000	260	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
cis-1,2-dichloroethene	U	1000	380	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
chloroform	U	1000	290	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
bromochloromethane	U	1000	270	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
tetrahydrofuran (THF)	U	5000	620	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,1,1-trichloroethane	U	1000	290	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,1-dichloropropene	U	1000	330	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
carbon tetrachloride	U	1000	300	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,2-dichloroethane	U	1000	320	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
benzene	U	1000	330	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
trichloroethene	U	1000	300	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,2-dichloropropane	U	1000	330	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
bromodichloromethane	U	300	250	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
dibromomethane	U	1000	340	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
4-methyl-2-pentanone (MIBK)	U	5000	410	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
cis-1,3-dichloropropene	U	1000	320	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
toluene	U	1000	320	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
trans-1,3-dichloropropene	U	1000	280	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
2-hexanone	U	5000	320	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,1,2-trichloroethane	U	1000	360	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,3-dichloropropane	U	1000	350	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
tetrachloroethene	U	1000	240	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
dibromochloromethane	U	1000	290	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,2-dibromoethane (EDB)	U	1000	350	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
chlorobenzene	U	1000	330	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,1,1,2-tetrachloroethane	U	1000	380	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
ethylbenzene	U	1000	360	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C

Project ID: Order ID:1105 19E1501
Job ID: 48690
Sample#: 48690-002
Sample ID: 19E1501-02
Matrix: Water
Sampled: 5/14/19 12:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
m&p-xylenes	U	1000	710	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
o-xylene	U	1000	310	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
styrene	**100000**	1000	300	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
bromoform	U	1000	320	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
isopropylbenzene	U	1000	300	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,1,2,2-tetrachloroethane	U	1000	310	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,2,3-trichloropropane	U	1000	330	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
n-propylbenzene	U	1000	260	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
bromobenzene	U	1000	430	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,3,5-trimethylbenzene	U	1000	330	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
2-chlorotoluene	U	1000	400	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
4-chlorotoluene	U	1000	370	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
tert-butylbenzene	U	1000	370	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,2,4-trimethylbenzene	U	1000	310	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
sec-butylbenzene	U	1000	300	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,3-dichlorobenzene	U	1000	320	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
4-isopropyltoluene	U	1000	250	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,4-dichlorobenzene	U	1000	240	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,2-dichlorobenzene	U	1000	280	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
n-butylbenzene	U	1000	300	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,2-dibromo-3-chloropropane (DBCP)	U	1000	500	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,2,4-trichlorobenzene	U	1000	260	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
hexachlorobutadiene	U	250	200	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
naphthalene	U	2500	290	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
1,2,3-trichlorobenzene	U	1000	300	ug/L	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
Surrogate Recovery		**Limits**										
dibromofluoromethane SUR	**101**	78-114		%	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
toluene-D8 SUR	**104**	88-110		%	500	LMM			1901335	5/24/19	19:25	SW5030C8260C
4-bromofluorobenzene SUR	**109**	86-115		%	500	LMM			1901335	5/24/19	19:25	SW5030C8260C

Project ID: Order ID:1105 19E1501
Job ID: 48690
Sample#: 48690-003
Sample ID: 19E1501-03
Matrix: Water
Sampled: 5/14/19 12:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
dichlorodifluoromethane	U	400	95	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
chloromethane	U	400	140	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
vinyl chloride	U	400	150	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
bromomethane	U	400	370	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
chloroethane	U	400	100	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
trichlorofluoromethane	U	400	110	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
diethyl ether	U	1000	130	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
acetone	1000 J	10000	690	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,1-dichloroethene	U	200	140	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
methylene chloride	U	1000	140	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
carbon disulfide	U	400	150	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
methyl t-butyl ether (MTBE)	U	400	120	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
trans-1,2-dichloroethene	U	400	120	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,1-dichloroethane	U	400	130	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
2-butanone (MEK)	U	2000	360	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
2,2-dichloropropane	U	400	100	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
cis-1,2-dichloroethene	U	400	150	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
chloroform	U	400	120	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
bromochloromethane	U	400	110	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
tetrahydrofuran (THF)	U	2000	250	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,1,1-trichloroethane	U	400	110	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,1-dichloropropene	U	400	130	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
carbon tetrachloride	U	400	120	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,2-dichloroethane	U	400	130	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
benzene	U	400	130	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
trichloroethene	U	400	120	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,2-dichloropropane	U	400	130	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
bromodichloromethane	U	120	100	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
dibromomethane	U	400	140	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
4-methyl-2-pentanone (MIBK)	U	2000	160	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
cis-1,3-dichloropropene	U	400	130	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
toluene	U	400	130	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
trans-1,3-dichloropropene	U	400	110	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
2-hexanone	U	2000	130	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,1,2-trichloroethane	U	400	140	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,3-dichloropropane	U	400	140	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
tetrachloroethene	U	400	95	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
dibromochloromethane	U	400	120	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,2-dibromoethane (EDB)	U	400	140	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
chlorobenzene	U	400	130	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,1,1,2-tetrachloroethane	U	400	150	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
ethylbenzene	U	400	150	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C

Project ID: Order ID:1105 19E1501
Job ID: 48690
Sample#: 48690-003
Sample ID: 19E1501-03
Matrix: Water
Sampled: 5/14/19 12:00

Parameter	Result	Reporting Limit	DL	Units	Instr Dil'n Factor	Analyst	Prep Date	Prep Time	Batch	Analysis Date	Analysis Time	Reference
m&p-xylenes	U	400	280	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
o-xylene	200 J	400	120	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
styrene	**41000**	400	120	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
bromoform	U	400	130	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
isopropylbenzene	U	400	120	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,1,2,2-tetrachloroethane	U	400	120	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,2,3-trichloropropane	U	400	130	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
n-propylbenzene	U	400	100	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
bromobenzene	U	400	170	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,3,5-trimethylbenzene	U	400	130	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
2-chlorotoluene	U	400	160	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
4-chlorotoluene	U	400	150	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
tert-butylbenzene	U	400	150	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,2,4-trimethylbenzene	U	400	130	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
sec-butylbenzene	U	400	120	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,3-dichlorobenzene	U	400	130	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
4-isopropyltoluene	U	400	100	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,4-dichlorobenzene	U	400	96	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,2-dichlorobenzene	U	400	110	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
n-butylbenzene	U	400	120	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,2-dibromo-3-chloropropane (DBCP)	U	400	200	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,2,4-trichlorobenzene	U	400	100	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
hexachlorobutadiene	U	100	79	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
naphthalene	U	1000	120	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
1,2,3-trichlorobenzene	U	400	120	ug/L	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
Surrogate Recovery		**Limits**										
dibromofluoromethane SUR	**99**	78-114		%	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
toluene-D8 SUR	**104**	88-110		%	200	LMM			1901335	5/24/19	18:58	SW5030C8260C
4-bromofluorobenzene SUR	**104**	86-115		%	200	LMM			1901335	5/24/19	18:58	SW5030C8260C

Quality Control Report

124 Heritage Avenue Unit 16
Portsmouth, NH 03801
www.absoluteresourceassociates.com

Case Narrative
Lab # 48690

Sample Receiving and Chain of Custody Discrepancies

Samples were not received on ice at 21 degrees C. Sample analysis was authorized by the customer.

Calibration

No exceptions noted.

Method Blank

No exceptions noted.

Surrogate Recoveries

No exceptions noted.

Laboratory Control Sample Results

VOC: The LCS/D1901335 did not meet the acceptance criteria for vinyl chloride and bromomethane. These compounds showed high recovery. There is no impact to the data as these analytes were not detected in the associated samples.

Matrix Spike/Matrix Spike Duplicate/Duplicate Results

Not requested for this project.

Other

Reporting Limits: Dilutions performed during the analysis are noted on the result pages.

No other exceptions noted.

Data Qualifiers

U = This compound was analyzed for, but not detected above the associated method detection limit.
J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

GLOSSARY

%R	Percent Recovery
BLK	Blank (Method Blank, Preparation Blank)
CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification
Dil'n	Dilution
DL	Detection Limit
DUP	Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantitation
MB	Methanol Blank (associated with solid VOC samples)
MLCS	Methanol Laboratory Control Sample (associated with solid VOC samples)
MLCSD	Methanol Laboratory Control Sample Duplicate (associated with solid VOC samples)
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PB	Preparation Blank
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference
SUR	Surrogate

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits	RPD	RPD Limit
SW5030C8260C	BLK1901335	dichlorodifluoromethane		< 2	ug/L					
		chloromethane		< 2	ug/L					
		vinyl chloride		< 2	ug/L					
		bromomethane		< 2	ug/L					
		chloroethane		< 2	ug/L					
		trichlorofluoromethane		< 2	ug/L					
		diethyl ether		< 2	ug/L					
		acetone		< 10	ug/L					
		1,1-dichloroethene		< 1	ug/L					
		methylene chloride		< 2	ug/L					
		carbon disulfide		< 2	ug/L					
		methyl t-butyl ether (MTBE)		< 2	ug/L					
		trans-1,2-dichloroethene		< 2	ug/L					
		1,1-dichloroethane		< 2	ug/L					
		2-butanone (MEK)		< 10	ug/L					
		2,2-dichloropropane		< 2	ug/L					
		cis-1,2-dichloroethene		< 2	ug/L					
		chloroform		< 2	ug/L					
		bromochloromethane		< 2	ug/L					
		tetrahydrofuran (THF)		< 2	ug/L					
		1,1,1-trichloroethane		< 2	ug/L					
		1,1-dichloropropene		< 2	ug/L					
		carbon tetrachloride		< 2	ug/L					
		1,2-dichloroethane		< 2	ug/L					
		benzene		< 2	ug/L					
		trichloroethene		< 2	ug/L					
		1,2-dichloropropane		< 2	ug/L					
		bromodichloromethane		< 0.6	ug/L					
		dibromomethane		< 2	ug/L					
		4-methyl-2-pentanone (MIBK)		< 10	ug/L					
		cis-1,3-dichloropropene		< 2	ug/L					
		toluene		< 2	ug/L					
		trans-1,3-dichloropropene		< 2	ug/L					
		2-hexanone		< 10	ug/L					
		1,1,2-trichloroethane		< 2	ug/L					
		1,3-dichloropropane		< 2	ug/L					
		tetrachloroethene		< 2	ug/L					
		dibromochloromethane		< 2	ug/L					
		1,2-dibromoethane (EDB)		< 2	ug/L					
		chlorobenzene		< 2	ug/L					
		1,1,1,2-tetrachloroethane		< 2	ug/L					
		ethylbenzene		< 2	ug/L					
		m&p-xylenes		< 2	ug/L					
		o-xylene		< 2	ug/L					
		styrene		< 2	ug/L					
		bromoform		< 2	ug/L					
		isopropylbenzene		< 2	ug/L					
		1,1,2,2-tetrachloroethane		< 2	ug/L					
		1,2,3-trichloropropane		< 2	ug/L					
		n-propylbenzene		< 2	ug/L					

Method	QC ID	Parameter	Associated Sample		Result	Units Amt Added	%R	Limits		RPD	RPD Limit
SW5030C8260C	BLK1901335	bromobenzene		<	2	ug/L					
		1,3,5-trimethylbenzene		<	2	ug/L					
		2-chlorotoluene		<	2	ug/L					
		4-chlorotoluene		<	2	ug/L					
		tert-butylbenzene		<	2	ug/L					
		1,2,4-trimethylbenzene		<	2	ug/L					
		sec-butylbenzene		<	2	ug/L					
		1,3-dichlorobenzene		<	2	ug/L					
		4-isopropyltoluene		<	2	ug/L					
		1,4-dichlorobenzene		<	2	ug/L					
		1,2-dichlorobenzene		<	2	ug/L					
		n-butylbenzene		<	2	ug/L					
		1,2-dibromo-3-chloropropane (DBCP)		<	2	ug/L					
		1,2,4-trichlorobenzene		<	2	ug/L					
		hexachlorobutadiene		<	0.5	ug/L					
		naphthalene		<	2	ug/L					
		1,2,3-trichlorobenzene		<	2	ug/L					
		dibromofluoromethane SUR			102	%		78	114		
		toluene-D8 SUR			102	%		88	110		
		4-bromofluorobenzene SUR			106	%		86	115		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R		Limits		RPD	RPD Limit
SW5030C8260C	LCS1901335	dichlorodifluoromethane		19	ug/L	20	94		70	130		
		chloromethane		21	ug/L	20	103		70	130		
		vinyl chloride		38	ug/L	20	189	*	70	130		
		bromomethane		31	ug/L	20	155	*	70	130		
		chloroethane		17	ug/L	20	87		70	130		
		trichlorofluoromethane		21	ug/L	20	107		70	130		
		diethyl ether		18	ug/L	20	89		70	130		
		acetone		18	ug/L	20	91		70	130		
		1,1-dichloroethene		20	ug/L	20	101		70	130		
		methylene chloride		20	ug/L	20	101		70	130		
		carbon disulfide		17	ug/L	20	85		70	130		
		methyl t-butyl ether (MTBE)		20	ug/L	20	102		70	130		
		trans-1,2-dichloroethene		22	ug/L	20	108		70	130		
		1,1-dichloroethane		19	ug/L	20	94		70	130		
		2-butanone (MEK)		15	ug/L	20	76		70	130		
		2,2-dichloropropane		20	ug/L	20	98		70	130		
		cis-1,2-dichloroethene		21	ug/L	20	106		70	130		
		chloroform		21	ug/L	20	103		70	130		
		bromochloromethane		20	ug/L	20	99		70	130		
		tetrahydrofuran (THF)		15	ug/L	20	76		70	130		
		1,1,1-trichloroethane		21	ug/L	20	106		70	130		
		1,1-dichloropropene		20	ug/L	20	98		70	130		
		carbon tetrachloride		20	ug/L	20	100		70	130		
		1,2-dichloroethane		20	ug/L	20	101		70	130		
		benzene		20	ug/L	20	102		70	130		
		trichloroethene		21	ug/L	20	106		70	130		
		1,2-dichloropropane		19	ug/L	20	93		70	130		
		bromodichloromethane		19	ug/L	20	97		70	130		
		dibromomethane		21	ug/L	20	107		70	130		
		4-methyl-2-pentanone (MIBK)		20	ug/L	20	98		70	130		
		cis-1,3-dichloropropene		20	ug/L	20	102		70	130		
		toluene		21	ug/L	20	103		70	130		
		trans-1,3-dichloropropene		21	ug/L	20	105		70	130		
		2-hexanone		19	ug/L	20	95		70	130		
		1,1,2-trichloroethane		21	ug/L	20	105		70	130		
		1,3-dichloropropane		18	ug/L	20	88		70	130		
		tetrachloroethene		16	ug/L	20	79		70	130		
		dibromochloromethane		16	ug/L	20	79		70	130		
		1,2-dibromoethane (EDB)		19	ug/L	20	94		70	130		
		chlorobenzene		18	ug/L	20	92		70	130		
		1,1,1,2-tetrachloroethane		18	ug/L	20	91		70	130		
		ethylbenzene		18	ug/L	20	92		70	130		
		m&p-xylenes		38	ug/L	40	95		70	130		
		o-xylene		19	ug/L	20	97		70	130		
		styrene		20	ug/L	20	98		70	130		
		bromoform		15	ug/L	20	74		70	130		
		isopropylbenzene		19	ug/L	20	95		70	130		
		1,1,2,2-tetrachloroethane		18	ug/L	20	90		70	130		
		1,2,3-trichloropropane		17	ug/L	20	87		70	130		
		n-propylbenzene		18	ug/L	20	90		70	130		
		bromobenzene		17	ug/L	20	83		70	130		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW5030C8260C	LCS1901335	1,3,5-trimethylbenzene		19	ug/L	20	96	70	130		
		2-chlorotoluene		18	ug/L	20	91	70	130		
		4-chlorotoluene		18	ug/L	20	89	70	130		
		tert-butylbenzene		19	ug/L	20	94	70	130		
		1,2,4-trimethylbenzene		19	ug/L	20	95	70	130		
		sec-butylbenzene		17	ug/L	20	87	70	130		
		1,3-dichlorobenzene		18	ug/L	20	88	70	130		
		4-isopropyltoluene		19	ug/L	20	94	70	130		
		1,4-dichlorobenzene		17	ug/L	20	86	70	130		
		1,2-dichlorobenzene		17	ug/L	20	86	70	130		
		n-butylbenzene		19	ug/L	20	94	70	130		
		1,2-dibromo-3-chloropropane (DBCP)		19	ug/L	20	96	70	130		
		1,2,4-trichlorobenzene		16	ug/L	20	81	70	130		
		hexachlorobutadiene		15	ug/L	20	73	70	130		
		naphthalene		21	ug/L	20	103	70	130		
		1,2,3-trichlorobenzene		17	ug/L	20	85	70	130		
		dibromofluoromethane SUR		105	%			78	114		
		toluene-D8 SUR		105	%			88	110		
		4-bromofluorobenzene SUR		112	%			86	115		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R		Limits		RPD	RPD Limit
SW5030C8260C	LCSD1901335	dichlorodifluoromethane		20	ug/L	20	98		70	130	4	20
		chloromethane		21	ug/L	20	105		70	130	2	20
		vinyl chloride		40	ug/L	20	198	*	70	130	5	20
		bromomethane		34	ug/L	20	168	*	70	130	8	20
		chloroethane		18	ug/L	20	91		70	130	5	20
		trichlorofluoromethane		23	ug/L	20	114		70	130	6	20
		diethyl ether		18	ug/L	20	89		70	130	1	20
		acetone		17	ug/L	20	84		70	130	8	20
		1,1-dichloroethene		20	ug/L	20	101		70	130	0	20
		methylene chloride		21	ug/L	20	106		70	130	5	20
		carbon disulfide		17	ug/L	20	86		70	130	1	20
		methyl t-butyl ether (MTBE)		21	ug/L	20	104		70	130	2	20
		trans-1,2-dichloroethene		22	ug/L	20	109		70	130	1	20
		1,1-dichloroethane		19	ug/L	20	97		70	130	3	20
		2-butanone (MEK)		15	ug/L	20	77		70	130	1	20
		2,2-dichloropropane		20	ug/L	20	98		70	130	0	20
		cis-1,2-dichloroethene		22	ug/L	20	109		70	130	3	20
		chloroform		21	ug/L	20	105		70	130	2	20
		bromochloromethane		20	ug/L	20	101		70	130	2	20
		tetrahydrofuran (THF)		15	ug/L	20	74		70	130	3	20
		1,1,1-trichloroethane		22	ug/L	20	109		70	130	2	20
		1,1-dichloropropene		20	ug/L	20	99		70	130	1	20
		carbon tetrachloride		20	ug/L	20	102		70	130	2	20
		1,2-dichloroethane		21	ug/L	20	104		70	130	3	20
		benzene		21	ug/L	20	104		70	130	2	20
		trichloroethene		22	ug/L	20	108		70	130	1	20
		1,2-dichloropropane		19	ug/L	20	94		70	130	1	20
		bromodichloromethane		20	ug/L	20	100		70	130	4	20
		dibromomethane		23	ug/L	20	113		70	130	6	20
		4-methyl-2-pentanone (MIBK)		20	ug/L	20	100		70	130	2	20
		cis-1,3-dichloropropene		21	ug/L	20	106		70	130	4	20
		toluene		21	ug/L	20	104		70	130	1	20
		trans-1,3-dichloropropene		22	ug/L	20	110		70	130	4	20
		2-hexanone		19	ug/L	20	95		70	130	0	20
		1,1,2-trichloroethane		21	ug/L	20	107		70	130	2	20
		1,3-dichloropropane		18	ug/L	20	90		70	130	2	20
		tetrachloroethene		16	ug/L	20	81		70	130	3	20
		dibromochloromethane		17	ug/L	20	84		70	130	6	20
		1,2-dibromoethane (EDB)		19	ug/L	20	97		70	130	2	20
		chlorobenzene		19	ug/L	20	93		70	130	2	20
		1,1,1,2-tetrachloroethane		18	ug/L	20	92		70	130	2	20
		ethylbenzene		18	ug/L	20	92		70	130	0	20
		m&p-xylenes		38	ug/L	40	96		70	130	1	20
		o-xylene		20	ug/L	20	98		70	130	1	20
		styrene		19	ug/L	20	97		70	130	0	20
		bromoform		15	ug/L	20	77		70	130	4	20
		isopropylbenzene		19	ug/L	20	97		70	130	3	20
		1,1,2,2-tetrachloroethane		18	ug/L	20	91		70	130	1	20
		1,2,3-trichloropropane		18	ug/L	20	88		70	130	2	20
		n-propylbenzene		18	ug/L	20	91		70	130	0	20
		bromobenzene		17	ug/L	20	86		70	130	2	20

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW5030C8260C	LCSD1901335	1,3,5-trimethylbenzene		20	ug/L	20	98	70	130	2	20
		2-chlorotoluene		18	ug/L	20	92	70	130	1	20
		4-chlorotoluene		18	ug/L	20	90	70	130	1	20
		tert-butylbenzene		19	ug/L	20	95	70	130	1	20
		1,2,4-trimethylbenzene		19	ug/L	20	96	70	130	1	20
		sec-butylbenzene		18	ug/L	20	89	70	130	2	20
		1,3-dichlorobenzene		18	ug/L	20	90	70	130	2	20
		4-isopropyltoluene		19	ug/L	20	94	70	130	1	20
		1,4-dichlorobenzene		18	ug/L	20	88	70	130	3	20
		1,2-dichlorobenzene		18	ug/L	20	90	70	130	5	20
		n-butylbenzene		19	ug/L	20	96	70	130	2	20
		1,2-dibromo-3-chloropropane (DBCP)		19	ug/L	20	97	70	130	1	20
		1,2,4-trichlorobenzene		17	ug/L	20	85	70	130	4	20
		hexachlorobutadiene		16	ug/L	20	79	70	130	7	20
		naphthalene		21	ug/L	20	106	70	130	3	20
		1,2,3-trichlorobenzene		17	ug/L	20	87	70	130	3	20
		dibromofluoromethane SUR		103	%			78	114		
		toluene-D8 SUR		104	%			88	110		
		4-bromofluorobenzene SUR		112	%			86	115		

APPENDIX B: AERMOD MODELING FILES

Site 1 (Shreveport, LA)

```
CO STARTING
CO TITLEONE 2801 Milam Street, Shreveport, LA
CO TITLETWO Styrene Emission Modeling
CO MODELOPT DFAULT CONC
CO AVERTIME 1
CO POLLUTID STYRENE
CO RUNORNOT RUN
CO FINISHED

SO STARTING
SO EMISUNIT 215.21 GRAM/SEC PPM
**           EPN      TYPE    X(m)       Y(m)      Elev(m)
**          ----------------------------------------------
   LOCATION STACK01  POINT  426516.2  3596515.4  65.5
**
**             EPN    QS(g/s)   HS(m)  TS(K)  VS(m/s)  DS(m)
**          ------------------------------------------------
   SRCPARAM STACK01  0.01  0.52  350.15  24.85   0.055


SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
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SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00

   SRCGROUP ALL

SO FINISHED

RE STARTING
RE ELEVUNIT METERS
RE GRIDPOLR POL1 STA
                 ORIG  STACK01
                 DIST  2. 3. 4. 6. 8. 15. 20. 45.
                 GDIR  36 10 10
   GRIDPOLR POL1     ELEV    1     65.3     65.3     65.2     65.1     65.0     64.4
   GRIDPOLR POL1     ELEV    1     63.9     60.4
   GRIDPOLR POL1     ELEV    2     65.3     65.3     65.2     65.1     64.9     64.4
   GRIDPOLR POL1     ELEV    2     64.1     61.3
   GRIDPOLR POL1     ELEV    3     65.3     65.2     65.2     65.0     64.9     64.4
   GRIDPOLR POL1     ELEV    3     64.1     62.6
   GRIDPOLR POL1     ELEV    4     65.3     65.2     65.2     65.0     64.9     64.4
   GRIDPOLR POL1     ELEV    4     64.1     63.8
   GRIDPOLR POL1     ELEV    5     65.3     65.2     65.2     65.0     64.9     64.4
   GRIDPOLR POL1     ELEV    5     64.1     64.6
   GRIDPOLR POL1     ELEV    6     65.3     65.2     65.2     65.0     64.9     64.4
   GRIDPOLR POL1     ELEV    6     64.1     64.0
   GRIDPOLR POL1     ELEV    7     65.3     65.3     65.2     65.1     65.0     64.5
   GRIDPOLR POL1     ELEV    7     64.1     63.0
   GRIDPOLR POL1     ELEV    8     65.3     65.3     65.2     65.1     65.0     64.6
   GRIDPOLR POL1     ELEV    8     64.2     62.5
   GRIDPOLR POL1     ELEV    9     65.3     65.3     65.3     65.2     65.1     64.8
   GRIDPOLR POL1     ELEV    9     64.4     62.3
   GRIDPOLR POL1     ELEV   10     65.4     65.3     65.3     65.2     65.2     64.9
   GRIDPOLR POL1     ELEV   10     64.6     62.2
   GRIDPOLR POL1     ELEV   11     65.4     65.4     65.3     65.3     65.2     65.0
   GRIDPOLR POL1     ELEV   11     64.7     62.2
   GRIDPOLR POL1     ELEV   12     65.4     65.4     65.4     65.4     65.3     65.1
   GRIDPOLR POL1     ELEV   12     64.9     62.2
   GRIDPOLR POL1     ELEV   13     65.4     65.4     65.4     65.4     65.4     65.3
   GRIDPOLR POL1     ELEV   13     65.0     62.5
   GRIDPOLR POL1     ELEV   14     65.5     65.5     65.5     65.5     65.5     65.5
   GRIDPOLR POL1     ELEV   14     65.0     62.8
   GRIDPOLR POL1     ELEV   15     65.5     65.5     65.5     65.5     65.5     65.6
   GRIDPOLR POL1     ELEV   15     65.1     63.5
   GRIDPOLR POL1     ELEV   16     65.5     65.5     65.5     65.6     65.6     65.6
   GRIDPOLR POL1     ELEV   16     65.4     64.6
   GRIDPOLR POL1     ELEV   17     65.5     65.5     65.6     65.6     65.7     65.8
   GRIDPOLR POL1     ELEV   17     65.7     65.4
   GRIDPOLR POL1     ELEV   18     65.5     65.6     65.6     65.7     65.8     66.0
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GRIDPOLR POL1     ELEV   18     66.0     65.8
GRIDPOLR POL1     ELEV   19     65.5     65.6     65.6     65.7     65.8     66.1
GRIDPOLR POL1     ELEV   19     66.2     65.9
GRIDPOLR POL1     ELEV   20     65.6     65.6     65.6     65.7     65.9     66.2
GRIDPOLR POL1     ELEV   20     66.4     66.9
GRIDPOLR POL1     ELEV   21     65.6     65.6     65.7     65.8     65.9     66.3
GRIDPOLR POL1     ELEV   21     66.6     67.8
GRIDPOLR POL1     ELEV   22     65.6     65.6     65.7     65.8     65.9     66.4
GRIDPOLR POL1     ELEV   22     67.0     68.5
GRIDPOLR POL1     ELEV   23     65.6     65.6     65.7     65.8     65.9     66.6
GRIDPOLR POL1     ELEV   23     67.3     68.8
GRIDPOLR POL1     ELEV   24     65.5     65.6     65.7     65.8     65.9     66.6
GRIDPOLR POL1     ELEV   24     67.4     68.3
GRIDPOLR POL1     ELEV   25     65.5     65.6     65.6     65.7     65.8     66.6
GRIDPOLR POL1     ELEV   25     67.2     67.7
GRIDPOLR POL1     ELEV   26     65.5     65.6     65.6     65.7     65.8     66.5
GRIDPOLR POL1     ELEV   26     67.0     67.1
GRIDPOLR POL1     ELEV   27     65.5     65.5     65.6     65.6     65.7     66.2
GRIDPOLR POL1     ELEV   27     66.6     66.6
GRIDPOLR POL1     ELEV   28     65.5     65.5     65.5     65.6     65.6     66.0
GRIDPOLR POL1     ELEV   28     66.1     65.5
GRIDPOLR POL1     ELEV   29     65.5     65.5     65.5     65.5     65.5     65.7
GRIDPOLR POL1     ELEV   29     65.6     65.4
GRIDPOLR POL1     ELEV   30     65.4     65.4     65.5     65.5     65.5     65.4
GRIDPOLR POL1     ELEV   30     65.3     65.2
GRIDPOLR POL1     ELEV   31     65.4     65.4     65.4     65.4     65.4     65.2
GRIDPOLR POL1     ELEV   31     65.2     65.2
GRIDPOLR POL1     ELEV   32     65.4     65.4     65.4     65.3     65.3     65.1
GRIDPOLR POL1     ELEV   32     65.0     64.4
GRIDPOLR POL1     ELEV   33     65.4     65.4     65.3     65.3     65.2     65.0
GRIDPOLR POL1     ELEV   33     64.9     63.1
GRIDPOLR POL1     ELEV   34     65.4     65.3     65.3     65.2     65.1     64.8
GRIDPOLR POL1     ELEV   34     64.7     61.5
GRIDPOLR POL1     ELEV   35     65.4     65.3     65.3     65.2     65.1     64.6
GRIDPOLR POL1     ELEV   35     64.2     60.4
GRIDPOLR POL1     ELEV   36     65.3     65.3     65.2     65.1     65.0     64.5
GRIDPOLR POL1     ELEV   36     63.9     60.1
GRIDPOLR POL1     HILL    1     65.3     65.3     65.2     65.1     65.0     64.4
GRIDPOLR POL1     HILL    1     63.9     68.6
GRIDPOLR POL1     HILL    2     65.3     65.3     65.2     65.1     64.9     64.4
GRIDPOLR POL1     HILL    2     64.1     68.2
GRIDPOLR POL1     HILL    3     65.3     65.2     65.2     65.0     64.9     64.4
GRIDPOLR POL1     HILL    3     64.1     66.5
GRIDPOLR POL1     HILL    4     65.3     65.2     65.2     65.0     64.9     64.4
GRIDPOLR POL1     HILL    4     64.1     66.5
GRIDPOLR POL1     HILL    5     65.3     65.2     65.2     65.0     64.9     64.4
GRIDPOLR POL1     HILL    5     64.1     66.5
GRIDPOLR POL1     HILL    6     65.3     65.2     65.2     65.0     64.9     64.4
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GRIDPOLR POL1     HILL    6     64.1     66.5
GRIDPOLR POL1     HILL    7     65.3     65.3     65.2     65.1     65.0     64.5
GRIDPOLR POL1     HILL    7     64.1     66.5
GRIDPOLR POL1     HILL    8     65.3     65.3     65.2     65.1     65.0     64.6
GRIDPOLR POL1     HILL    8     64.2     66.5
GRIDPOLR POL1     HILL    9     65.3     65.3     65.3     65.2     65.1     64.8
GRIDPOLR POL1     HILL    9     64.8     66.5
GRIDPOLR POL1     HILL   10     65.4     65.3     65.3     65.2     65.2     64.9
GRIDPOLR POL1     HILL   10     64.6     66.5
GRIDPOLR POL1     HILL   11     65.4     65.4     65.3     65.3     65.2     65.0
GRIDPOLR POL1     HILL   11     64.7     64.9
GRIDPOLR POL1     HILL   12     65.4     65.4     65.4     65.4     65.3     65.1
GRIDPOLR POL1     HILL   12     64.9     65.6
GRIDPOLR POL1     HILL   13     65.4     65.4     65.4     65.4     65.4     65.3
GRIDPOLR POL1     HILL   13     65.0     66.1
GRIDPOLR POL1     HILL   14     65.5     65.5     65.5     65.5     65.5     65.5
GRIDPOLR POL1     HILL   14     65.6     68.4
GRIDPOLR POL1     HILL   15     65.5     65.5     65.5     65.5     65.5     65.6
GRIDPOLR POL1     HILL   15     65.1     66.0
GRIDPOLR POL1     HILL   16     65.5     65.5     65.5     65.6     65.6     65.6
GRIDPOLR POL1     HILL   16     65.4     65.4
GRIDPOLR POL1     HILL   17     67.6     67.6     67.6     65.6     65.7     65.8
GRIDPOLR POL1     HILL   17     65.7     65.4
GRIDPOLR POL1     HILL   18     67.6     67.6     67.6     67.6     67.6     66.0
GRIDPOLR POL1     HILL   18     66.0     65.8
GRIDPOLR POL1     HILL   19     67.6     67.6     67.6     67.6     67.6     66.1
GRIDPOLR POL1     HILL   19     67.7     69.0
GRIDPOLR POL1     HILL   20     67.6     67.6     67.6     67.6     67.6     67.7
GRIDPOLR POL1     HILL   20     68.5     68.9
GRIDPOLR POL1     HILL   21     67.6     67.6     67.6     67.6     68.2     68.5
GRIDPOLR POL1     HILL   21     68.5     67.8
GRIDPOLR POL1     HILL   22     67.6     67.6     67.6     68.2     68.2     68.5
GRIDPOLR POL1     HILL   22     67.6     68.5
GRIDPOLR POL1     HILL   23     67.6     67.6     68.2     68.2     68.2     68.2
GRIDPOLR POL1     HILL   23     67.6     68.8
GRIDPOLR POL1     HILL   24     67.6     68.2     68.2     68.2     68.2     68.2
GRIDPOLR POL1     HILL   24     67.6     68.3
GRIDPOLR POL1     HILL   25     67.6     68.2     68.2     68.2     68.2     68.2
GRIDPOLR POL1     HILL   25     68.2     67.7
GRIDPOLR POL1     HILL   26     67.6     68.2     68.2     68.2     68.2     68.2
GRIDPOLR POL1     HILL   26     68.2     67.1
GRIDPOLR POL1     HILL   27     67.6     68.2     68.2     68.2     68.2     68.2
GRIDPOLR POL1     HILL   27     68.2     66.8
GRIDPOLR POL1     HILL   28     67.6     68.2     68.2     68.2     68.2     68.2
GRIDPOLR POL1     HILL   28     68.2     68.1
GRIDPOLR POL1     HILL   29     67.6     68.2     68.2     68.2     68.2     68.2
GRIDPOLR POL1     HILL   29     68.2     67.4
GRIDPOLR POL1     HILL   30     67.6     68.2     68.2     68.2     68.2     68.2
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   GRIDPOLR POL1     HILL   30     68.2     65.2
   GRIDPOLR POL1     HILL   31     67.6     68.2     68.2     68.2     68.2     68.2
   GRIDPOLR POL1     HILL   31     68.2     65.2
   GRIDPOLR POL1     HILL   32     67.6     67.6     68.2     68.2     68.2     68.2
   GRIDPOLR POL1     HILL   32     68.2     65.2
   GRIDPOLR POL1     HILL   33     67.6     67.6     67.6     68.2     68.2     68.2
   GRIDPOLR POL1     HILL   33     64.9     67.4
   GRIDPOLR POL1     HILL   34     67.6     67.6     67.6     67.6     65.1     68.2
   GRIDPOLR POL1     HILL   34     64.7     68.6
   GRIDPOLR POL1     HILL   35     67.6     67.6     65.3     65.2     65.1     64.6
   GRIDPOLR POL1     HILL   35     68.2     69.5
   GRIDPOLR POL1     HILL   36     65.3     65.3     65.2     65.1     65.0     64.5
   GRIDPOLR POL1     HILL   36     68.2     69.5
RE GRIDPOLR POL1 END
RE FINISHED

ME STARTING
   SURFFILE SHV01_AMET.SFC
   PROFFILE SHV01_AMET.PFL
   SURFDATA 13957 2018 SHREVEPORT,LA
   UAIRDATA 13957 2018 SHREVEPORT,LA
   PROFBASE 78.5
ME FINISHED

OU STARTING
   RECTABLE ALLAVE 1ST 8TH
   SUMMFILE SHV01.SUM
   PLOTFILE 1 ALL 1ST SHV01_1hr.PLT 31
OU FINISHED
```

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CO STARTING
CO TITLEONE 2801 Milam Street, Shreveport, LA
CO TITLETWO Styrene Emission Modeling
CO MODELOPT DFAULT CONC
CO AVERTIME 1
CO POLLUTID STYRENE
CO RUNORNOT RUN
CO FINISHED

SO STARTING
SO EMISUNIT 215.21 GRAM/SEC PPM
**           EPN      TYPE    X(m)       Y(m)      Elev(m)
**          ----------------------------------------------
   LOCATION STACK01  POINT  426516.2  3596515.4  65.5
**
**              EPN    QS(g/s)   HS(m)  TS(K)  VS(m/s)  DS(m)
**          ------------------------------------------------
   SRCPARAM STACK01  0.01  0.52  350.15  24.85   0.055


SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
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SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00

   SRCGROUP ALL

SO FINISHED

RE STARTING
RE ELEVUNIT METERS
RE GRIDPOLR POL1 STA
                 ORIG  STACK01
                 DIST  2. 3. 4. 6. 8. 15. 20. 45.
                 GDIR  36 10 10
   GRIDPOLR POL1     ELEV    1     65.3     65.3     65.2     65.1     65.0     64.4
   GRIDPOLR POL1     ELEV    1     63.9     60.4
   GRIDPOLR POL1     ELEV    2     65.3     65.3     65.2     65.1     64.9     64.4
   GRIDPOLR POL1     ELEV    2     64.1     61.3
   GRIDPOLR POL1     ELEV    3     65.3     65.2     65.2     65.0     64.9     64.4
   GRIDPOLR POL1     ELEV    3     64.1     62.6
   GRIDPOLR POL1     ELEV    4     65.3     65.2     65.2     65.0     64.9     64.4
   GRIDPOLR POL1     ELEV    4     64.1     63.8
   GRIDPOLR POL1     ELEV    5     65.3     65.2     65.2     65.0     64.9     64.4
   GRIDPOLR POL1     ELEV    5     64.1     64.6
   GRIDPOLR POL1     ELEV    6     65.3     65.2     65.2     65.0     64.9     64.4
   GRIDPOLR POL1     ELEV    6     64.1     64.0
   GRIDPOLR POL1     ELEV    7     65.3     65.3     65.2     65.1     65.0     64.5
   GRIDPOLR POL1     ELEV    7     64.1     63.0
   GRIDPOLR POL1     ELEV    8     65.3     65.3     65.2     65.1     65.0     64.6
   GRIDPOLR POL1     ELEV    8     64.2     62.5
   GRIDPOLR POL1     ELEV    9     65.3     65.3     65.3     65.2     65.1     64.8
   GRIDPOLR POL1     ELEV    9     64.4     62.3
   GRIDPOLR POL1     ELEV   10     65.4     65.3     65.3     65.2     65.2     64.9
   GRIDPOLR POL1     ELEV   10     64.6     62.2
   GRIDPOLR POL1     ELEV   11     65.4     65.4     65.3     65.3     65.2     65.0
   GRIDPOLR POL1     ELEV   11     64.7     62.2
   GRIDPOLR POL1     ELEV   12     65.4     65.4     65.4     65.4     65.3     65.1
   GRIDPOLR POL1     ELEV   12     64.9     62.2
   GRIDPOLR POL1     ELEV   13     65.4     65.4     65.4     65.4     65.4     65.3
   GRIDPOLR POL1     ELEV   13     65.0     62.5
   GRIDPOLR POL1     ELEV   14     65.5     65.5     65.5     65.5     65.5     65.5
   GRIDPOLR POL1     ELEV   14     65.0     62.8
   GRIDPOLR POL1     ELEV   15     65.5     65.5     65.5     65.5     65.5     65.6
   GRIDPOLR POL1     ELEV   15     65.1     63.5
   GRIDPOLR POL1     ELEV   16     65.5     65.5     65.5     65.6     65.6     65.6
   GRIDPOLR POL1     ELEV   16     65.4     64.6
   GRIDPOLR POL1     ELEV   17     65.5     65.5     65.6     65.6     65.7     65.8
   GRIDPOLR POL1     ELEV   17     65.7     65.4
   GRIDPOLR POL1     ELEV   18     65.5     65.6     65.6     65.7     65.8     66.0
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GRIDPOLR	POL1	ELEV	18	66.0	65.8			
GRIDPOLR	POL1	ELEV	19	65.5	65.6	65.6	65.7	65.8	66.1
GRIDPOLR	POL1	ELEV	19	66.2	65.9			
GRIDPOLR	POL1	ELEV	20	65.6	65.6	65.6	65.7	65.9	66.2
GRIDPOLR	POL1	ELEV	20	66.4	66.9			
GRIDPOLR	POL1	ELEV	21	65.6	65.6	65.7	65.8	65.9	66.3
GRIDPOLR	POL1	ELEV	21	66.6	67.8			
GRIDPOLR	POL1	ELEV	22	65.6	65.6	65.7	65.8	65.9	66.4
GRIDPOLR	POL1	ELEV	22	67.0	68.5			
GRIDPOLR	POL1	ELEV	23	65.6	65.6	65.7	65.8	65.9	66.6
GRIDPOLR	POL1	ELEV	23	67.3	68.8			
GRIDPOLR	POL1	ELEV	24	65.5	65.6	65.7	65.8	65.9	66.6
GRIDPOLR	POL1	ELEV	24	67.4	68.3			
GRIDPOLR	POL1	ELEV	25	65.5	65.6	65.6	65.7	65.8	66.6
GRIDPOLR	POL1	ELEV	25	67.2	67.7			
GRIDPOLR	POL1	ELEV	26	65.5	65.6	65.6	65.7	65.8	66.5
GRIDPOLR	POL1	ELEV	26	67.0	67.1			
GRIDPOLR	POL1	ELEV	27	65.5	65.5	65.6	65.6	65.7	66.2
GRIDPOLR	POL1	ELEV	27	66.6	66.6			
GRIDPOLR	POL1	ELEV	28	65.5	65.5	65.5	65.6	65.6	66.0
GRIDPOLR	POL1	ELEV	28	66.1	65.5			
GRIDPOLR	POL1	ELEV	29	65.5	65.5	65.5	65.5	65.5	65.7
GRIDPOLR	POL1	ELEV	29	65.6	65.4			
GRIDPOLR	POL1	ELEV	30	65.4	65.4	65.5	65.5	65.5	65.4
GRIDPOLR	POL1	ELEV	30	65.3	65.2			
GRIDPOLR	POL1	ELEV	31	65.4	65.4	65.4	65.4	65.4	65.2
GRIDPOLR	POL1	ELEV	31	65.2	65.2			
GRIDPOLR	POL1	ELEV	32	65.4	65.4	65.4	65.3	65.3	65.1
GRIDPOLR	POL1	ELEV	32	65.0	64.4			
GRIDPOLR	POL1	ELEV	33	65.4	65.4	65.3	65.3	65.2	65.0
GRIDPOLR	POL1	ELEV	33	64.9	63.1			
GRIDPOLR	POL1	ELEV	34	65.4	65.3	65.3	65.2	65.1	64.8
GRIDPOLR	POL1	ELEV	34	64.7	61.5			
GRIDPOLR	POL1	ELEV	35	65.4	65.3	65.3	65.2	65.1	64.6
GRIDPOLR	POL1	ELEV	35	64.2	60.4			
GRIDPOLR	POL1	ELEV	36	65.3	65.3	65.2	65.1	65.0	64.5
GRIDPOLR	POL1	ELEV	36	63.9	60.1			
GRIDPOLR	POL1	HILL	1	65.3	65.3	65.2	65.1	65.0	64.4
GRIDPOLR	POL1	HILL	1	63.9	68.6			
GRIDPOLR	POL1	HILL	2	65.3	65.3	65.2	65.1	64.9	64.4
GRIDPOLR	POL1	HILL	2	64.1	68.2			
GRIDPOLR	POL1	HILL	3	65.3	65.2	65.2	65.0	64.9	64.4
GRIDPOLR	POL1	HILL	3	64.1	66.5			
GRIDPOLR	POL1	HILL	4	65.3	65.2	65.2	65.0	64.9	64.4
GRIDPOLR	POL1	HILL	4	64.1	66.5			
GRIDPOLR	POL1	HILL	5	65.3	65.2	65.2	65.0	64.9	64.4
GRIDPOLR	POL1	HILL	5	64.1	66.5			
GRIDPOLR	POL1	HILL	6	65.3	65.2	65.2	65.0	64.9	64.4

GRIDPOLR	POL1	HILL	6	64.1	66.5			
GRIDPOLR	POL1	HILL	7	65.3	65.3	65.2	65.1	65.0	64.5
GRIDPOLR	POL1	HILL	7	64.1	66.5			
GRIDPOLR	POL1	HILL	8	65.3	65.3	65.2	65.1	65.0	64.6
GRIDPOLR	POL1	HILL	8	64.2	66.5			
GRIDPOLR	POL1	HILL	9	65.3	65.3	65.3	65.2	65.1	64.8
GRIDPOLR	POL1	HILL	9	64.8	66.5			
GRIDPOLR	POL1	HILL	10	65.4	65.3	65.3	65.2	65.2	64.9
GRIDPOLR	POL1	HILL	10	64.6	66.5			
GRIDPOLR	POL1	HILL	11	65.4	65.4	65.3	65.3	65.2	65.0
GRIDPOLR	POL1	HILL	11	64.7	64.9			
GRIDPOLR	POL1	HILL	12	65.4	65.4	65.4	65.4	65.3	65.1
GRIDPOLR	POL1	HILL	12	64.9	65.6			
GRIDPOLR	POL1	HILL	13	65.4	65.4	65.4	65.4	65.4	65.3
GRIDPOLR	POL1	HILL	13	65.0	66.1			
GRIDPOLR	POL1	HILL	14	65.5	65.5	65.5	65.5	65.5	65.5
GRIDPOLR	POL1	HILL	14	65.6	68.4			
GRIDPOLR	POL1	HILL	15	65.5	65.5	65.5	65.5	65.5	65.6
GRIDPOLR	POL1	HILL	15	65.1	66.0			
GRIDPOLR	POL1	HILL	16	65.5	65.5	65.5	65.6	65.6	65.6
GRIDPOLR	POL1	HILL	16	65.4	65.4			
GRIDPOLR	POL1	HILL	17	67.6	67.6	67.6	65.6	65.7	65.8
GRIDPOLR	POL1	HILL	17	65.7	65.4			
GRIDPOLR	POL1	HILL	18	67.6	67.6	67.6	67.6	67.6	66.0
GRIDPOLR	POL1	HILL	18	66.0	65.8			
GRIDPOLR	POL1	HILL	19	67.6	67.6	67.6	67.6	67.6	66.1
GRIDPOLR	POL1	HILL	19	67.7	69.0			
GRIDPOLR	POL1	HILL	20	67.6	67.6	67.6	67.6	67.6	67.7
GRIDPOLR	POL1	HILL	20	68.5	68.9			
GRIDPOLR	POL1	HILL	21	67.6	67.6	67.6	67.6	68.2	68.5
GRIDPOLR	POL1	HILL	21	68.5	67.8			
GRIDPOLR	POL1	HILL	22	67.6	67.6	67.6	68.2	68.2	68.5
GRIDPOLR	POL1	HILL	22	67.6	68.5			
GRIDPOLR	POL1	HILL	23	67.6	67.6	68.2	68.2	68.2	68.2
GRIDPOLR	POL1	HILL	23	67.6	68.8			
GRIDPOLR	POL1	HILL	24	67.6	68.2	68.2	68.2	68.2	68.2
GRIDPOLR	POL1	HILL	24	67.6	68.3			
GRIDPOLR	POL1	HILL	25	67.6	68.2	68.2	68.2	68.2	68.2
GRIDPOLR	POL1	HILL	25	68.2	67.7			
GRIDPOLR	POL1	HILL	26	67.6	68.2	68.2	68.2	68.2	68.2
GRIDPOLR	POL1	HILL	26	68.2	67.1			
GRIDPOLR	POL1	HILL	27	67.6	68.2	68.2	68.2	68.2	68.2
GRIDPOLR	POL1	HILL	27	68.2	66.8			
GRIDPOLR	POL1	HILL	28	67.6	68.2	68.2	68.2	68.2	68.2
GRIDPOLR	POL1	HILL	28	68.2	68.1			
GRIDPOLR	POL1	HILL	29	67.6	68.2	68.2	68.2	68.2	68.2
GRIDPOLR	POL1	HILL	29	68.2	67.4			
GRIDPOLR	POL1	HILL	30	67.6	68.2	68.2	68.2	68.2	68.2

```
   GRIDPOLR POL1     HILL   30     68.2     65.2
   GRIDPOLR POL1     HILL   31     67.6     68.2     68.2     68.2     68.2     68.2
   GRIDPOLR POL1     HILL   31     68.2     65.2
   GRIDPOLR POL1     HILL   32     67.6     67.6     68.2     68.2     68.2     68.2
   GRIDPOLR POL1     HILL   32     68.2     65.2
   GRIDPOLR POL1     HILL   33     67.6     67.6     67.6     68.2     68.2     68.2
   GRIDPOLR POL1     HILL   33     64.9     67.4
   GRIDPOLR POL1     HILL   34     67.6     67.6     67.6     67.6     65.1     68.2
   GRIDPOLR POL1     HILL   34     64.7     68.6
   GRIDPOLR POL1     HILL   35     67.6     67.6     65.3     65.2     65.1     64.6
   GRIDPOLR POL1     HILL   35     68.2     69.5
   GRIDPOLR POL1     HILL   36     65.3     65.3     65.2     65.1     65.0     64.5
   GRIDPOLR POL1     HILL   36     68.2     69.5
RE GRIDPOLR POL1 END
RE FINISHED

ME STARTING
   SURFFILE SHV01_AMET.SFC
   PROFFILE SHV01_AMET.PFL
   SURFDATA 13957 2018 SHREVEPORT,LA
   UAIRDATA 13957 2018 SHREVEPORT,LA
   PROFBASE 78.5
ME FINISHED

OU STARTING
   RECTABLE ALLAVE 1ST 8TH
   SUMMFILE SHV01.SUM
   PLOTFILE 1 ALL 1ST SHV01_1hr.PLT 31
OU FINISHED

 **********************************
 *** SETUP Finishes Successfully ***
 **********************************

 *** AERMOD - VERSION  18081 ***   *** 2801 Milam Street, Shreveport, LA
                          ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                         ***        11:22:38

                                   PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                              ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.
```

```
  --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.

 **Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  STYRENE

 **Model Calculates  1 Short Term Average(s) of:   1-HR

 **This Run Includes:      1 Source(s);       1 Source Group(s); and     288
Receptor(s)

                with:      1 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:      0 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  18081

 **Output Options Selected:
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
```

Keyword)

 **NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and
Missing Hours

 **Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   78.50 ; Decay
Coef. =   0.000   ; Rot. Angle =   0.0
                  Emission Units = GRAM/SEC   ;
Emission Rate Unit Factor =   215.21
                  Output Units   = PPM

 **Approximate Storage Requirements of Model =   3.6 MB of RAM.

 **Input Runstream File: aermod.inp

 **Output Print File: aermod.out

 **File for Summary of Results: SHV01.SUM

 *** MODELOPTs: RegDFAULT CONC ELEV RURAL

                                                    *** POINT SOURCE DATA ***

              NUMBER EMISSION RATE   BASE   STACK   STACK
STACK   STACK   BLDG   URBAN CAP/ EMIS RATE
   SOURCE   PART. (USER UNITS)   X   Y   ELEV.   HEIGHT TEMP.   EXIT
VEL. DIAMETER EXISTS SOURCE HOR   SCALAR
     ID   CATS.   (METERS) (METERS) (METERS) (METERS) (DEG.K)
(M/SEC) (METERS)   VARY BY
 -
- -

 STACK01   0   0.10000E-01 426516.2 3596515.4   65.5   0.52   350.15
24.85   0.06   NO   NO   NO

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	STACK01 ,

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*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

*** ORIGIN FOR POLAR NETWORK ***
X-ORIG = 426516.20 ; Y-ORIG = 3596515.40 (METERS)

*** DISTANCE RANGES OF NETWORK ***
(METERS)

2.0, 3.0, 4.0, 6.0, 8.0, 15.0, 20.0,
45.0,

*** DIRECTION RADIALS OF NETWORK ***
(DEGREES)

10.0, 20.0, 30.0, 40.0, 50.0, 60.0, 70.0,
80.0, 90.0, 100.0,
110.0, 120.0, 130.0, 140.0, 150.0, 160.0, 170.0,
180.0, 190.0, 200.0,
210.0, 220.0, 230.0, 240.0, 250.0, 260.0, 270.0,
280.0, 290.0, 300.0,
310.0, 320.0, 330.0, 340.0, 350.0, 360.0,

*** AERMOD - VERSION 18081 *** *** 2801 Milam Street, Shreveport, LA
*** *** 02/22/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
*** 11:22:38

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

* ELEVATION HEIGHTS IN METERS *

DIRECTION (DEGREES)	DISTANCE (METERS)											
	2.00	3.00	4.00	6.00	8.00	15.00	20.00	45.00				
10.00	65.30	65.30	65.20	65.10	65.00	64.40	63.90	60.40				
20.00	65.30	65.30	65.20	65.10	64.90	64.40	64.10	61.30				
30.00	65.30	65.20	65.20	65.00	64.90	64.40	64.10	62.60				
40.00	65.30	65.20	65.20	65.00	64.90	64.40	64.10	63.80				
50.00	65.30	65.20	65.20	65.00	64.90	64.40	64.10	64.60				
60.00	65.30	65.20	65.20	65.00	64.90	64.40	64.10	64.00				
70.00	65.30	65.30	65.20	65.10	65.00	64.50	64.10	63.00				
80.00	65.30	65.30	65.20	65.10	65.00	64.60	64.20	62.50				
90.00	65.30	65.30	65.30	65.20	65.10	64.80	64.40	62.30				
100.00	65.40	65.30	65.30	65.20	65.20	64.90	64.60	62.20				
110.00	65.40	65.40	65.30	65.30	65.20	65.00	64.70	62.20				
120.00	65.40	65.40	65.40	65.40	65.30	65.10	64.90	62.20				
130.00	65.40	65.40	65.40	65.40	65.40	65.30	65.00	62.50				
140.00	65.50	65.50	65.50	65.50	65.50	65.50	65.00	62.80				
150.00	65.50	65.50	65.50	65.50	65.50	65.60	65.10	63.50				
160.00	65.50	65.50	65.50	65.60	65.60	65.60	65.40	64.60				
170.00	65.50	65.50	65.60	65.60	65.70							

```
  65.80        65.70        65.40
     180.00 |         65.50        65.60        65.60        65.70        65.80
  66.00        66.00        65.80
     190.00 |         65.50        65.60        65.60        65.70        65.80
  66.10        66.20        65.90
     200.00 |         65.60        65.60        65.60        65.70        65.90
  66.20        66.40        66.90
     210.00 |         65.60        65.60        65.70        65.80        65.90
  66.30        66.60        67.80
     220.00 |         65.60        65.60        65.70        65.80        65.90
  66.40        67.00        68.50
     230.00 |         65.60        65.60        65.70        65.80        65.90
  66.60        67.30        68.80
     240.00 |         65.50        65.60        65.70        65.80        65.90
  66.60        67.40        68.30
     250.00 |         65.50        65.60        65.60        65.70        65.80
  66.60        67.20        67.70
     260.00 |         65.50        65.60        65.60        65.70        65.80
  66.50        67.00        67.10
     270.00 |         65.50        65.50        65.60        65.60        65.70
  66.20        66.60        66.60
     280.00 |         65.50        65.50        65.50        65.60        65.60
  66.00        66.10        65.50
     290.00 |         65.50        65.50        65.50        65.50        65.50
  65.70        65.60        65.40
     300.00 |         65.40        65.40        65.50        65.50        65.50
  65.40        65.30        65.20
     310.00 |         65.40        65.40        65.40        65.40        65.40
  65.20        65.20        65.20
     320.00 |         65.40        65.40        65.40        65.30        65.30
  65.10        65.00        64.40
     330.00 |         65.40        65.40        65.30        65.30        65.20
  65.00        64.90        63.10
     340.00 |         65.40        65.30        65.30        65.20        65.10
  64.80        64.70        61.50
     350.00 |         65.40        65.30        65.30        65.20        65.10
  64.60        64.20        60.40
     360.00 |         65.30        65.30        65.20        65.10        65.00
  64.50        63.90        60.10
 *** AERMOD - VERSION  18081 ***   *** 2801 Milam Street, Shreveport, LA
                        ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                       ***        11:22:38

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                  *** NETWORK ID: POL1     ;  NETWORK TYPE: GRIDPOLR
```

***

* HILL HEIGHT SCALES IN METERS *

DIRECTION (DEGREES)	DISTANCE (METERS)								
	2.00	3.00	4.00	6.00	8.00	15.00	20.00	45.00	
10.00	65.30	65.30	65.20	65.10	65.00	64.40	63.90	68.60	
20.00	65.30	65.30	65.20	65.10	64.90	64.40	64.10	68.20	
30.00	65.30	65.20	65.20	65.00	64.90	64.40	64.10	66.50	
40.00	65.30	65.20	65.20	65.00	64.90	64.40	64.10	66.50	
50.00	65.30	65.20	65.20	65.00	64.90	64.40	64.10	66.50	
60.00	65.30	65.20	65.20	65.00	64.90	64.40	64.10	66.50	
70.00	65.30	65.30	65.20	65.10	65.00	64.50	64.10	66.50	
80.00	65.30	65.30	65.20	65.10	65.00	64.60	64.20	66.50	
90.00	65.30	65.30	65.30	65.20	65.10	64.80	64.80	66.50	
100.00	65.40	65.30	65.30	65.20	65.20	64.90	64.60	66.50	
110.00	65.40	65.40	65.30	65.30	65.20	65.00	64.70	64.90	
120.00	65.40	65.40	65.40	65.40	65.30	65.10	64.90	65.60	
130.00	65.40	65.40	65.40	65.40	65.40	65.30	65.00	66.10	
140.00	65.50	65.50	65.50	65.50	65.50	65.50	65.60	68.40	
150.00	65.50	65.50	65.50	65.50	65.50	65.60	65.10	66.00	
160.00	65.50	65.50	65.50	65.60	65.60	65.60	65.40	65.40	
170.00	67.60	67.60	67.60	65.60	65.70	65.80	65.70	65.40	
180.00	67.60	67.60	67.60	67.60	67.60	66.00	66.00	65.80	
190.00	67.60	67.60	67.60	67.60	67.60	66.10	67.70	69.00	

```
   200.00 |         67.60        67.60        67.60        67.60        67.60
  67.70        68.50        68.90
   210.00 |         67.60        67.60        67.60        67.60        68.20
  68.50        68.50        67.80
   220.00 |         67.60        67.60        67.60        68.20        68.20
  68.50        67.60        68.50
   230.00 |         67.60        67.60        68.20        68.20        68.20
  68.20        67.60        68.80
   240.00 |         67.60        68.20        68.20        68.20        68.20
  68.20        67.60        68.30
   250.00 |         67.60        68.20        68.20        68.20        68.20
  68.20        68.20        67.70
   260.00 |         67.60        68.20        68.20        68.20        68.20
  68.20        68.20        67.10
   270.00 |         67.60        68.20        68.20        68.20        68.20
  68.20        68.20        66.80
   280.00 |         67.60        68.20        68.20        68.20        68.20
  68.20        68.20        68.10
   290.00 |         67.60        68.20        68.20        68.20        68.20
  68.20        68.20        67.40
   300.00 |         67.60        68.20        68.20        68.20        68.20
  68.20        68.20        65.20
   310.00 |         67.60        68.20        68.20        68.20        68.20
  68.20        68.20        65.20
   320.00 |         67.60        67.60        68.20        68.20        68.20
  68.20        68.20        65.20
   330.00 |         67.60        67.60        67.60        68.20        68.20
  68.20        64.90        67.40
   340.00 |         67.60        67.60        67.60        67.60        65.10
  68.20        64.70        68.60
   350.00 |         67.60        67.60        65.30        65.20        65.10
  64.60        68.20        69.50
   360.00 |         65.30        65.30        65.20        65.10        65.00
  64.50        68.20        69.50
 *** AERMOD - VERSION  18081 ***   *** 2801 Milam Street, Shreveport, LA
                       ***         02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                       ***         11:22:38

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                          *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
                                                          (1=YES; 0=NO)

           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 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
```

```
           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 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
           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 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
           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 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
           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 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
           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 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
           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 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
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1

               NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON
WHAT IS INCLUDED IN THE DATA FILE.



                                  *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED
CATEGORIES ***
                                                            (METERS/SEC)

                                                 1.54,   3.09,   5.14,   8.23,
10.80,
↑ *** AERMOD - VERSION  18081 ***   *** 2801 Milam Street, Shreveport, LA
                         ***       02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                       ***       11:22:38

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                    *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL
DATA ***

   Surface file:   SHV01_AMET.SFC
                 Met Version:  18081
   Profile file:   SHV01_AMET.PFL

   Surface format: FREE

   Profile format: FREE

   Surface station no.:    13957                Upper air station no.:    13957
                  Name: SHREVEPORT,LA                             Name:
SHREVEPORT,LA
                  Year:   2018                                    Year:   2018
```

```
 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -
 18 01 01   1 01  -64.0  0.586 -9.000 -9.000 -999. 1076.    288.0  0.59   0.41
1.00    4.41    2.   10.0  269.2    2.0
 18 01 01   1 02  -63.3  0.602 -9.000 -9.000 -999. 1121.    316.1  0.59   0.41
1.00    4.51   12.   10.0  269.2    2.0
 18 01 01   1 03  -64.0  0.681 -9.000 -9.000 -999. 1347.    453.1  0.59   0.41
1.00    5.02   21.   10.0  268.8    2.0
 18 01 01   1 04  -64.0  0.766 -9.000 -9.000 -999. 1604.    643.6  0.59   0.41
1.00    5.58   20.   10.0  268.1    2.0
 18 01 01   1 05  -64.0  0.806 -9.000 -9.000 -999. 1733.    750.8  0.59   0.41
1.00    5.85   21.   10.0  268.1    2.0
 18 01 01   1 06  -64.0  0.822 -9.000 -9.000 -999. 1788.    797.8  0.59   0.41
1.00    5.96   16.   10.0  267.5    2.0
 18 01 01   1 07  -54.3  0.894 -9.000 -9.000 -999. 2021.   1208.2  0.59   0.41
1.00    6.43   16.   10.0  267.0    2.0
 18 01 01   1 08  -49.6  0.825 -9.000 -9.000 -999. 1810.   1041.2  0.59   0.41
0.67    5.95   15.   10.0  267.0    2.0
 18 01 01   1 09    6.4  0.856  0.380  0.008  311. 1897.  -8888.0  0.59   0.41
0.34    6.06   18.   10.0  267.5    2.0
 18 01 01   1 10   33.1  0.939  0.837  0.010  651. 2175.  -2301.2  0.59   0.41
0.23    6.62   14.   10.0  268.1    2.0
 18 01 01   1 11   51.8  0.775  1.055  0.009  835. 1677.   -825.7  0.59   0.41
0.19    5.41   21.   10.0  269.9    2.0
 18 01 01   1 12   70.1  0.746  1.176  0.009  853. 1550.   -543.9  0.59   0.41
0.18    5.17   19.   10.0  270.4    2.0
 18 01 01   1 13   77.8  0.743  1.227  0.009  874. 1538.   -484.8  0.59   0.41
0.18    5.14    8.   10.0  272.0    2.0
 18 01 01   1 14   70.9  0.755  1.198  0.009  891. 1574.   -558.0  0.59   0.41
0.19    5.24   10.   10.0  272.0    2.0
 18 01 01   1 15   55.7  0.748  1.112  0.009  905. 1553.   -689.3  0.59   0.41
0.20    5.21   13.   10.0  272.5    2.0
 18 01 01   1 16   28.8  0.729  0.894  0.010  912. 1497.  -1236.8  0.59   0.41
0.26    5.12    6.   10.0  272.0    2.0
 18 01 01   1 17  -18.3  0.708 -9.000 -9.000 -999. 1431.   1777.7  0.59   0.41
0.42    5.07    8.   10.0  271.4    2.0
 18 01 01   1 18  -62.0  0.592 -9.000 -9.000 -999. 1110.    306.6  0.59   0.41
1.00    4.44   10.   10.0  270.4    2.0
 18 01 01   1 19  -64.0  0.615 -9.000 -9.000 -999. 1155.    332.9  0.59   0.41
1.00    4.59   21.   10.0  269.9    2.0
 18 01 01   1 20  -64.0  0.579 -9.000 -9.000 -999. 1061.    279.1  0.59   0.41
1.00    4.37   29.   10.0  269.2    2.0
 18 01 01   1 21  -64.0  0.843 -9.000 -9.000 -999. 1856.    860.7  0.71   0.41
1.00    5.70   38.   10.0  269.2    2.0
```

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 18 01 01   1 22  -64.0  0.706 -9.000 -9.000 -999. 1453.    505.8  0.55   0.41
1.00    5.31   60.   10.0  268.1    2.0
 18 01 01   1 23  -64.0  0.785 -9.000 -9.000 -999. 1666.    695.0  0.55   0.41
1.00    5.85   64.   10.0  267.5    2.0
 18 01 01   1 24  -64.0  0.820 -9.000 -9.000 -999. 1779.    791.0  0.55   0.41
1.00    6.09   62.   10.0  267.0    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 18 01 01 01   10.0 1    2.    4.41   269.3   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION  18081 ***   *** 2801 Milam Street, Shreveport, LA
                          ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                         ***       11:22:38

                                   PAGE   9
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                   INCLUDING SOURCE(S):     STACK01     ,

                                    *** NETWORK ID: POL1     ;  NETWORK TYPE:
GRIDPOLR ***

                                        ** CONC OF STYRENE  IN PPM
                    **

 DIRECTION |                                                 DISTANCE (METERS)
 (DEGREES) |            2.00                    3.00                    4.00
          6.00                    8.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - -

      10.0 |      0.06096 (18120101)      0.06355 (18022822)      0.05302 (18022819)
     0.03825 (18022105)      0.02780 (18022105)
      20.0 |      0.05971 (18021506)      0.06108 (18021524)      0.04840 (18120201)
     0.03535 (18120120)      0.02531 (18122222)
      30.0 |      0.05865 (18022418)      0.05795 (18120103)      0.04902 (18120103)
     0.03322 (18120120)      0.02471 (18122721)
      40.0 |      0.06024 (18022418)      0.05748 (18120104)      0.04715 (18120103)
     0.03151 (18120205)      0.02483 (18120119)
      50.0 |      0.05893 (18120117)      0.05684 (18120106)      0.05177 (18120106)
     0.03495 (18120118)      0.02598 (18120118)
      60.0 |      0.05893 (18120117)      0.06136 (18120106)      0.05520 (18120106)
```

0.03799 (18120118) 0.02804 (18120118)
 70.0 | 0.05706 (18090519) 0.06260 (18120106) 0.05373 (18120106)
0.03839 (18120118) 0.02865 (18120207)
 80.0 | 0.05931 (18012203) 0.06162 (18012203) 0.05269 (18012207)
0.04190 (18021708) 0.03170 (18012301)
 90.0 | 0.05788 (18012203) 0.06228 (18110108) 0.06035 (18012302)
0.04757 (18021708) 0.03604 (18012301)
100.0 | 0.06530 (18110102) 0.06924 (18012218) 0.06443 (18012223)
0.04831 (18012220) 0.03723 (18122305)
110.0 | 0.06688 (18082019) 0.07881 (18082019) 0.06530 (18121419)
0.04942 (18012224) 0.03792 (18122224)
120.0 | 0.06892 (18082019) 0.08137 (18082020) 0.07011 (18021019)
0.05155 (18121404) 0.03801 (18012306)
130.0 | 0.06632 (18042122) 0.07595 (18082020) 0.06735 (18122802)
0.05089 (18021018) 0.03855 (18120217)
140.0 | 0.07789 (18040321) 0.08319 (18122008) 0.07453 (18122603)
0.05339 (18010806) 0.03922 (18120219)
150.0 | 0.07678 (18041822) 0.08402 (18022119) 0.07453 (18122603)
0.05176 (18022303) 0.04045 (18120219)
160.0 | 0.06923 (18041822) 0.07572 (18022119) 0.06650 (18022119)
0.04548 (18022304) 0.03566 (18120219)
170.0 | 0.06537 (18022108) 0.05973 (18031119) 0.05237 (18022119)
0.03780 (18032919) 0.02680 (18011222)
180.0 | 0.06553 (18022122) 0.05940 (18020118) 0.04906 (18012820)
0.03411 (18012807) 0.02609 (18012822)
190.0 | 0.06669 (18022122) 0.05967 (18020118) 0.04922 (18020419)
0.03432 (18020421) 0.02607 (18020421)
200.0 | 0.06681 (18022123) 0.05952 (18012724) 0.04803 (18012806)
0.03407 (18020421) 0.02588 (18020421)
210.0 | 0.06584 (18120720) 0.05931 (18012801) 0.04737 (18012802)
0.03408 (18122818) 0.02473 (18012924)
220.0 | 0.06537 (18090519) 0.05724 (18012801) 0.04594 (18012802)
0.03222 (18122818) 0.02311 (18122818)
230.0 | 0.06537 (18090519) 0.06164 (18022118) 0.04942 (18022118)
0.03365 (18020801) 0.02430 (18021305)
240.0 | 0.06537 (18021208) 0.06454 (18022118) 0.05275 (18022505)
0.03535 (18013006) 0.02582 (18020608)
250.0 | 0.06531 (18090519) 0.06376 (18021802) 0.05492 (18042920)
0.03635 (18021624) 0.02759 (18022608)
260.0 | 0.06531 (18090519) 0.07299 (18042920) 0.06299 (18042920)
0.04561 (18021624) 0.03367 (18022608)
270.0 | 0.06627 (18040620) 0.07711 (18072324) 0.06648 (18021224)
0.04961 (18021624) 0.03607 (18022320)
280.0 | 0.07446 (18040620) 0.07611 (18032521) 0.06637 (18021224)
0.04866 (18021221) 0.03736 (18022318)
290.0 | 0.07594 (18081719) 0.08118 (18122523) 0.06858 (18122523)
0.04976 (18021702) 0.03743 (18010719)
300.0 | 0.06578 (18081719) 0.07274 (18122523) 0.06858 (18122523)

0.04765 (18083020) 0.03647 (18122524)
310.0 | 0.06683 (18122617) 0.06914 (18010720) 0.06390 (18122607)
0.04694 (18011020) 0.03473 (18122418)
320.0 | 0.06634 (18122520) 0.07267 (18010721) 0.06479 (18122608)
0.04559 (18022406) 0.03408 (18022720)
330.0 | 0.06575 (18122623) 0.07145 (18011101) 0.05966 (18011101)
0.04520 (18012621) 0.03260 (18020107)
340.0 | 0.06897 (18021921) 0.06697 (18021905) 0.05960 (18022408)
0.04110 (18022324) 0.03220 (18021822)
350.0 | 0.06861 (18022101) 0.06806 (18022002) 0.06052 (18022819)
0.04320 (18022324) 0.03244 (18022323)
360.0 | 0.06221 (18022820) 0.06862 (18022822) 0.05805 (18022819)
0.04173 (18022105) 0.03071 (18021420)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STACK01 ,

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

** CONC OF STYRENE IN PPM **

DIRECTION (DEGREES)	DISTANCE (METERS) 15.00	20.00	45.00
10.0	0.01421 (18021419)	0.01068 (18122720)	0.00526 (18100124)
20.0	0.01237 (18121619)	0.01058 (18051421)	0.00514 (18052524)
30.0	0.01308 (18120119)	0.00979 (18051421)	0.00554 (18101003)
40.0	0.01336 (18120119)	0.00905 (18101501)	0.00558 (18060721)
50.0	0.01319 (18122302)	0.00983 (18052205)	0.00652 (18052204)
60.0	0.01399 (18052504)	0.01116 (18052504)	0.00631 (18091722)
70.0	0.01395 (18052504)	0.01099 (18052504)	0.00583 (18091620)
80.0	0.01567 (18042402)	0.01103 (18042402)	0.00578 (18052901)
90.0	0.01814 (18042402)	0.01267 (18042402)	0.00578 (18042703)
100.0	0.01838 (18120423)	0.01360 (18042802)	0.00564 (18082104)
110.0	0.01954 (18052023)	0.01344 (18052023)	0.00563 (18042404)
120.0	0.01925 (18042719)	0.01401 (18012903)	0.00602 (18052904)

130.0	0.02060 (18120218)	0.01460 (18120218)	0.00598 (18052905)
140.0	0.02035 (18120923)	0.01399 (18012905)	0.00589 (18091503)
150.0	0.01996 (18012401)	0.01374 (18012401)	0.00563 (18091506)
160.0	0.01748 (18011219)	0.01242 (18012401)	0.00628 (18052906)
170.0	0.01343 (18120420)	0.01107 (18120420)	0.00645 (18052906)
180.0	0.01378 (18022602)	0.01077 (18011720)	0.00621 (18051621)
190.0	0.01460 (18022602)	0.01092 (18011720)	0.00667 (18121819)
200.0	0.01403 (18022602)	0.00967 (18022602)	0.00633 (18091402)
210.0	0.01349 (18011719)	0.00994 (18022519)	0.00657 (18070601)
220.0	0.01261 (18011719)	0.00926 (18022519)	0.00639 (18020603)
230.0	0.01406 (18013007)	0.01002 (18020604)	0.00690 (18090601)
240.0	0.01511 (18013007)	0.01131 (18072303)	0.00656 (18100104)
250.0	0.01441 (18013007)	0.01164 (18073103)	0.00663 (18060403)
260.0	0.01752 (18022507)	0.01311 (18070723)	0.00711 (18050803)
270.0	0.01982 (18022507)	0.01525 (18070723)	0.00756 (18020919)
280.0	0.01972 (18022320)	0.01605 (18052722)	0.00794 (18093007)
290.0	0.02017 (18022321)	0.01528 (18022321)	0.00792 (18091819)
300.0	0.02049 (18022321)	0.01544 (18022321)	0.00724 (18101421)
310.0	0.01837 (18021821)	0.01336 (18021821)	0.00760 (18071206)
320.0	0.01726 (18022403)	0.01339 (18100423)	0.00679 (18100421)
330.0	0.01678 (18070223)	0.01292 (18022322)	0.00603 (18051306)
340.0	0.01561 (18021008)	0.01146 (18081001)	0.00576 (18052124)
350.0	0.01578 (18122219)	0.01104 (18122718)	0.00554 (18052523)
360.0	0.01606 (18122219)	0.01167 (18122718)	0.00556 (18090720)

↟ *** AERMOD - VERSION 18081 *** *** 2801 Milam Street, Shreveport, LA
*** 02/22/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
*** 11:22:38

PAGE 11
*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 8TH HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STACK01 ,

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

** CONC OF STYRENE IN PPM **

DIRECTION (DEGREES)	DISTANCE (METERS) 2.00	3.00	4.00	6.00	8.00

10.0		0.05793	(18012201)	0.06078	(18022020)	0.04820	(18022802)	
0.03549	(18121119)	0.02643	(18021423)					
20.0		0.05648	(18082219)	0.05954	(18021523)	0.04667	(18021603)	
0.03322	(18022804)	0.02387	(18122218)					
30.0		0.05526	(18120104)	0.05564	(18012202)	0.04682	(18120203)	
0.02969	(18123105)	0.02282	(18120121)					
40.0		0.05549	(18021604)	0.05425	(18021606)	0.04531	(18021607)	
0.02928	(18120124)	0.02138	(18120120)					
50.0		0.05532	(18021606)	0.05378	(18120104)	0.04452	(18123108)	
0.03026	(18123108)	0.02281	(18120107)					
60.0		0.05330	(18082220)	0.05215	(18120105)	0.04669	(18123106)	
0.03202	(18120205)	0.02314	(18042324)					
70.0		0.05346	(18090922)	0.05379	(18121408)	0.04834	(18122722)	
0.03484	(18122722)	0.02499	(18012208)					
80.0		0.05331	(18090522)	0.05314	(18110108)	0.04826	(18123106)	
0.03684	(18012208)	0.02705	(18122301)					
90.0		0.05331	(18090522)	0.05399	(18110107)	0.05385	(18012218)	
0.04353	(18030620)	0.03175	(18030620)					
100.0		0.05766	(18092622)	0.06173	(18110105)	0.05881	(18122117)	
0.04493	(18120208)	0.03432	(18030719)					
110.0		0.06223	(18110104)	0.07205	(18122022)	0.06312	(18121418)	
0.04679	(18122306)	0.03516	(18121405)					
120.0		0.06358	(18042523)	0.07363	(18121502)	0.06757	(18122101)	
0.04972	(18122308)	0.03624	(18121404)					
130.0		0.06357	(18032001)	0.07326	(18122724)	0.06558	(18122723)	
0.04802	(18021102)	0.03741	(18011221)					
140.0		0.07186	(18032003)	0.07803	(18121424)	0.06870	(18122807)	
0.05060	(18122804)	0.03822	(18011118)					
150.0		0.06624	(18042520)	0.07590	(18041822)	0.06674	(18122803)	
0.04935	(18021118)	0.03410	(18122803)					
160.0		0.06371	(18090921)	0.06361	(18122007)	0.05954	(18050422)	
0.04272	(18010806)	0.03059	(18010806)					
170.0		0.06206	(18120818)	0.05590	(18012919)	0.04667	(18022419)	
0.03302	(18122603)	0.02476	(18012822)					
180.0		0.06371	(18090921)	0.05623	(18012818)	0.04672	(18020503)	
0.03250	(18120304)	0.02459	(18122822)					
190.0		0.06371	(18090921)	0.05746	(18012723)	0.04727	(18012722)	
0.03324	(18012807)	0.02459	(18022503)					
200.0		0.06469	(18022122)	0.05730	(18122317)	0.04656	(18010820)	
0.03266	(18012720)	0.02374	(18022601)					
210.0		0.06378	(18090921)	0.05591	(18120718)	0.04523	(18010120)	
0.03110	(18122819)	0.02265	(18020622)					
220.0		0.06211	(18090522)	0.05416	(18012724)	0.04390	(18010120)	
0.02897	(18012719)	0.02099	(18020608)					
230.0		0.06201	(18092622)	0.05744	(18021208)	0.04818	(18010824)	
0.03219	(18013005)	0.02240	(18020804)					
240.0		0.06195	(18090922)	0.06087	(18020508)	0.05031	(18120707)	
0.03462	(18013004)	0.02454	(18120623)					

250.0	0.06193 (18092622)	0.06188 (18042920)	0.05070 (18020802)	0.03535 (18013006)	0.02601 (18092220)
260.0	0.06108 (18101218)	0.06160 (18020218)	0.05601 (18090924)	0.03973 (18072401)	0.03038 (18030221)
270.0	0.06193 (18090522)	0.06934 (18021224)	0.06305 (18032520)	0.04381 (18021224)	0.03365 (18011323)
280.0	0.06205 (18082220)	0.07287 (18090223)	0.06300 (18090306)	0.04684 (18011324)	0.03478 (18010719)
290.0	0.06553 (18090119)	0.07501 (18090307)	0.06205 (18082321)	0.04590 (18083020)	0.03450 (18010621)
300.0	0.05936 (18042120)	0.06856 (18081719)	0.06202 (18092302)	0.04527 (18011020)	0.03462 (18090205)
310.0	0.06389 (18122619)	0.06618 (18090220)	0.05747 (18010721)	0.04545 (18021819)	0.03401 (18013018)
320.0	0.06474 (18061720)	0.06646 (18122618)	0.06173 (18012624)	0.04416 (18121301)	0.03320 (18122418)
330.0	0.06244 (18021922)	0.06872 (18011106)	0.05819 (18121304)	0.04338 (18121305)	0.03154 (18012006)
340.0	0.06720 (18021919)	0.06604 (18022007)	0.05746 (18021904)	0.04042 (18012623)	0.03006 (18013022)
350.0	0.06704 (18022102)	0.06687 (18012018)	0.05837 (18021908)	0.04139 (18022323)	0.02992 (18122504)
360.0	0.06005 (18012101)	0.06619 (18021824)	0.05351 (18021424)	0.03885 (18022324)	0.02899 (18021422)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 8TH HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STACK01 ,

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

** CONC OF STYRENE IN PPM **

DIRECTION (DEGREES)	DISTANCE (METERS) 15.00	20.00	45.00
10.0	0.01295 (18061604)	0.00947 (18010518)	0.00480 (18052404)

20.0	0.01147 (18120119)	0.00860 (18053001)	0.00483 (18051405)
30.0	0.01116 (18051421)	0.00787 (18052522)	0.00518 (18052120)
40.0	0.01145 (18021707)	0.00821 (18062105)	0.00531 (18052601)
50.0	0.01211 (18052504)	0.00880 (18101501)	0.00594 (18042621)
60.0	0.01271 (18042320)	0.00946 (18042320)	0.00562 (18091802)
70.0	0.01282 (18122301)	0.00947 (18042424)	0.00545 (18052901)
80.0	0.01374 (18091519)	0.00949 (18051606)	0.00511 (18050521)
90.0	0.01565 (18032023)	0.01061 (18112621)	0.00534 (18032103)
100.0	0.01722 (18032023)	0.01227 (18042704)	0.00496 (18030604)
110.0	0.01773 (18042719)	0.01258 (18122003)	0.00507 (18121006)
120.0	0.01804 (18042222)	0.01284 (18052023)	0.00534 (18121604)
130.0	0.01840 (18121008)	0.01285 (18121008)	0.00531 (18091502)
140.0	0.01880 (18012401)	0.01241 (18042419)	0.00509 (18042706)
150.0	0.01774 (18051601)	0.01194 (18051601)	0.00471 (18012319)
160.0	0.01477 (18051601)	0.01025 (18051601)	0.00499 (18110524)
170.0	0.01206 (18012320)	0.00864 (18042419)	0.00549 (18012824)
180.0	0.01205 (18021720)	0.00873 (18021720)	0.00519 (18020602)
190.0	0.01191 (18022601)	0.00858 (18102019)	0.00553 (18040923)
200.0	0.01193 (18120507)	0.00859 (18021719)	0.00559 (18080106)
210.0	0.01099 (18052806)	0.00792 (18080103)	0.00543 (18031721)
220.0	0.00997 (18031406)	0.00750 (18072303)	0.00533 (18090601)
230.0	0.01070 (18010804)	0.00780 (18022308)	0.00527 (18112203)
240.0	0.01230 (18020604)	0.00956 (18101904)	0.00562 (18093005)
250.0	0.01314 (18011321)	0.00963 (18022308)	0.00557 (18100106)
260.0	0.01518 (18092201)	0.01095 (18092720)	0.00590 (18031804)
270.0	0.01742 (18052722)	0.01314 (18123021)	0.00681 (18093006)
280.0	0.01804 (18052324)	0.01348 (18031807)	0.00734 (18080222)
290.0	0.01755 (18042024)	0.01354 (18030321)	0.00740 (18090423)
300.0	0.01768 (18010703)	0.01333 (18020922)	0.00693 (18020823)
310.0	0.01680 (18083105)	0.01290 (18122424)	0.00713 (18100122)
320.0	0.01647 (18010801)	0.01248 (18072903)	0.00654 (18052606)
330.0	0.01604 (18121319)	0.01178 (18092519)	0.00571 (18060602)
340.0	0.01461 (18100302)	0.01085 (18100224)	0.00549 (18052421)
350.0	0.01479 (18021008)	0.01047 (18100322)	0.00531 (18081302)
360.0	0.01463 (18121620)	0.01012 (18011005)	0.00528 (18051704)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF STYRENE IN PPM

```
            **

                                                              DATE
                                                 NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)           RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       0.08402  ON 18022119: AT (  426517.70,
3596512.80,    65.50,    65.50,    0.00)  GP  POL1
         HIGH   8TH HIGH VALUE IS       0.07803  ON 18121424: AT (  426518.13,
3596513.10,    65.50,    65.50,    0.00)  GP  POL1


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION  18081 ***   *** 2801 Milam Street, Shreveport, LA
                          ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                        ***        11:22:38

                                  PAGE  14
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of          111 Informational Message(s)

 A Total of         8760 Hours Were Processed

 A Total of           63 Calm Hours Identified

 A Total of           48 Missing Hours Identified (  0.55 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

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**********************************
*** AERMOD Finishes Successfully ***
**********************************
```

```
* AERMOD ( 18081): 2801 Milam Street, Shreveport, LA
      02/22/20
* AERMET ( 18081): Styrene Emission Modeling
      11:22:38
* MODELING OPTIONS USED:   RegDFAULT  CONC  ELEV  RURAL
*         PLOT FILE OF  HIGH   1ST HIGH  1-HR VALUES FOR SOURCE GROUP: ALL
*         FOR A TOTAL OF   288 RECEPTORS.
*         FORMAT: (3(1X,F13.5),3(1X,F8.2),3X,A5,2X,A8,2X,A5,5X,A8,2X,I8)


*        X             Y      AVERAGE CONC    ZELEV    ZHILL    ZFLAG    AVE     GRP
      RANK     NET ID   DATE(CONC)
* ______________  ______________  ______________   _______   _______   _______  _______
_________  _________  _________  _________
  426516.54730 3596517.36962       0.06096    65.30    65.30     0.00    1-HR  ALL
      1ST     POL1      18120101
  426516.72094 3596518.35442       0.06355    65.30    65.30     0.00    1-HR  ALL
      1ST     POL1      18022822
  426516.89459 3596519.33923       0.05302    65.20    65.20     0.00    1-HR  ALL
      1ST     POL1      18022819
  426517.24189 3596521.30885       0.03825    65.10    65.10     0.00    1-HR  ALL
      1ST     POL1      18022105
  426517.58919 3596523.27846       0.02780    65.00    65.00     0.00    1-HR  ALL
      1ST     POL1      18022105
  426518.80472 3596530.17212       0.01421    64.40    64.40     0.00    1-HR  ALL
      1ST     POL1      18021419
  426519.67296 3596535.09616       0.01068    63.90    63.90     0.00    1-HR  ALL
      1ST     POL1      18122720
  426524.01417 3596559.71635       0.00526    60.40    68.60     0.00    1-HR  ALL
      1ST     POL1      18100124
  426516.88404 3596517.27939       0.05971    65.30    65.30     0.00    1-HR  ALL
      1ST     POL1      18021506
  426517.22606 3596518.21908       0.06108    65.30    65.30     0.00    1-HR  ALL
      1ST     POL1      18021524
  426517.56808 3596519.15877       0.04840    65.20    65.20     0.00    1-HR  ALL
      1ST     POL1      18120201
  426518.25212 3596521.03816       0.03535    65.10    65.10     0.00    1-HR  ALL
      1ST     POL1      18120120
  426518.93616 3596522.91754       0.02531    64.90    64.90     0.00    1-HR  ALL
      1ST     POL1      18122222
  426521.33030 3596529.49539       0.01237    64.40    64.40     0.00    1-HR  ALL
      1ST     POL1      18121619
  426523.04040 3596534.19385       0.01058    64.10    64.10     0.00    1-HR  ALL
      1ST     POL1      18051421
  426531.59091 3596557.68617       0.00514    61.30    68.20     0.00    1-HR  ALL
      1ST     POL1      18052524
  426517.20000 3596517.13205       0.05865    65.30    65.30     0.00    1-HR  ALL
      1ST     POL1      18022418
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426517.70000 3596517.99808       0.05795    65.20    65.20     0.00    1-HR  ALL
    1ST     POL1      18120103
426518.20000 3596518.86410       0.04902    65.20    65.20     0.00    1-HR  ALL
    1ST     POL1      18120103
426519.20000 3596520.59615       0.03322    65.00    65.00     0.00    1-HR  ALL
    1ST     POL1      18120120
426520.20000 3596522.32820       0.02471    64.90    64.90     0.00    1-HR  ALL
    1ST     POL1      18122721
426523.70000 3596528.39038       0.01308    64.40    64.40     0.00    1-HR  ALL
    1ST     POL1      18120119
426526.20000 3596532.72051       0.00979    64.10    64.10     0.00    1-HR  ALL
    1ST     POL1      18051421
426538.70000 3596554.37114       0.00554    62.60    66.50     0.00    1-HR  ALL
    1ST     POL1      18101003
426517.48558 3596516.93209       0.06024    65.30    65.30     0.00    1-HR  ALL
    1ST     POL1      18022418
426518.12836 3596517.69813       0.05748    65.20    65.20     0.00    1-HR  ALL
    1ST     POL1      18120104
426518.77115 3596518.46418       0.04715    65.20    65.20     0.00    1-HR  ALL
    1ST     POL1      18120103
426520.05673 3596519.99627       0.03151    65.00    65.00     0.00    1-HR  ALL
    1ST     POL1      18120205
426521.34230 3596521.52836       0.02483    64.90    64.90     0.00    1-HR  ALL
    1ST     POL1      18120119
426525.84181 3596526.89067       0.01336    64.40    64.40     0.00    1-HR  ALL
    1ST     POL1      18120119
426529.05575 3596530.72089       0.00905    64.10    64.10     0.00    1-HR  ALL
    1ST     POL1      18101501
426545.12544 3596549.87200       0.00558    63.80    66.50     0.00    1-HR  ALL
    1ST     POL1      18060721
426517.73209 3596516.68558       0.05893    65.30    65.30     0.00    1-HR  ALL
    1ST     POL1      18120117
426518.49813 3596517.32836       0.05684    65.20    65.20     0.00    1-HR  ALL
    1ST     POL1      18120106
426519.26418 3596517.97115       0.05177    65.20    65.20     0.00    1-HR  ALL
    1ST     POL1      18120106
426520.79627 3596519.25673       0.03495    65.00    65.00     0.00    1-HR  ALL
    1ST     POL1      18120118
426522.32836 3596520.54230       0.02598    64.90    64.90     0.00    1-HR  ALL
    1ST     POL1      18120118
426527.69067 3596525.04181       0.01319    64.40    64.40     0.00    1-HR  ALL
    1ST     POL1      18122302
426531.52089 3596528.25575       0.00983    64.10    64.10     0.00    1-HR  ALL
    1ST     POL1      18052205
426550.67200 3596544.32544       0.00652    64.60    66.50     0.00    1-HR  ALL
    1ST     POL1      18052204
426517.93205 3596516.40000       0.05893    65.30    65.30     0.00    1-HR  ALL
    1ST     POL1      18120117
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426518.79808 3596516.90000       0.06136    65.20    65.20     0.00    1-HR  ALL
    1ST     POL1      18120106
426519.66410 3596517.40000       0.05520    65.20    65.20     0.00    1-HR  ALL
    1ST     POL1      18120106
426521.39615 3596518.40000       0.03799    65.00    65.00     0.00    1-HR  ALL
    1ST     POL1      18120118
426523.12820 3596519.40000       0.02804    64.90    64.90     0.00    1-HR  ALL
    1ST     POL1      18120118
426529.19038 3596522.90000       0.01399    64.40    64.40     0.00    1-HR  ALL
    1ST     POL1      18052504
426533.52051 3596525.40000       0.01116    64.10    64.10     0.00    1-HR  ALL
    1ST     POL1      18052504
426555.17114 3596537.90000       0.00631    64.00    66.50     0.00    1-HR  ALL
    1ST     POL1      18091722
426518.07939 3596516.08404       0.05706    65.30    65.30     0.00    1-HR  ALL
    1ST     POL1      18090519
426519.01908 3596516.42606       0.06260    65.30    65.30     0.00    1-HR  ALL
    1ST     POL1      18120106
426519.95877 3596516.76808       0.05373    65.20    65.20     0.00    1-HR  ALL
    1ST     POL1      18120106
426521.83816 3596517.45212       0.03839    65.10    65.10     0.00    1-HR  ALL
    1ST     POL1      18120118
426523.71754 3596518.13616       0.02865    65.00    65.00     0.00    1-HR  ALL
    1ST     POL1      18120207
426530.29539 3596520.53030       0.01395    64.50    64.50     0.00    1-HR  ALL
    1ST     POL1      18052504
426534.99385 3596522.24040       0.01099    64.10    64.10     0.00    1-HR  ALL
    1ST     POL1      18052504
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    1ST     POL1      18091620
426518.16962 3596515.74730       0.05931    65.30    65.30     0.00    1-HR  ALL
    1ST     POL1      18012203
426519.15442 3596515.92094       0.06162    65.30    65.30     0.00    1-HR  ALL
    1ST     POL1      18012203
426520.13923 3596516.09459       0.05269    65.20    65.20     0.00    1-HR  ALL
    1ST     POL1      18012207
426522.10885 3596516.44189       0.04190    65.10    65.10     0.00    1-HR  ALL
    1ST     POL1      18021708
426524.07846 3596516.78919       0.03170    65.00    65.00     0.00    1-HR  ALL
    1ST     POL1      18012301
426530.97212 3596518.00472       0.01567    64.60    64.60     0.00    1-HR  ALL
    1ST     POL1      18042402
426535.89616 3596518.87296       0.01103    64.20    64.20     0.00    1-HR  ALL
    1ST     POL1      18042402
426560.51635 3596523.21417       0.00578    62.50    66.50     0.00    1-HR  ALL
    1ST     POL1      18052901
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    1ST     POL1      18012203
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    1ST     POL1      18110108
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    1ST     POL1      18012302
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426536.20000 3596515.40000       0.01267    64.40    64.80     0.00    1-HR  ALL
    1ST     POL1      18042402
426561.20000 3596515.40000       0.00578    62.30    66.50     0.00    1-HR  ALL
    1ST     POL1      18042703
426518.16962 3596515.05270       0.06530    65.40    65.40     0.00    1-HR  ALL
    1ST     POL1      18110102
426519.15442 3596514.87906       0.06924    65.30    65.30     0.00    1-HR  ALL
    1ST     POL1      18012218
426520.13923 3596514.70541       0.06443    65.30    65.30     0.00    1-HR  ALL
    1ST     POL1      18012223
426522.10885 3596514.35811       0.04831    65.20    65.20     0.00    1-HR  ALL
    1ST     POL1      18012220
426524.07846 3596514.01081       0.03723    65.20    65.20     0.00    1-HR  ALL
    1ST     POL1      18122305
426530.97212 3596512.79528       0.01838    64.90    64.90     0.00    1-HR  ALL
    1ST     POL1      18120423
426535.89616 3596511.92704       0.01360    64.60    64.60     0.00    1-HR  ALL
    1ST     POL1      18042802
426560.51635 3596507.58583       0.00564    62.20    66.50     0.00    1-HR  ALL
    1ST     POL1      18082104
426518.07939 3596514.71596       0.06688    65.40    65.40     0.00    1-HR  ALL
    1ST     POL1      18082019
426519.01908 3596514.37394       0.07881    65.40    65.40     0.00    1-HR  ALL
    1ST     POL1      18082019
426519.95877 3596514.03192       0.06530    65.30    65.30     0.00    1-HR  ALL
    1ST     POL1      18121419
426521.83816 3596513.34788       0.04942    65.30    65.30     0.00    1-HR  ALL
    1ST     POL1      18012224
426523.71754 3596512.66384       0.03792    65.20    65.20     0.00    1-HR  ALL
    1ST     POL1      18122224
426530.29539 3596510.26970       0.01954    65.00    65.00     0.00    1-HR  ALL
    1ST     POL1      18052023
426534.99385 3596508.55960       0.01344    64.70    64.70     0.00    1-HR  ALL
    1ST     POL1      18052023
426558.48617 3596500.00909       0.00563    62.20    64.90     0.00    1-HR  ALL
    1ST     POL1      18042404
426517.93205 3596514.40000       0.06892    65.40    65.40     0.00    1-HR  ALL
    1ST     POL1      18082019
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426518.79808 3596513.90000       0.08137    65.40    65.40     0.00    1-HR  ALL
    1ST     POL1      18082020
426519.66410 3596513.40000       0.07011    65.40    65.40     0.00    1-HR  ALL
    1ST     POL1      18021019
426521.39615 3596512.40000       0.05155    65.40    65.40     0.00    1-HR  ALL
    1ST     POL1      18121404
426523.12820 3596511.40000       0.03801    65.30    65.30     0.00    1-HR  ALL
    1ST     POL1      18012306
426529.19038 3596507.90000       0.01925    65.10    65.10     0.00    1-HR  ALL
    1ST     POL1      18042719
426533.52051 3596505.40000       0.01401    64.90    64.90     0.00    1-HR  ALL
    1ST     POL1      18012903
426555.17114 3596492.90000       0.00602    62.20    65.60     0.00    1-HR  ALL
    1ST     POL1      18052904
426517.73209 3596514.11442       0.06632    65.40    65.40     0.00    1-HR  ALL
    1ST     POL1      18042122
426518.49813 3596513.47164       0.07595    65.40    65.40     0.00    1-HR  ALL
    1ST     POL1      18082020
426519.26418 3596512.82885       0.06735    65.40    65.40     0.00    1-HR  ALL
    1ST     POL1      18122802
426520.79627 3596511.54327       0.05089    65.40    65.40     0.00    1-HR  ALL
    1ST     POL1      18021018
426522.32836 3596510.25770       0.03855    65.40    65.40     0.00    1-HR  ALL
    1ST     POL1      18120217
426527.69067 3596505.75819       0.02060    65.30    65.30     0.00    1-HR  ALL
    1ST     POL1      18120218
426531.52089 3596502.54425       0.01460    65.00    65.00     0.00    1-HR  ALL
    1ST     POL1      18120218
426550.67200 3596486.47456       0.00598    62.50    66.10     0.00    1-HR  ALL
    1ST     POL1      18052905
426517.48558 3596513.86791       0.07789    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18040321
426518.12836 3596513.10187       0.08319    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18122008
426518.77115 3596512.33582       0.07453    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18122603
426520.05673 3596510.80373       0.05339    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18010806
426521.34230 3596509.27164       0.03922    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18120219
426525.84181 3596503.90933       0.02035    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18120923
426529.05575 3596500.07911       0.01399    65.00    65.60     0.00    1-HR  ALL
    1ST     POL1      18012905
426545.12544 3596480.92800       0.00589    62.80    68.40     0.00    1-HR  ALL
    1ST     POL1      18091503
426517.20000 3596513.66795       0.07678    65.50    65.50     0.00    1-HR  ALL
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426517.70000 3596512.80192       0.08402    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18022119
426518.20000 3596511.93590       0.07453    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18122603
426519.20000 3596510.20385       0.05176    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18022303
426520.20000 3596508.47180       0.04045    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18120219
426523.70000 3596502.40962       0.01996    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18012401
426526.20000 3596498.07949       0.01374    65.10    65.10     0.00    1-HR  ALL
    1ST     POL1      18012401
426538.70000 3596476.42886       0.00563    63.50    66.00     0.00    1-HR  ALL
    1ST     POL1      18091506
426516.88404 3596513.52061       0.06923    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18041822
426517.22606 3596512.58092       0.07572    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18022119
426517.56808 3596511.64123       0.06650    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18022119
426518.25212 3596509.76184       0.04548    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18022304
426518.93616 3596507.88246       0.03566    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18120219
426521.33030 3596501.30461       0.01748    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18011219
426523.04040 3596496.60615       0.01242    65.40    65.40     0.00    1-HR  ALL
    1ST     POL1      18012401
426531.59091 3596473.11383       0.00628    64.60    65.40     0.00    1-HR  ALL
    1ST     POL1      18052906
426516.54730 3596513.43038       0.06537    65.50    67.60     0.00    1-HR  ALL
    1ST     POL1      18022108
426516.72094 3596512.44558       0.05973    65.50    67.60     0.00    1-HR  ALL
    1ST     POL1      18031119
426516.89459 3596511.46077       0.05237    65.60    67.60     0.00    1-HR  ALL
    1ST     POL1      18022119
426517.24189 3596509.49115       0.03780    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18032919
426517.58919 3596507.52154       0.02680    65.70    65.70     0.00    1-HR  ALL
    1ST     POL1      18011222
426518.80472 3596500.62788       0.01343    65.80    65.80     0.00    1-HR  ALL
    1ST     POL1      18120420
426519.67296 3596495.70384       0.01107    65.70    65.70     0.00    1-HR  ALL
    1ST     POL1      18120420
426524.01417 3596471.08365       0.00645    65.40    65.40     0.00    1-HR  ALL
    1ST     POL1      18052906
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    1ST     POL1      18012820
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    1ST     POL1      18012807
426516.20000 3596507.40000       0.02609    65.80    67.60     0.00    1-HR  ALL
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426516.20000 3596470.40000       0.00621    65.80    65.80     0.00    1-HR  ALL
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426513.59528 3596500.62788       0.01460    66.10    66.10     0.00    1-HR  ALL
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ifwgroup y 06 07 2007

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OUTFILES FINISHED
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 State Postal Code: LA
 AERMET-formatted output file opened: SHV01_AERSURF.OUT
 Type of Coordinates Entered: LATLON
   Latitude (decimal degrees):     32.470000
   Longitude (decimal degrees):   -93.820000
   Datum: NAD83
 Study Radius for surface roughness (km):     1.0
 Is surface roughness varied by sector? Y
  # Sectors = 12
    Sector beginning directions:     0   30   60   90  120  150  180  210  240  270
300  330
 Temporal resolution (ANNUAL, MONTHLY, SEASONAL): MONTHLY
 Continuous snow cover for at least one month? N
 Reassign months to seasons? N
 Is site located at an airport? Y
 Is site considered an arid region? N
 Characterization of surface moisture at site: Wet
 Log file opened: SHV01_AERSURF.log


 Based on the following input coordinates, converted if needed to LATLON/NAD83:
    Latitude:     32.470000
    Longitude:   -93.820000

 The study center is located at
    Albers projection X-coordinate:    203793.
    Albers projection Y-coordinate:   1046507.
    Row in data file:    2300
    Column in data file:     748

 Rotation of Albers grid to true North (deg):   -1.31433


 Land cover grid for Albedo and Bowen Ratio.
 These data are included in: albedo_bowen_domain.txt

    1051530. : 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11
11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 81 85 81 81 81 81 81
81 82 82 82 82 82 91 42 81 82 81 81 82 82 81 91 11 11 11 11 11 11 11 42 82 82 82 81
81 81 81 81 82 82 81 82 82 82 82 82 82 81 81 43 43 42 42 42 11 11 11 11 11 11 11 11
11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11
11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11
11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 23
23 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11
41 41 41 41 41 41 41 41 41 41 41 41 41 41 41 92 91 42 41 42 91 91 91 91 41 91 41
```

SHV01_AMET_S1.INP

```
JOB
  REPORT      SHV01_AMET_S1.RPT
  MESSAGES    SHV01_AMET_S1.MSG


UPPERAIR
  DATA        UA\13957_SHV_18.FSL  FSL
  EXTRACT     UAEXOUT_SHV01.DSK
  XDATES      18/01/01 TO 19/01/01
  LOCATION    13957  32.47N  93.82W  6
  QAOUT       UAQAOUT_SHV01.DSK
  AUDIT       UATT  UAWS  UALR  UAWD


SURFACE
  DATA        SURFACE\722480-13957_18 ISHD
  EXTRACT     SFEXOUT_SHV01.DSK
  XDATES      18/01/01  TO  19/01/01
  LOCATION    13957 32.47N 93.82W 6 77.0
  QAOUT       SFQAOUT_SHV01.DSK
  AUDIT       SLVP PRES CLHT TSKC PWTH ASKY HZVS DPTP RHUM
  NO_MISSING  PRES
```

SHV01_AMET_S2.INP

```
JOB
  REPORT      SHV01_AMET_S2.RPT
  MESSAGES    SHV01_AMET_S2.MSG

UPPERAIR
  QAOUT       UAQAOUT_SHV01.DSK

SURFACE
  QAOUT       SFQAOUT_SHV01.DSK

ASOS1MIN      ..\AERMINUTE\SHV01_1MIN_18.DAT

MERGE
  OUTPUT      MERGE_SHV01.DSK
  XDATES      18/01/01 18/12/31
```

SHV01_AMET_S3.INP

```
JOB
  REPORT      SHV01_AMET_S3.RPT
  MESSAGES    SHV01_AMET_S3.MSG

METPREP
  DATA        MERGE_SHV01.DSK
  METHOD      REFLEVEL SUBNWS
  METHOD      WIND_DIR RANDOM
  NWS_HGT     WIND     10.0
  METHOD      UASELECT SUNRISE
  AERSURF     ..\AERSURFACE\SHV01_AERSURF.OUT
  OUTPUT      SHV01_AMET.SFC
  PROFILE     SHV01_AMET.PFL
```

```
CO STARTING
   TITLEONE 2801 Milam Street, Shreveport, LA
   DATATYPE NED
   DATAFILE Shreveport01.geotiff
   ANCHORXY 426516.2 3596515.4 426516.2 3596515.4 15 4
   DOMAINXY 426016.2 3596115.4 15 427016.2 3596915.4 15
   RUNORNOT RUN
CO FINISHED

SO STARTING
   LOCATION STACK1 POINT 426516.2 3596515.4
SO FINISHED

RE STARTING
RE GRIDPOLR POL1 STA
                ORIG  STACK1
                DIST  2. 3. 4. 6. 8. 15. 20. 45.
                GDIR  36 10 10
RE GRIDPOLR POL1 END
RE FINISHED

OU STARTING
   RECEPTOR SHV01.RE
   SOURCLOC SHV01.SO
OU FINISHED
```

```
'2801 Milam Street, Shreveport, LA'
'P'
'METERS' 1.0
'UTMN', 210.
13
'BUILD01' 1 64.85
4 3.0
  426533.18 3596511.48
  426541.84 3596511.18
  426532.47 3596497.44
  426542.64 3596496.42
'BUILD02' 1 63.31
4 3.0
  426543.37 3596511.16
  426553.87 3596511.09
  426543.28 3596498.36
  426553.73 3596497.64
'BUILD03' 1 67.97
4 3.7
  426496.19 3596507.92
  426498.29 3596494.42
  426498.20 3596494.82
  426489.32 3596496.08
'BUILD04' 1 62.32
6 2.4
  426554.79 3596511.02
  426560.75 3596511.04
  426560.82 3596509.98
  426564.56 3596509.66
  426563.56 3596497.06
  426554.51 3596497.03
'BUILD05' 1 61.56
4 2.4
  426566.81 3596510.79
  426576.53 3596510.87
  426576.56 3596497.69
  426566.85 3596497.48
'BUILD06' 1 60.48
4 2.7
  426579.39 3596510.79
  426589.25 3596510.68
  426588.67 3596496.37
  426579.01 3596496.88
'BUILD07' 1 65.52
4 3.7
  426589.25 3596547.44
  426581.31 3596548.01
  426580.66 3596565.68
```

```
  426588.49 3596565.28
'BUILD08' 1 65.25
4 3.4
  426560.37 3596548.27
  426568.31 3596548.65
  426568.58 3596559.75
  426560.50 3596560.07
'BUILD09' 1 63.56
6 3.4
  426544.39 3596546.30
  426553.72 3596546.85
  426553.94 3596558.68
  426555.00 3596559.02
  426554.86 3596563.81
  426544.65 3596563.63
'BUILD10' 1 62.03
4 2.7
  426531.37 3596554.99
  426541.34 3596555.00
  426541.86 3596548.12
  426531.53 3596546.85
'BUILD11' 1 64.68
4 3.0
  426476.92 3596542.34
  426486.00 3596542.29
  426486.12 3596554.48
  426477.18 3596554.13
'BUILD12' 1 63.92
6 2.7
  426464.59 3596542.10
  426474.94 3596542.45
  426475.16 3596547.68
  426473.20 3596547.69
  426473.22 3596556.39
  426464.47 3596556.24
'BUILD13' 1 66.19
4 3.0
  426428.50 3596510.28
  426437.22 3596508.88
  426437.77 3596500.89
  426429.10 3596500.03
1
'STACK01'  65.50  0.52     426516.16    3596515.38
```

Site 2 (Shreveport, LA)

```
CO STARTING
CO TITLEONE 412 Delaware St. Shreveport, LA
CO TITLETWO Styrene Emission Modeling
CO MODELOPT DFAULT CONC
CO AVERTIME 1
CO POLLUTID STYRENE
CO RUNORNOT RUN
CO FINISHED

SO STARTING
SO EMISUNIT 215.21 GRAM/SEC PPM
**           EPN      TYPE    X(m)       Y(m)      Elev(m)
**          ----------------------------------------------
   LOCATION STACK01  POINT  430718.7  3591936.8  48.1
**
**              EPN    QS(g/s)   HS(m)  TS(K)  VS(m/s)  DS(m)
**          ------------------------------------------------
   SRCPARAM STACK01   0.01  0.52  364.15  24.85   0.044


SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
```

```
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00

   SRCGROUP ALL

SO FINISHED

RE STARTING
RE ELEVUNIT METERS
RE GRIDPOLR POL1 STA
                ORIG  STACK01
                DIST  2. 3. 4. 6. 8. 15. 20. 45.
                GDIR  36 10 10
   GRIDPOLR POL1     ELEV    1     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    1     48.3     48.6
   GRIDPOLR POL1     ELEV    2     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    2     48.4     48.7
   GRIDPOLR POL1     ELEV    3     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    3     48.4     48.7
   GRIDPOLR POL1     ELEV    4     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    4     48.4     48.8
   GRIDPOLR POL1     ELEV    5     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    5     48.4     48.7
   GRIDPOLR POL1     ELEV    6     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    6     48.4     48.5
   GRIDPOLR POL1     ELEV    7     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    7     48.4     48.4
   GRIDPOLR POL1     ELEV    8     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    8     48.4     48.3
   GRIDPOLR POL1     ELEV    9     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    9     48.4     48.3
   GRIDPOLR POL1     ELEV   10     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV   10     48.4     48.4
   GRIDPOLR POL1     ELEV   11     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV   11     48.4     48.5
   GRIDPOLR POL1     ELEV   12     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV   12     48.4     48.5
   GRIDPOLR POL1     ELEV   13     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV   13     48.4     48.6
   GRIDPOLR POL1     ELEV   14     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV   14     48.4     48.6
   GRIDPOLR POL1     ELEV   15     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV   15     48.4     48.5
   GRIDPOLR POL1     ELEV   16     48.2     48.2     48.2     48.1     48.1     48.3
   GRIDPOLR POL1     ELEV   16     48.4     48.4
   GRIDPOLR POL1     ELEV   17     48.2     48.2     48.2     48.1     48.1     48.2
   GRIDPOLR POL1     ELEV   17     48.4     48.5
   GRIDPOLR POL1     ELEV   18     48.2     48.2     48.2     48.1     48.1     48.2
```

```
GRIDPOLR POL1     ELEV   18     48.4     48.6
GRIDPOLR POL1     ELEV   19     48.2     48.2     48.2     48.1     48.1     48.2
GRIDPOLR POL1     ELEV   19     48.3     48.6
GRIDPOLR POL1     ELEV   20     48.2     48.2     48.2     48.1     48.1     48.2
GRIDPOLR POL1     ELEV   20     48.3     48.5
GRIDPOLR POL1     ELEV   21     48.2     48.2     48.2     48.1     48.1     48.2
GRIDPOLR POL1     ELEV   21     48.2     49.1
GRIDPOLR POL1     ELEV   22     48.2     48.2     48.2     48.1     48.1     48.1
GRIDPOLR POL1     ELEV   22     48.1     49.8
GRIDPOLR POL1     ELEV   23     48.2     48.2     48.2     48.2     48.1     48.1
GRIDPOLR POL1     ELEV   23     48.0     50.2
GRIDPOLR POL1     ELEV   24     48.2     48.2     48.2     48.2     48.2     48.1
GRIDPOLR POL1     ELEV   24     48.1     50.1
GRIDPOLR POL1     ELEV   25     48.2     48.2     48.2     48.2     48.1     48.0
GRIDPOLR POL1     ELEV   25     48.2     49.8
GRIDPOLR POL1     ELEV   26     48.2     48.2     48.2     48.2     48.2     48.0
GRIDPOLR POL1     ELEV   26     48.2     49.7
GRIDPOLR POL1     ELEV   27     48.2     48.2     48.2     48.2     48.2     48.0
GRIDPOLR POL1     ELEV   27     48.3     50.0
GRIDPOLR POL1     ELEV   28     48.2     48.2     48.2     48.2     48.2     48.0
GRIDPOLR POL1     ELEV   28     48.3     50.6
GRIDPOLR POL1     ELEV   29     48.2     48.2     48.2     48.2     48.2     48.1
GRIDPOLR POL1     ELEV   29     48.4     50.7
GRIDPOLR POL1     ELEV   30     48.2     48.2     48.2     48.2     48.2     48.1
GRIDPOLR POL1     ELEV   30     48.3     50.4
GRIDPOLR POL1     ELEV   31     48.2     48.2     48.2     48.2     48.2     48.1
GRIDPOLR POL1     ELEV   31     48.1     50.0
GRIDPOLR POL1     ELEV   32     48.2     48.2     48.2     48.2     48.2     48.2
GRIDPOLR POL1     ELEV   32     48.1     49.4
GRIDPOLR POL1     ELEV   33     48.2     48.2     48.2     48.2     48.2     48.2
GRIDPOLR POL1     ELEV   33     48.2     48.7
GRIDPOLR POL1     ELEV   34     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     ELEV   34     48.2     48.2
GRIDPOLR POL1     ELEV   35     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     ELEV   35     48.3     48.4
GRIDPOLR POL1     ELEV   36     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     ELEV   36     48.3     48.5
GRIDPOLR POL1     HILL    1     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     HILL    1     48.3     48.6
GRIDPOLR POL1     HILL    2     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     HILL    2     48.4     48.7
GRIDPOLR POL1     HILL    3     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     HILL    3     48.4     48.7
GRIDPOLR POL1     HILL    4     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     HILL    4     48.4     48.8
GRIDPOLR POL1     HILL    5     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     HILL    5     48.4     48.7
GRIDPOLR POL1     HILL    6     48.2     48.2     48.2     48.2     48.2     48.3
```

```
GRIDPOLR POL1     HILL    6     48.4     48.5
GRIDPOLR POL1     HILL    7     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     HILL    7     48.4     48.4
GRIDPOLR POL1     HILL    8     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     HILL    8     48.4     48.3
GRIDPOLR POL1     HILL    9     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     HILL    9     48.4     48.3
GRIDPOLR POL1     HILL   10     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     HILL   10     48.4     48.4
GRIDPOLR POL1     HILL   11     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     HILL   11     48.4     48.5
GRIDPOLR POL1     HILL   12     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     HILL   12     48.4     48.5
GRIDPOLR POL1     HILL   13     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     HILL   13     48.4     48.6
GRIDPOLR POL1     HILL   14     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     HILL   14     48.4     48.6
GRIDPOLR POL1     HILL   15     48.2     48.2     48.2     48.2     48.2     48.3
GRIDPOLR POL1     HILL   15     48.4     48.5
GRIDPOLR POL1     HILL   16     48.2     48.2     48.2     48.1     48.1     48.3
GRIDPOLR POL1     HILL   16     48.4     48.4
GRIDPOLR POL1     HILL   17     48.2     48.2     48.2     48.1     48.1     48.2
GRIDPOLR POL1     HILL   17     48.4     48.5
GRIDPOLR POL1     HILL   18     48.2     48.2     48.2     48.1     48.1     48.2
GRIDPOLR POL1     HILL   18     48.4     48.6
GRIDPOLR POL1     HILL   19     48.2     48.2     48.2     48.1     48.1     48.2
GRIDPOLR POL1     HILL   19     48.3     48.6
GRIDPOLR POL1     HILL   20     48.2     48.2     48.2     48.1     48.1     48.2
GRIDPOLR POL1     HILL   20     48.3     50.3
GRIDPOLR POL1     HILL   21     48.2     48.2     48.2     48.1     48.1     48.2
GRIDPOLR POL1     HILL   21     48.2     50.3
GRIDPOLR POL1     HILL   22     48.2     48.2     48.2     48.1     48.1     48.1
GRIDPOLR POL1     HILL   22     48.1     49.8
GRIDPOLR POL1     HILL   23     48.2     48.2     48.2     48.2     48.1     48.1
GRIDPOLR POL1     HILL   23     48.0     50.2
GRIDPOLR POL1     HILL   24     48.2     48.2     48.2     48.2     48.2     48.1
GRIDPOLR POL1     HILL   24     48.1     50.1
GRIDPOLR POL1     HILL   25     48.2     48.2     48.2     48.2     48.1     48.0
GRIDPOLR POL1     HILL   25     48.2     50.9
GRIDPOLR POL1     HILL   26     48.2     48.2     48.2     48.2     48.2     48.0
GRIDPOLR POL1     HILL   26     50.2     49.7
GRIDPOLR POL1     HILL   27     48.2     48.2     48.2     48.2     48.2     50.2
GRIDPOLR POL1     HILL   27     50.7     50.0
GRIDPOLR POL1     HILL   28     48.2     48.2     48.2     48.2     48.2     50.2
GRIDPOLR POL1     HILL   28     50.7     50.6
GRIDPOLR POL1     HILL   29     48.2     48.2     48.2     48.2     48.2     50.2
GRIDPOLR POL1     HILL   29     50.7     50.7
GRIDPOLR POL1     HILL   30     48.2     48.2     48.2     48.2     48.2     50.2
```

```
   GRIDPOLR POL1     HILL   30     50.7     50.4
   GRIDPOLR POL1     HILL   31     48.2     48.2     48.2     48.2     48.2     48.1
   GRIDPOLR POL1     HILL   31     50.7     50.0
   GRIDPOLR POL1     HILL   32     48.2     48.2     48.2     48.2     48.2     48.2
   GRIDPOLR POL1     HILL   32     50.2     49.4
   GRIDPOLR POL1     HILL   33     48.2     48.2     48.2     48.2     48.2     48.2
   GRIDPOLR POL1     HILL   33     48.2     48.7
   GRIDPOLR POL1     HILL   34     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     HILL   34     48.2     48.2
   GRIDPOLR POL1     HILL   35     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     HILL   35     48.3     48.4
   GRIDPOLR POL1     HILL   36     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     HILL   36     48.3     48.5
RE GRIDPOLR POL1 END
RE FINISHED

ME STARTING
   SURFFILE SHV02_AMET.SFC
   PROFFILE SHV02_AMET.PFL
   SURFDATA 13957 2018 SHREVEPORT,LA
   UAIRDATA 13957 2018 SHREVEPORT,LA
   PROFBASE 78.5
ME FINISHED

OU STARTING
   RECTABLE ALLAVE 1ST 8TH
   SUMMFILE SHV02.SUM
   PLOTFILE 1 ALL 1ST SHV02_1hr.PLT 31
OU FINISHED
```

```
CO STARTING
CO TITLEONE 412 Delaware St. Shreveport, LA
CO TITLETWO Styrene Emission Modeling
CO MODELOPT DFAULT CONC
CO AVERTIME 1
CO POLLUTID STYRENE
CO RUNORNOT RUN
CO FINISHED

SO STARTING
SO EMISUNIT 215.21 GRAM/SEC PPM
**           EPN      TYPE    X(m)       Y(m)      Elev(m)
**          ----------------------------------------------
   LOCATION STACK01  POINT  430718.7  3591936.8  48.1
**
**              EPN    QS(g/s)   HS(m)  TS(K)  VS(m/s)  DS(m)
**          ------------------------------------------------
   SRCPARAM STACK01   0.01  0.52  364.15  24.85   0.044


SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
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SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00

   SRCGROUP ALL

SO FINISHED

RE STARTING
RE ELEVUNIT METERS
RE GRIDPOLR POL1 STA
                 ORIG  STACK01
                 DIST  2. 3. 4. 6. 8. 15. 20. 45.
                 GDIR  36 10 10
   GRIDPOLR POL1     ELEV    1     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    1     48.3     48.6
   GRIDPOLR POL1     ELEV    2     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    2     48.4     48.7
   GRIDPOLR POL1     ELEV    3     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    3     48.4     48.7
   GRIDPOLR POL1     ELEV    4     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    4     48.4     48.8
   GRIDPOLR POL1     ELEV    5     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    5     48.4     48.7
   GRIDPOLR POL1     ELEV    6     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    6     48.4     48.5
   GRIDPOLR POL1     ELEV    7     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    7     48.4     48.4
   GRIDPOLR POL1     ELEV    8     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    8     48.4     48.3
   GRIDPOLR POL1     ELEV    9     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV    9     48.4     48.3
   GRIDPOLR POL1     ELEV   10     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV   10     48.4     48.4
   GRIDPOLR POL1     ELEV   11     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV   11     48.4     48.5
   GRIDPOLR POL1     ELEV   12     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV   12     48.4     48.5
   GRIDPOLR POL1     ELEV   13     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV   13     48.4     48.6
   GRIDPOLR POL1     ELEV   14     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV   14     48.4     48.6
   GRIDPOLR POL1     ELEV   15     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     ELEV   15     48.4     48.5
   GRIDPOLR POL1     ELEV   16     48.2     48.2     48.2     48.1     48.1     48.3
   GRIDPOLR POL1     ELEV   16     48.4     48.4
   GRIDPOLR POL1     ELEV   17     48.2     48.2     48.2     48.1     48.1     48.2
   GRIDPOLR POL1     ELEV   17     48.4     48.5
   GRIDPOLR POL1     ELEV   18     48.2     48.2     48.2     48.1     48.1     48.2
```

GRIDPOLR POL1	ELEV	18	48.4	48.6				
GRIDPOLR POL1	ELEV	19	48.2	48.2	48.2	48.1	48.1	48.2
GRIDPOLR POL1	ELEV	19	48.3	48.6				
GRIDPOLR POL1	ELEV	20	48.2	48.2	48.2	48.1	48.1	48.2
GRIDPOLR POL1	ELEV	20	48.3	48.5				
GRIDPOLR POL1	ELEV	21	48.2	48.2	48.2	48.1	48.1	48.2
GRIDPOLR POL1	ELEV	21	48.2	49.1				
GRIDPOLR POL1	ELEV	22	48.2	48.2	48.2	48.1	48.1	48.1
GRIDPOLR POL1	ELEV	22	48.1	49.8				
GRIDPOLR POL1	ELEV	23	48.2	48.2	48.2	48.2	48.1	48.1
GRIDPOLR POL1	ELEV	23	48.0	50.2				
GRIDPOLR POL1	ELEV	24	48.2	48.2	48.2	48.2	48.2	48.1
GRIDPOLR POL1	ELEV	24	48.1	50.1				
GRIDPOLR POL1	ELEV	25	48.2	48.2	48.2	48.2	48.1	48.0
GRIDPOLR POL1	ELEV	25	48.2	49.8				
GRIDPOLR POL1	ELEV	26	48.2	48.2	48.2	48.2	48.2	48.0
GRIDPOLR POL1	ELEV	26	48.2	49.7				
GRIDPOLR POL1	ELEV	27	48.2	48.2	48.2	48.2	48.2	48.0
GRIDPOLR POL1	ELEV	27	48.3	50.0				
GRIDPOLR POL1	ELEV	28	48.2	48.2	48.2	48.2	48.2	48.0
GRIDPOLR POL1	ELEV	28	48.3	50.6				
GRIDPOLR POL1	ELEV	29	48.2	48.2	48.2	48.2	48.2	48.1
GRIDPOLR POL1	ELEV	29	48.4	50.7				
GRIDPOLR POL1	ELEV	30	48.2	48.2	48.2	48.2	48.2	48.1
GRIDPOLR POL1	ELEV	30	48.3	50.4				
GRIDPOLR POL1	ELEV	31	48.2	48.2	48.2	48.2	48.2	48.1
GRIDPOLR POL1	ELEV	31	48.1	50.0				
GRIDPOLR POL1	ELEV	32	48.2	48.2	48.2	48.2	48.2	48.2
GRIDPOLR POL1	ELEV	32	48.1	49.4				
GRIDPOLR POL1	ELEV	33	48.2	48.2	48.2	48.2	48.2	48.2
GRIDPOLR POL1	ELEV	33	48.2	48.7				
GRIDPOLR POL1	ELEV	34	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	ELEV	34	48.2	48.2				
GRIDPOLR POL1	ELEV	35	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	ELEV	35	48.3	48.4				
GRIDPOLR POL1	ELEV	36	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	ELEV	36	48.3	48.5				
GRIDPOLR POL1	HILL	1	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	HILL	1	48.3	48.6				
GRIDPOLR POL1	HILL	2	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	HILL	2	48.4	48.7				
GRIDPOLR POL1	HILL	3	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	HILL	3	48.4	48.7				
GRIDPOLR POL1	HILL	4	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	HILL	4	48.4	48.8				
GRIDPOLR POL1	HILL	5	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	HILL	5	48.4	48.7				
GRIDPOLR POL1	HILL	6	48.2	48.2	48.2	48.2	48.2	48.3

GRIDPOLR POL1	HILL	6	48.4	48.5				
GRIDPOLR POL1	HILL	7	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	HILL	7	48.4	48.4				
GRIDPOLR POL1	HILL	8	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	HILL	8	48.4	48.3				
GRIDPOLR POL1	HILL	9	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	HILL	9	48.4	48.3				
GRIDPOLR POL1	HILL	10	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	HILL	10	48.4	48.4				
GRIDPOLR POL1	HILL	11	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	HILL	11	48.4	48.5				
GRIDPOLR POL1	HILL	12	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	HILL	12	48.4	48.5				
GRIDPOLR POL1	HILL	13	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	HILL	13	48.4	48.6				
GRIDPOLR POL1	HILL	14	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	HILL	14	48.4	48.6				
GRIDPOLR POL1	HILL	15	48.2	48.2	48.2	48.2	48.2	48.3
GRIDPOLR POL1	HILL	15	48.4	48.5				
GRIDPOLR POL1	HILL	16	48.2	48.2	48.2	48.1	48.1	48.3
GRIDPOLR POL1	HILL	16	48.4	48.4				
GRIDPOLR POL1	HILL	17	48.2	48.2	48.2	48.1	48.1	48.2
GRIDPOLR POL1	HILL	17	48.4	48.5				
GRIDPOLR POL1	HILL	18	48.2	48.2	48.2	48.1	48.1	48.2
GRIDPOLR POL1	HILL	18	48.4	48.6				
GRIDPOLR POL1	HILL	19	48.2	48.2	48.2	48.1	48.1	48.2
GRIDPOLR POL1	HILL	19	48.3	48.6				
GRIDPOLR POL1	HILL	20	48.2	48.2	48.2	48.1	48.1	48.2
GRIDPOLR POL1	HILL	20	48.3	50.3				
GRIDPOLR POL1	HILL	21	48.2	48.2	48.2	48.1	48.1	48.2
GRIDPOLR POL1	HILL	21	48.2	50.3				
GRIDPOLR POL1	HILL	22	48.2	48.2	48.2	48.1	48.1	48.1
GRIDPOLR POL1	HILL	22	48.1	49.8				
GRIDPOLR POL1	HILL	23	48.2	48.2	48.2	48.2	48.1	48.1
GRIDPOLR POL1	HILL	23	48.0	50.2				
GRIDPOLR POL1	HILL	24	48.2	48.2	48.2	48.2	48.2	48.1
GRIDPOLR POL1	HILL	24	48.1	50.1				
GRIDPOLR POL1	HILL	25	48.2	48.2	48.2	48.2	48.1	48.0
GRIDPOLR POL1	HILL	25	48.2	50.9				
GRIDPOLR POL1	HILL	26	48.2	48.2	48.2	48.2	48.2	48.0
GRIDPOLR POL1	HILL	26	50.2	49.7				
GRIDPOLR POL1	HILL	27	48.2	48.2	48.2	48.2	48.2	50.2
GRIDPOLR POL1	HILL	27	50.7	50.0				
GRIDPOLR POL1	HILL	28	48.2	48.2	48.2	48.2	48.2	50.2
GRIDPOLR POL1	HILL	28	50.7	50.6				
GRIDPOLR POL1	HILL	29	48.2	48.2	48.2	48.2	48.2	50.2
GRIDPOLR POL1	HILL	29	50.7	50.7				
GRIDPOLR POL1	HILL	30	48.2	48.2	48.2	48.2	48.2	50.2

```
   GRIDPOLR POL1     HILL   30     50.7     50.4
   GRIDPOLR POL1     HILL   31     48.2     48.2     48.2     48.2     48.2     48.1
   GRIDPOLR POL1     HILL   31     50.7     50.0
   GRIDPOLR POL1     HILL   32     48.2     48.2     48.2     48.2     48.2     48.2
   GRIDPOLR POL1     HILL   32     50.2     49.4
   GRIDPOLR POL1     HILL   33     48.2     48.2     48.2     48.2     48.2     48.2
   GRIDPOLR POL1     HILL   33     48.2     48.7
   GRIDPOLR POL1     HILL   34     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     HILL   34     48.2     48.2
   GRIDPOLR POL1     HILL   35     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     HILL   35     48.3     48.4
   GRIDPOLR POL1     HILL   36     48.2     48.2     48.2     48.2     48.2     48.3
   GRIDPOLR POL1     HILL   36     48.3     48.5
RE GRIDPOLR POL1 END
RE FINISHED

ME STARTING
   SURFFILE SHV02_AMET.SFC
   PROFFILE SHV02_AMET.PFL
   SURFDATA 13957 2018 SHREVEPORT,LA
   UAIRDATA 13957 2018 SHREVEPORT,LA
   PROFBASE 78.5
ME FINISHED

OU STARTING
   RECTABLE ALLAVE 1ST 8TH
   SUMMFILE SHV02.SUM
   PLOTFILE 1 ALL 1ST SHV02_1hr.PLT 31
OU FINISHED

 **********************************
 *** SETUP Finishes Successfully ***
 **********************************

 *** AERMOD - VERSION  18081 ***   *** 412 Delaware St. Shreveport, LA
                          ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                         ***        16:31:36

                                   PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                             ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.
```

```
  --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.

 **Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  STYRENE

 **Model Calculates  1 Short Term Average(s) of:   1-HR

 **This Run Includes:      1 Source(s);       1 Source Group(s); and     288
Receptor(s)

                with:      1 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:      0 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  18081

 **Output Options Selected:
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
```

Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 78.50 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAM/SEC ;
Emission Rate Unit Factor = 215.21
Output Units = PPM

**Approximate Storage Requirements of Model = 3.6 MB of RAM.

**Input Runstream File: aermod.inp

**Output Print File: aermod.out

**File for Summary of Results: SHV02.SUM

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (USER UNITS)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/ HOR VARY BY	EMIS RATE SCALAR
STACK01	0	0.10000E-01	430718.7	3591936.8	48.1	0.52	364.15	24.85	0.04	NO	NO	NO	

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	STACK01 ,

*** AERMOD - VERSION 18081 *** *** 412 Delaware St. Shreveport, LA
*** *** 02/22/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
*** 16:31:36

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

*** ORIGIN FOR POLAR NETWORK ***
X-ORIG = 430718.70 ; Y-ORIG = 3591936.80 (METERS)

*** DISTANCE RANGES OF NETWORK ***
(METERS)

2.0, 3.0, 4.0, 6.0, 8.0, 15.0, 20.0,
45.0,

*** DIRECTION RADIALS OF NETWORK ***
(DEGREES)

10.0, 20.0, 30.0, 40.0, 50.0, 60.0, 70.0,
80.0, 90.0, 100.0,
110.0, 120.0, 130.0, 140.0, 150.0, 160.0, 170.0,
180.0, 190.0, 200.0,
210.0, 220.0, 230.0, 240.0, 250.0, 260.0, 270.0,
280.0, 290.0, 300.0,
310.0, 320.0, 330.0, 340.0, 350.0, 360.0,

*** AERMOD - VERSION 18081 *** *** 412 Delaware St. Shreveport, LA
*** *** 02/22/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
*** 16:31:36

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

* ELEVATION HEIGHTS IN METERS *

DIRECTION (DEGREES)	DISTANCE (METERS)										
	2.00	3.00	4.00	6.00	8.00	15.00	20.00	45.00			
10.00	48.20	48.20	48.20	48.20	48.20	48.30	48.30	48.60			
20.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.70			
30.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.70			
40.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.80			
50.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.70			
60.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.50			
70.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.40			
80.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.30			
90.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.30			
100.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.40			
110.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.50			
120.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.50			
130.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.60			
140.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.60			
150.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.50			
160.00	48.20	48.20	48.20	48.10	48.10	48.30	48.40	48.40			
170.00	48.20	48.20	48.20	48.10	48.10						

```
  48.20        48.40        48.50
     180.00 |         48.20        48.20        48.20        48.10        48.10
  48.20        48.40        48.60
     190.00 |         48.20        48.20        48.20        48.10        48.10
  48.20        48.30        48.60
     200.00 |         48.20        48.20        48.20        48.10        48.10
  48.20        48.30        48.50
     210.00 |         48.20        48.20        48.20        48.10        48.10
  48.20        48.20        49.10
     220.00 |         48.20        48.20        48.20        48.10        48.10
  48.10        48.10        49.80
     230.00 |         48.20        48.20        48.20        48.20        48.10
  48.10        48.00        50.20
     240.00 |         48.20        48.20        48.20        48.20        48.20
  48.10        48.10        50.10
     250.00 |         48.20        48.20        48.20        48.20        48.10
  48.00        48.20        49.80
     260.00 |         48.20        48.20        48.20        48.20        48.20
  48.00        48.20        49.70
     270.00 |         48.20        48.20        48.20        48.20        48.20
  48.00        48.30        50.00
     280.00 |         48.20        48.20        48.20        48.20        48.20
  48.00        48.30        50.60
     290.00 |         48.20        48.20        48.20        48.20        48.20
  48.10        48.40        50.70
     300.00 |         48.20        48.20        48.20        48.20        48.20
  48.10        48.30        50.40
     310.00 |         48.20        48.20        48.20        48.20        48.20
  48.10        48.10        50.00
     320.00 |         48.20        48.20        48.20        48.20        48.20
  48.20        48.10        49.40
     330.00 |         48.20        48.20        48.20        48.20        48.20
  48.20        48.20        48.70
     340.00 |         48.20        48.20        48.20        48.20        48.20
  48.30        48.20        48.20
     350.00 |         48.20        48.20        48.20        48.20        48.20
  48.30        48.30        48.40
     360.00 |         48.20        48.20        48.20        48.20        48.20
  48.30        48.30        48.50
 *** AERMOD - VERSION  18081 ***   *** 412 Delaware St. Shreveport, LA
                        ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                       ***        16:31:36

                                  PAGE   6
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                  *** NETWORK ID: POL1     ;  NETWORK TYPE: GRIDPOLR
```

***

* HILL HEIGHT SCALES IN METERS *

DIRECTION (DEGREES)	DISTANCE (METERS)								
	2.00	3.00	4.00	6.00	8.00	15.00	20.00	45.00
10.00	48.20	48.20	48.20	48.20	48.20	48.30	48.30	48.60
20.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.70
30.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.70
40.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.80
50.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.70
60.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.50
70.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.40
80.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.30
90.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.30
100.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.40
110.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.50
120.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.50
130.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.60
140.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.60
150.00	48.20	48.20	48.20	48.20	48.20	48.30	48.40	48.50
160.00	48.20	48.20	48.20	48.10	48.10	48.30	48.40	48.40
170.00	48.20	48.20	48.20	48.10	48.10	48.20	48.40	48.50
180.00	48.20	48.20	48.20	48.10	48.10	48.20	48.40	48.60
190.00	48.20	48.20	48.20	48.10	48.10	48.20	48.30	48.60

```
    200.00 |         48.20        48.20        48.20        48.10        48.10
  48.20        48.30        50.30
    210.00 |         48.20        48.20        48.20        48.10        48.10
  48.20        48.20        50.30
    220.00 |         48.20        48.20        48.20        48.10        48.10
  48.10        48.10        49.80
    230.00 |         48.20        48.20        48.20        48.20        48.10
  48.10        48.00        50.20
    240.00 |         48.20        48.20        48.20        48.20        48.20
  48.10        48.10        50.10
    250.00 |         48.20        48.20        48.20        48.20        48.10
  48.00        48.20        50.90
    260.00 |         48.20        48.20        48.20        48.20        48.20
  48.00        50.20        49.70
    270.00 |         48.20        48.20        48.20        48.20        48.20
  50.20        50.70        50.00
    280.00 |         48.20        48.20        48.20        48.20        48.20
  50.20        50.70        50.60
    290.00 |         48.20        48.20        48.20        48.20        48.20
  50.20        50.70        50.70
    300.00 |         48.20        48.20        48.20        48.20        48.20
  50.20        50.70        50.40
    310.00 |         48.20        48.20        48.20        48.20        48.20
  48.10        50.70        50.00
    320.00 |         48.20        48.20        48.20        48.20        48.20
  48.20        50.20        49.40
    330.00 |         48.20        48.20        48.20        48.20        48.20
  48.20        48.20        48.70
    340.00 |         48.20        48.20        48.20        48.20        48.20
  48.30        48.20        48.20
    350.00 |         48.20        48.20        48.20        48.20        48.20
  48.30        48.30        48.40
    360.00 |         48.20        48.20        48.20        48.20        48.20
  48.30        48.30        48.50
 *** AERMOD - VERSION  18081 ***   *** 412 Delaware St. Shreveport, LA
                       ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                       ***       16:31:36

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                          *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
                                                          (1=YES; 0=NO)

           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 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
```

```
           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 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
           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 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
           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 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
           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 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
           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 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
           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 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
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

↑ *** AERMOD - VERSION 18081 *** *** 412 Delaware St. Shreveport, LA *** 02/22/20

*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling *** 16:31:36

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: SHV02_AMET.SFC
Met Version: 18081
Profile file: SHV02_AMET.PFL

Surface format: FREE

Profile format: FREE

Surface station no.: 13957 Upper air station no.: 13957
Name: SHREVEPORT,LA Name: SHREVEPORT,LA
Year: 2018 Year: 2018

```
 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -
 18 01 01   1 01  -64.0  0.586 -9.000 -9.000 -999. 1076.    288.0  0.59   0.41
1.00    4.41    2.   10.0  269.2    2.0
 18 01 01   1 02  -63.3  0.602 -9.000 -9.000 -999. 1121.    316.1  0.59   0.41
1.00    4.51   12.   10.0  269.2    2.0
 18 01 01   1 03  -64.0  0.681 -9.000 -9.000 -999. 1347.    453.1  0.59   0.41
1.00    5.02   21.   10.0  268.8    2.0
 18 01 01   1 04  -64.0  0.766 -9.000 -9.000 -999. 1604.    643.6  0.59   0.41
1.00    5.58   20.   10.0  268.1    2.0
 18 01 01   1 05  -64.0  0.806 -9.000 -9.000 -999. 1733.    750.8  0.59   0.41
1.00    5.85   21.   10.0  268.1    2.0
 18 01 01   1 06  -64.0  0.822 -9.000 -9.000 -999. 1788.    797.8  0.59   0.41
1.00    5.96   16.   10.0  267.5    2.0
 18 01 01   1 07  -54.3  0.894 -9.000 -9.000 -999. 2021.   1208.2  0.59   0.41
1.00    6.43   16.   10.0  267.0    2.0
 18 01 01   1 08  -49.6  0.825 -9.000 -9.000 -999. 1810.   1041.2  0.59   0.41
0.67    5.95   15.   10.0  267.0    2.0
 18 01 01   1 09    6.4  0.856  0.380  0.008  311. 1897.  -8888.0  0.59   0.41
0.34    6.06   18.   10.0  267.5    2.0
 18 01 01   1 10   33.1  0.939  0.837  0.010  651. 2175.  -2301.2  0.59   0.41
0.23    6.62   14.   10.0  268.1    2.0
 18 01 01   1 11   51.8  0.775  1.055  0.009  835. 1677.   -825.7  0.59   0.41
0.19    5.41   21.   10.0  269.9    2.0
 18 01 01   1 12   70.1  0.746  1.176  0.009  853. 1550.   -543.9  0.59   0.41
0.18    5.17   19.   10.0  270.4    2.0
 18 01 01   1 13   77.8  0.743  1.227  0.009  874. 1538.   -484.8  0.59   0.41
0.18    5.14    8.   10.0  272.0    2.0
 18 01 01   1 14   70.9  0.755  1.198  0.009  891. 1574.   -558.0  0.59   0.41
0.19    5.24   10.   10.0  272.0    2.0
 18 01 01   1 15   55.7  0.748  1.112  0.009  905. 1553.   -689.3  0.59   0.41
0.20    5.21   13.   10.0  272.5    2.0
 18 01 01   1 16   28.8  0.729  0.894  0.010  912. 1497.  -1236.8  0.59   0.41
0.26    5.12    6.   10.0  272.0    2.0
 18 01 01   1 17  -18.3  0.708 -9.000 -9.000 -999. 1431.   1777.7  0.59   0.41
0.42    5.07    8.   10.0  271.4    2.0
 18 01 01   1 18  -62.0  0.592 -9.000 -9.000 -999. 1110.    306.6  0.59   0.41
1.00    4.44   10.   10.0  270.4    2.0
 18 01 01   1 19  -64.0  0.615 -9.000 -9.000 -999. 1155.    332.9  0.59   0.41
1.00    4.59   21.   10.0  269.9    2.0
 18 01 01   1 20  -64.0  0.579 -9.000 -9.000 -999. 1061.    279.1  0.59   0.41
1.00    4.37   29.   10.0  269.2    2.0
 18 01 01   1 21  -64.0  0.843 -9.000 -9.000 -999. 1856.    860.7  0.71   0.41
1.00    5.70   38.   10.0  269.2    2.0
```

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 18 01 01   1 22  -64.0  0.706 -9.000 -9.000 -999. 1453.    505.8  0.55   0.41
1.00    5.31   60.   10.0  268.1    2.0
 18 01 01   1 23  -64.0  0.785 -9.000 -9.000 -999. 1666.    695.0  0.55   0.41
1.00    5.85   64.   10.0  267.5    2.0
 18 01 01   1 24  -64.0  0.820 -9.000 -9.000 -999. 1779.    791.0  0.55   0.41
1.00    6.09   62.   10.0  267.0    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 18 01 01 01   10.0 1    2.    4.41   269.3   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION  18081 ***   *** 412 Delaware St. Shreveport, LA
                         ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                               *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                  INCLUDING SOURCE(S):     STACK01     ,

                                   *** NETWORK ID: POL1     ;  NETWORK TYPE:
GRIDPOLR ***

                                       ** CONC OF STYRENE  IN PPM
                  **

 DIRECTION |                                                 DISTANCE (METERS)
 (DEGREES) |            2.00                    3.00                    4.00
          6.00                    8.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - -

      10.0 |      0.08497 (18022724)      0.08217 (18022822)      0.06788 (18021423)
     0.04902 (18022105)      0.03584 (18021419)
      20.0 |      0.08479 (18021506)      0.07727 (18021524)      0.06389 (18120121)
     0.04534 (18122222)      0.03396 (18122221)
      30.0 |      0.08419 (18021604)      0.07870 (18120103)      0.06389 (18120121)
     0.04433 (18122721)      0.03514 (18120119)
      40.0 |      0.08387 (18021605)      0.07559 (18120104)      0.05963 (18120107)
     0.04127 (18120205)      0.03590 (18120119)
      50.0 |      0.08387 (18120117)      0.08077 (18120106)      0.06585 (18120106)
     0.04693 (18120118)      0.03308 (18121402)
      60.0 |      0.08387 (18120117)      0.08658 (18120106)      0.06980 (18120106)
```

```
0.05062 (18120118)      0.03599 (18121402)
 70.0 |      0.08278 (18123107)      0.08408 (18120106)      0.06950 (18012206)
0.04977 (18120207)      0.03624 (18120207)
 80.0 |      0.08631 (18012203)      0.08189 (18012207)      0.07153 (18021708)
0.05547 (18012301)      0.04244 (18122304)
 90.0 |      0.08444 (18012203)      0.08236 (18012302)      0.08082 (18012302)
0.06125 (18012301)      0.04717 (18122304)
100.0 |      0.08604 (18110108)      0.09066 (18012223)      0.08334 (18012302)
0.06146 (18122305)      0.04558 (18121405)
110.0 |      0.09096 (18082019)      0.09460 (18012219)      0.08430 (18120208)
0.06072 (18122224)      0.04771 (18122224)
120.0 |      0.09347 (18082019)      0.09531 (18082020)      0.08307 (18122306)
0.06075 (18012306)      0.04613 (18120920)
130.0 |      0.08731 (18042122)      0.09088 (18122006)      0.08075 (18122805)
0.05934 (18021018)      0.04376 (18011220)
140.0 |      0.08674 (18040321)      0.09112 (18122603)      0.08231 (18022420)
0.05905 (18120922)      0.04432 (18120219)
150.0 |      0.08802 (18041822)      0.09373 (18022119)      0.08169 (18122603)
0.05796 (18022303)      0.04568 (18120219)
160.0 |      0.07988 (18041822)      0.08484 (18022119)      0.07152 (18022304)
0.05096 (18011222)      0.04038 (18120219)
170.0 |      0.07129 (18022108)      0.06493 (18022119)      0.05769 (18032919)
0.04062 (18032919)      0.03073 (18011222)
180.0 |      0.07276 (18020620)      0.06468 (18012820)      0.05519 (18020419)
0.03964 (18012822)      0.02970 (18012823)
190.0 |      0.07440 (18020422)      0.06598 (18020424)      0.05580 (18020419)
0.03993 (18020421)      0.02969 (18120507)
200.0 |      0.07342 (18022123)      0.06530 (18012724)      0.05467 (18012821)
0.03967 (18020421)      0.02932 (18022601)
210.0 |      0.07290 (18120721)      0.06544 (18012801)      0.05271 (18020723)
0.03830 (18122818)      0.02957 (18022601)
220.0 |      0.07077 (18082219)      0.06331 (18012801)      0.04986 (18012802)
0.03632 (18122818)      0.02733 (18022601)
230.0 |      0.07263 (18021208)      0.06867 (18022118)      0.05517 (18020804)
0.03768 (18021305)      0.02681 (18021305)
240.0 |      0.07642 (18021724)      0.07170 (18022118)      0.05868 (18022505)
0.03997 (18020608)      0.02897 (18021318)
250.0 |      0.07513 (18021724)      0.07095 (18021621)      0.05913 (18042920)
0.04082 (18021223)      0.03143 (18022608)
260.0 |      0.07127 (18021802)      0.08208 (18042920)      0.06753 (18042920)
0.05078 (18021624)      0.03817 (18022608)
270.0 |      0.07632 (18040620)      0.08613 (18042920)      0.07508 (18020221)
0.05512 (18021624)      0.04326 (18022320)
280.0 |      0.08510 (18040620)      0.08436 (18032521)      0.07604 (18020221)
0.05485 (18021221)      0.04326 (18022320)
290.0 |      0.08682 (18081719)      0.09002 (18122523)      0.07415 (18021702)
0.05573 (18021818)      0.04107 (18010719)
300.0 |      0.08768 (18081719)      0.09002 (18122523)      0.07261 (18122523)
```

	0.05379 (18021818)	0.04181 (18010621)	
310.0	0.08751 (18122618)	0.08822 (18010720)	0.07546 (18122607)
	0.05471 (18011020)	0.04080 (18122524)	
320.0	0.08679 (18122520)	0.08925 (18122608)	0.07651 (18021819)
	0.05499 (18022720)	0.04107 (18020105)	
330.0	0.08604 (18012021)	0.08918 (18011101)	0.07696 (18121304)
	0.05432 (18020107)	0.04009 (18012007)	
340.0	0.08928 (18012119)	0.08736 (18021907)	0.07551 (18022722)
	0.05414 (18021822)	0.03953 (18021822)	
350.0	0.09001 (18022101)	0.08893 (18022819)	0.07344 (18021424)
	0.05453 (18022323)	0.03971 (18022323)	
360.0	0.08891 (18022102)	0.08987 (18022819)	0.07429 (18021423)
	0.05311 (18022105)	0.03961 (18021419)	

*** AERMOD - VERSION 18081 *** *** 412 Delaware St. Shreveport, LA
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*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STACK01 ,

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

** CONC OF STYRENE IN PPM **

DIRECTION (DEGREES)	DISTANCE (METERS) 15.00	20.00	45.00
10.0	0.01999 (18122720)	0.01576 (18122720)	0.00790 (18100124)
20.0	0.01882 (18051421)	0.01501 (18051421)	0.00798 (18052106)
30.0	0.01744 (18051421)	0.01392 (18051421)	0.00891 (18121518)
40.0	0.01653 (18120119)	0.01310 (18121924)	0.00858 (18121518)
50.0	0.01797 (18052205)	0.01310 (18121924)	0.00859 (18052204)
60.0	0.02041 (18052504)	0.01504 (18052504)	0.00876 (18052902)
70.0	0.02010 (18052504)	0.01482 (18052504)	0.00884 (18122119)
80.0	0.02091 (18042402)	0.01485 (18091619)	0.00910 (18052901)
90.0	0.02333 (18042402)	0.01654 (18042802)	0.00969 (18042703)
100.0	0.02385 (18042802)	0.01811 (18042802)	0.00933 (18012323)
110.0	0.02361 (18012903)	0.01783 (18010307)	0.00988 (18042404)
120.0	0.02416 (18012903)	0.01792 (18121007)	0.00968 (18121604)

130.0	0.02467 (18120218)	0.01710 (18120218)	0.01013 (18121718)
140.0	0.02354 (18012905)	0.01796 (18012319)	0.00928 (18012402)
150.0	0.02314 (18012401)	0.01669 (18012319)	0.00842 (18012404)
160.0	0.02010 (18012401)	0.01381 (18012401)	0.00819 (18022423)
170.0	0.01706 (18120420)	0.01299 (18120420)	0.00796 (18022423)
180.0	0.01682 (18011720)	0.01348 (18022501)	0.00751 (18012824)
190.0	0.01705 (18011720)	0.01348 (18022501)	0.00823 (18121819)
200.0	0.01585 (18022602)	0.01131 (18011720)	0.00813 (18022502)
210.0	0.01557 (18022519)	0.01139 (18022519)	0.00828 (18022502)
220.0	0.01451 (18022519)	0.01063 (18022519)	0.00818 (18020603)
230.0	0.01639 (18013007)	0.01186 (18020604)	0.00781 (18071306)
240.0	0.01760 (18013007)	0.01310 (18020604)	0.00835 (18100104)
250.0	0.01653 (18013007)	0.01383 (18073103)	0.00808 (18031804)
260.0	0.01972 (18022507)	0.01482 (18070723)	0.00908 (18050803)
270.0	0.02229 (18022507)	0.01723 (18070723)	0.00963 (18020919)
280.0	0.02272 (18052722)	0.01837 (18052722)	0.00993 (18022703)
290.0	0.02356 (18022321)	0.01690 (18022321)	0.00997 (18012608)
300.0	0.02454 (18022321)	0.01763 (18022321)	0.00991 (18120518)
310.0	0.02211 (18021821)	0.01616 (18072903)	0.00963 (18020902)
320.0	0.02203 (18022403)	0.01686 (18022322)	0.00932 (18100421)
330.0	0.02111 (18121319)	0.01831 (18022322)	0.00917 (18060821)
340.0	0.01999 (18021008)	0.01506 (18022322)	0.00953 (18022621)
350.0	0.02073 (18122219)	0.01653 (18060221)	0.00884 (18052523)
360.0	0.02222 (18122718)	0.01710 (18122718)	0.00890 (18123022)

*** AERMOD - VERSION 18081 *** *** 412 Delaware St. Shreveport, LA
*** 02/22/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
*** 16:31:36

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 8TH HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STACK01 ,

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

** CONC OF STYRENE IN PPM **

DIRECTION (DEGREES)	DISTANCE (METERS)			
	2.00	3.00	4.00	6.00	8.00

10.0	0.08314 (18021504)	0.07723 (18021824)	0.06452 (18121205)	0.04614 (18022401)	0.03370 (18022106)
20.0	0.08225 (18122217)	0.07545 (18021507)	0.05935 (18120204)	0.04243 (18022806)	0.03070 (18011908)
30.0	0.07884 (18021603)	0.07511 (18120104)	0.06014 (18120103)	0.03999 (18120119)	0.02905 (18120120)
40.0	0.07991 (18011117)	0.07335 (18120204)	0.05810 (18120103)	0.03872 (18120118)	0.02805 (18063004)
50.0	0.07601 (18120104)	0.07016 (18120117)	0.06009 (18123108)	0.03923 (18121402)	0.02968 (18021418)
60.0	0.07377 (18123106)	0.07264 (18021606)	0.06177 (18012208)	0.04186 (18120205)	0.03082 (18042324)
70.0	0.06975 (18090922)	0.07324 (18012206)	0.06698 (18122223)	0.04306 (18012221)	0.03149 (18042324)
80.0	0.06931 (18090519)	0.07503 (18123107)	0.06774 (18071220)	0.04736 (18122223)	0.03468 (18121407)
90.0	0.06975 (18090922)	0.07596 (18030621)	0.07242 (18030620)	0.05465 (18012302)	0.03967 (18030719)
100.0	0.07805 (18110105)	0.08330 (18121419)	0.07730 (18042604)	0.05689 (18021708)	0.04187 (18042319)
110.0	0.08528 (18110102)	0.09130 (18082019)	0.08004 (18012303)	0.05829 (18010317)	0.04310 (18071221)
120.0	0.08324 (18030619)	0.09310 (18122723)	0.08054 (18012304)	0.05814 (18120920)	0.04296 (18041420)
130.0	0.08402 (18031920)	0.08950 (18021107)	0.07912 (18022420)	0.05755 (18122308)	0.04224 (18122806)
140.0	0.08142 (18122018)	0.08694 (18121421)	0.07759 (18122807)	0.05695 (18120217)	0.04126 (18022303)
150.0	0.07645 (18122007)	0.08236 (18011208)	0.07433 (18032919)	0.05356 (18122803)	0.03676 (18042406)
160.0	0.07077 (18082219)	0.07211 (18030120)	0.06535 (18030120)	0.04703 (18041901)	0.03212 (18021118)
170.0	0.06996 (18022120)	0.06235 (18120319)	0.05245 (18122603)	0.03744 (18012822)	0.02731 (18010401)
180.0	0.07122 (18122317)	0.06311 (18012923)	0.05288 (18012923)	0.03690 (18012823)	0.02806 (18120507)
190.0	0.07181 (18120823)	0.06439 (18020619)	0.05348 (18122819)	0.03790 (18013001)	0.02820 (18012924)
200.0	0.07126 (18120721)	0.06438 (18012802)	0.05236 (18012721)	0.03638 (18020420)	0.02709 (18022602)
210.0	0.06975 (18090922)	0.06224 (18122921)	0.05095 (18010908)	0.03484 (18012719)	0.02588 (18122604)
220.0	0.06852 (18110708)	0.06033 (18010820)	0.04853 (18020804)	0.03272 (18020801)	0.02378 (18022204)
230.0	0.06904 (18090522)	0.06520 (18010122)	0.05257 (18120707)	0.03614 (18021223)	0.02504 (18120623)
240.0	0.06975 (18090922)	0.06930 (18021724)	0.05582 (18010208)	0.03829 (18020801)	0.02757 (18021303)

250.0	0.06975 (18090922)	0.06937 (18020803)	0.05689 (18013004)	0.03962 (18022607)	0.02970 (18122518)
260.0	0.06900 (18010202)	0.07115 (18032521)	0.06431 (18042921)	0.04560 (18092220)	0.03324 (18040422)
270.0	0.06975 (18090922)	0.08003 (18032520)	0.06927 (18042921)	0.04971 (18030221)	0.03661 (18021808)
280.0	0.07359 (18082320)	0.08237 (18070401)	0.07032 (18042922)	0.05186 (18011401)	0.03931 (18011403)
290.0	0.07782 (18082321)	0.08239 (18090222)	0.06861 (18042922)	0.05205 (18121908)	0.03928 (18020307)
300.0	0.07870 (18122618)	0.08177 (18090222)	0.06789 (18092301)	0.05196 (18122524)	0.03901 (18121317)
310.0	0.08291 (18122621)	0.07917 (18122523)	0.07181 (18021704)	0.05274 (18122420)	0.03937 (18013018)
320.0	0.08395 (18122621)	0.08537 (18122607)	0.07431 (18121304)	0.05319 (18012003)	0.03952 (18020522)
330.0	0.08243 (18021921)	0.08503 (18011022)	0.07427 (18010708)	0.05241 (18020520)	0.03921 (18122208)
340.0	0.08749 (18022004)	0.08623 (18012020)	0.07150 (18011108)	0.05086 (18011920)	0.03801 (18013022)
350.0	0.08818 (18021902)	0.08722 (18012619)	0.07178 (18021823)	0.05140 (18021422)	0.03797 (18021419)
360.0	0.08740 (18021824)	0.08477 (18022023)	0.07060 (18121119)	0.05080 (18022324)	0.03695 (18020322)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 8TH HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STACK01 ,

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

** CONC OF STYRENE IN PPM **

DIRECTION (DEGREES)	DISTANCE (METERS) 15.00	20.00	45.00
10.0	0.01750 (18122719)	0.01281 (18100322)	0.00751 (18042505)

20.0	0.01540 (18122719)	0.01180 (18061503)	0.00765 (18052524)
30.0	0.01451 (18121619)	0.01166 (18060721)	0.00760 (18052120)
40.0	0.01501 (18062105)	0.01146 (18071506)	0.00743 (18020404)
50.0	0.01607 (18021418)	0.01204 (18122302)	0.00786 (18102724)
60.0	0.01731 (18032024)	0.01268 (18122302)	0.00804 (18052204)
70.0	0.01763 (18042424)	0.01303 (18051606)	0.00845 (18091722)
80.0	0.01749 (18041024)	0.01306 (18071104)	0.00814 (18052203)
90.0	0.01966 (18112621)	0.01387 (18091619)	0.00905 (18091521)
100.0	0.02177 (18042704)	0.01532 (18041422)	0.00885 (18091424)
110.0	0.02246 (18041421)	0.01602 (18031304)	0.00891 (18101004)
120.0	0.02217 (18121403)	0.01552 (18010307)	0.00869 (18052904)
130.0	0.02204 (18121008)	0.01500 (18120924)	0.00874 (18042803)
140.0	0.02112 (18011219)	0.01419 (18010224)	0.00816 (18042706)
150.0	0.01987 (18051601)	0.01400 (18012905)	0.00656 (18031305)
160.0	0.01655 (18051601)	0.01140 (18120923)	0.00608 (18110524)
170.0	0.01392 (18021719)	0.01047 (18091524)	0.00608 (18110524)
180.0	0.01403 (18021720)	0.01022 (18040923)	0.00623 (18112003)
190.0	0.01318 (18022519)	0.01035 (18091403)	0.00625 (18080106)
200.0	0.01365 (18022224)	0.01050 (18091402)	0.00609 (18091402)
210.0	0.01199 (18052806)	0.00963 (18021720)	0.00656 (18052406)
220.0	0.01174 (18031220)	0.00941 (18011719)	0.00603 (18010404)
230.0	0.01248 (18040804)	0.00975 (18093005)	0.00637 (18020407)
240.0	0.01451 (18020606)	0.01078 (18101904)	0.00692 (18090601)
250.0	0.01510 (18042106)	0.01097 (18011518)	0.00721 (18100104)
260.0	0.01747 (18040422)	0.01245 (18122606)	0.00746 (18032120)
270.0	0.02012 (18011408)	0.01497 (18011408)	0.00879 (18072802)
280.0	0.02050 (18011408)	0.01514 (18120619)	0.00915 (18020901)
290.0	0.02024 (18072820)	0.01606 (18030321)	0.00944 (18090504)
300.0	0.02100 (18020922)	0.01600 (18122601)	0.00921 (18101421)
310.0	0.02069 (18080823)	0.01564 (18122206)	0.00927 (18122403)
320.0	0.02040 (18021821)	0.01572 (18022403)	0.00892 (18122203)
330.0	0.01974 (18122507)	0.01495 (18022403)	0.00894 (18111722)
340.0	0.01865 (18020102)	0.01407 (18100221)	0.00874 (18052924)
350.0	0.01919 (18011005)	0.01419 (18090704)	0.00850 (18051222)
360.0	0.01926 (18011904)	0.01407 (18011904)	0.00821 (18020903)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF STYRENE IN PPM

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              **

                                                   DATE
                                        NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)            RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       0.09531  ON 18082020: AT (  430721.30,
3591935.30,    48.20,    48.20,    0.00)  GP  POL1
         HIGH   8TH HIGH VALUE IS       0.09310  ON 18122723: AT (  430721.30,
3591935.30,    48.20,    48.20,    0.00)  GP  POL1


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION  18081 ***   *** 412 Delaware St. Shreveport, LA
                         ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                       ***        16:31:36

                                  PAGE  14
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of           0 Fatal Error Message(s)
 A Total of           0 Warning Message(s)
 A Total of         111 Informational Message(s)

 A Total of        8760 Hours Were Processed

 A Total of          63 Calm Hours Identified

 A Total of          48 Missing Hours Identified (  0.55 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
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**********************************
*** AERMOD Finishes Successfully ***
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* AERMOD ( 18081): 412 Delaware St. Shreveport, LA
      02/22/20
* AERMET ( 18081): Styrene Emission Modeling
      16:31:36
* MODELING OPTIONS USED:   RegDFAULT  CONC  ELEV  RURAL
*         PLOT FILE OF  HIGH   1ST HIGH  1-HR VALUES FOR SOURCE GROUP: ALL
*         FOR A TOTAL OF   288 RECEPTORS.
*         FORMAT: (3(1X,F13.5),3(1X,F8.2),3X,A5,2X,A8,2X,A5,5X,A8,2X,I8)


*        X             Y      AVERAGE CONC    ZELEV    ZHILL    ZFLAG    AVE     GRP
      RANK     NET ID   DATE(CONC)
* ______________  ______________  ______________   _______   _______   _______  _______
_________  _________  _________  _________
  430719.04730 3591938.76962       0.08497    48.20    48.20     0.00    1-HR  ALL
      1ST     POL1      18022724
  430719.22094 3591939.75442       0.08217    48.20    48.20     0.00    1-HR  ALL
      1ST     POL1      18022822
  430719.39459 3591940.73923       0.06788    48.20    48.20     0.00    1-HR  ALL
      1ST     POL1      18021423
  430719.74189 3591942.70885       0.04902    48.20    48.20     0.00    1-HR  ALL
      1ST     POL1      18022105
  430720.08919 3591944.67846       0.03584    48.20    48.20     0.00    1-HR  ALL
      1ST     POL1      18021419
  430721.30472 3591951.57212       0.01999    48.30    48.30     0.00    1-HR  ALL
      1ST     POL1      18122720
  430722.17296 3591956.49616       0.01576    48.30    48.30     0.00    1-HR  ALL
      1ST     POL1      18122720
  430726.51417 3591981.11635       0.00790    48.60    48.60     0.00    1-HR  ALL
      1ST     POL1      18100124
  430719.38404 3591938.67939       0.08479    48.20    48.20     0.00    1-HR  ALL
      1ST     POL1      18021506
  430719.72606 3591939.61908       0.07727    48.20    48.20     0.00    1-HR  ALL
      1ST     POL1      18021524
  430720.06808 3591940.55877       0.06389    48.20    48.20     0.00    1-HR  ALL
      1ST     POL1      18120121
  430720.75212 3591942.43816       0.04534    48.20    48.20     0.00    1-HR  ALL
      1ST     POL1      18122222
  430721.43616 3591944.31754       0.03396    48.20    48.20     0.00    1-HR  ALL
      1ST     POL1      18122221
  430723.83030 3591950.89539       0.01882    48.30    48.30     0.00    1-HR  ALL
      1ST     POL1      18051421
  430725.54040 3591955.59385       0.01501    48.40    48.40     0.00    1-HR  ALL
      1ST     POL1      18051421
  430734.09091 3591979.08617       0.00798    48.70    48.70     0.00    1-HR  ALL
      1ST     POL1      18052106
  430719.70000 3591938.53205       0.08419    48.20    48.20     0.00    1-HR  ALL
      1ST     POL1      18021604
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430720.20000	3591939.39808	0.07870	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18120103					
430720.70000	3591940.26410	0.06389	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18120121					
430721.70000	3591941.99615	0.04433	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18122721					
430722.70000	3591943.72820	0.03514	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18120119					
430726.20000	3591949.79038	0.01744	48.30	48.30	0.00	1-HR	ALL
1ST	POL1	18051421					
430728.70000	3591954.12051	0.01392	48.40	48.40	0.00	1-HR	ALL
1ST	POL1	18051421					
430741.20000	3591975.77114	0.00891	48.70	48.70	0.00	1-HR	ALL
1ST	POL1	18121518					
430719.98558	3591938.33209	0.08387	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18021605					
430720.62836	3591939.09813	0.07559	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18120104					
430721.27115	3591939.86418	0.05963	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18120107					
430722.55673	3591941.39627	0.04127	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18120205					
430723.84230	3591942.92836	0.03590	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18120119					
430728.34181	3591948.29067	0.01653	48.30	48.30	0.00	1-HR	ALL
1ST	POL1	18120119					
430731.55575	3591952.12089	0.01310	48.40	48.40	0.00	1-HR	ALL
1ST	POL1	18121924					
430747.62544	3591971.27200	0.00858	48.80	48.80	0.00	1-HR	ALL
1ST	POL1	18121518					
430720.23209	3591938.08558	0.08387	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18120117					
430720.99813	3591938.72836	0.08077	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18120106					
430721.76418	3591939.37115	0.06585	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18120106					
430723.29627	3591940.65673	0.04693	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18120118					
430724.82836	3591941.94230	0.03308	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18121402					
430730.19067	3591946.44181	0.01797	48.30	48.30	0.00	1-HR	ALL
1ST	POL1	18052205					
430734.02089	3591949.65575	0.01310	48.40	48.40	0.00	1-HR	ALL
1ST	POL1	18121924					
430753.17200	3591965.72544	0.00859	48.70	48.70	0.00	1-HR	ALL
1ST	POL1	18052204					
430720.43205	3591937.80000	0.08387	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18120117					

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430721.29808 3591938.30000       0.08658    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18120106
430722.16410 3591938.80000       0.06980    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18120106
430723.89615 3591939.80000       0.05062    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18120118
430725.62820 3591940.80000       0.03599    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18121402
430731.69038 3591944.30000       0.02041    48.30    48.30     0.00    1-HR  ALL
    1ST     POL1      18052504
430736.02051 3591946.80000       0.01504    48.40    48.40     0.00    1-HR  ALL
    1ST     POL1      18052504
430757.67114 3591959.30000       0.00876    48.50    48.50     0.00    1-HR  ALL
    1ST     POL1      18052902
430720.57939 3591937.48404       0.08278    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18123107
430721.51908 3591937.82606       0.08408    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18120106
430722.45877 3591938.16808       0.06950    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18012206
430724.33816 3591938.85212       0.04977    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18120207
430726.21754 3591939.53616       0.03624    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18120207
430732.79539 3591941.93030       0.02010    48.30    48.30     0.00    1-HR  ALL
    1ST     POL1      18052504
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430714.76077	3591937.49459	0.07604	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18020221					
430712.79115	3591937.84189	0.05485	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18021221					
430710.82154	3591938.18919	0.04326	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18022320					
430703.92788	3591939.40472	0.02272	48.00	50.20	0.00	1-HR	ALL
1ST	POL1	18052722					
430699.00384	3591940.27296	0.01837	48.30	50.70	0.00	1-HR	ALL
1ST	POL1	18052722					
430674.38365	3591944.61417	0.00993	50.60	50.60	0.00	1-HR	ALL
1ST	POL1	18022703					
430716.82061	3591937.48404	0.08682	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18081719					
430715.88092	3591937.82606	0.09002	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18122523					
430714.94123	3591938.16808	0.07415	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18021702					
430713.06184	3591938.85212	0.05573	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18021818					
430711.18246	3591939.53616	0.04107	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18010719					
430704.60461	3591941.93030	0.02356	48.10	50.20	0.00	1-HR	ALL
1ST	POL1	18022321					
430699.90615	3591943.64040	0.01690	48.40	50.70	0.00	1-HR	ALL
1ST	POL1	18022321					
430676.41383	3591952.19091	0.00997	50.70	50.70	0.00	1-HR	ALL
1ST	POL1	18012608					
430716.96795	3591937.80000	0.08768	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18081719					

430716.10192	3591938.30000	0.09002	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18122523					
430715.23590	3591938.80000	0.07261	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18122523					
430713.50385	3591939.80000	0.05379	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18021818					
430711.77180	3591940.80000	0.04181	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18010621					
430705.70962	3591944.30000	0.02454	48.10	50.20	0.00	1-HR	ALL
1ST	POL1	18022321					
430701.37949	3591946.80000	0.01763	48.30	50.70	0.00	1-HR	ALL
1ST	POL1	18022321					
430679.72886	3591959.30000	0.00991	50.40	50.40	0.00	1-HR	ALL
1ST	POL1	18120518					
430717.16791	3591938.08558	0.08751	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18122618					
430716.40187	3591938.72836	0.08822	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18010720					
430715.63582	3591939.37115	0.07546	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18122607					
430714.10373	3591940.65673	0.05471	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18011020					
430712.57164	3591941.94230	0.04080	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18122524					
430707.20933	3591946.44181	0.02211	48.10	48.10	0.00	1-HR	ALL
1ST	POL1	18021821					
430703.37911	3591949.65575	0.01616	48.10	50.70	0.00	1-HR	ALL
1ST	POL1	18072903					
430684.22800	3591965.72544	0.00963	50.00	50.00	0.00	1-HR	ALL
1ST	POL1	18020902					
430717.41442	3591938.33209	0.08679	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18122520					
430716.77164	3591939.09813	0.08925	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18122608					
430716.12885	3591939.86418	0.07651	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18021819					
430714.84327	3591941.39627	0.05499	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18022720					
430713.55770	3591942.92836	0.04107	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18020105					
430709.05819	3591948.29067	0.02203	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18022403					
430705.84425	3591952.12089	0.01686	48.10	50.20	0.00	1-HR	ALL
1ST	POL1	18022322					
430689.77456	3591971.27200	0.00932	49.40	49.40	0.00	1-HR	ALL
1ST	POL1	18100421					
430717.70000	3591938.53205	0.08604	48.20	48.20	0.00	1-HR	ALL
1ST	POL1	18012021					

```
430717.20000 3591939.39808       0.08918    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18011101
430716.70000 3591940.26410       0.07696    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18121304
430715.70000 3591941.99615       0.05432    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18020107
430714.70000 3591943.72820       0.04009    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18012007
430711.20000 3591949.79038       0.02111    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18121319
430708.70000 3591954.12051       0.01831    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18022322
430696.20000 3591975.77114       0.00917    48.70    48.70     0.00    1-HR  ALL
    1ST     POL1      18060821
430718.01596 3591938.67939       0.08928    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18012119
430717.67394 3591939.61908       0.08736    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18021907
430717.33192 3591940.55877       0.07551    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18022722
430716.64788 3591942.43816       0.05414    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18021822
430715.96384 3591944.31754       0.03953    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18021822
430713.56970 3591950.89539       0.01999    48.30    48.30     0.00    1-HR  ALL
    1ST     POL1      18021008
430711.85960 3591955.59385       0.01506    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18022322
430703.30909 3591979.08617       0.00953    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18022621
430718.35270 3591938.76962       0.09001    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18022101
430718.17906 3591939.75442       0.08893    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18022819
430718.00541 3591940.73923       0.07344    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18021424
430717.65811 3591942.70885       0.05453    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18022323
430717.31081 3591944.67846       0.03971    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18022323
430716.09528 3591951.57212       0.02073    48.30    48.30     0.00    1-HR  ALL
    1ST     POL1      18122219
430715.22704 3591956.49616       0.01653    48.30    48.30     0.00    1-HR  ALL
    1ST     POL1      18060221
430710.88583 3591981.11635       0.00884    48.40    48.40     0.00    1-HR  ALL
    1ST     POL1      18052523
430718.70000 3591938.80000       0.08891    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18022102
```

```
430718.70000 3591939.80000       0.08987    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18022819
430718.70000 3591940.80000       0.07429    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18021423
430718.70000 3591942.80000       0.05311    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18022105
430718.70000 3591944.80000       0.03961    48.20    48.20     0.00    1-HR  ALL
    1ST     POL1      18021419
430718.70000 3591951.80000       0.02222    48.30    48.30     0.00    1-HR  ALL
    1ST     POL1      18122718
430718.70000 3591956.80000       0.01710    48.30    48.30     0.00    1-HR  ALL
    1ST     POL1      18122718
430718.70000 3591981.80000       0.00890    48.50    48.50     0.00    1-HR  ALL
    1ST     POL1      18123022
```

```
;- meta
version=2
; (That line must be the first non-comment and the value must be 2.)
;
; The following is not case sensitive.
;

;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- input parameters
;  ================
;
;- input for origin of coordinate system
;  =====================================
;
; There are three options for the model grid coordinate system:
;
; 1) X and Y are relative coordinates in meters: the UTM coordinates in
;    AERPLOT.inp should be set to the "zero origin" of that coordinate
;    system to show the plot in the right location within the browser.
;
; 2) X and Y parameters are absolute UTM coordinates: coordinates
;    in AERPLOT.inp should be set to zero.
;
; 3) X and Y are not relative to a real grographic location: UTM
;    coordinates in AERPLOT.inp can be used to select a neutral
;    background (e.g., the ocean, or a glacier field) for easy display.
;
;
; State where the coordinate system's origin is --
; either in "UTM" (in meters) or LatLong (in degrees, using decimal fractions).
origin=UTM
;origin=LL
;
;- FOR UTM
;  -------
;
; The four parameters below will be used for 'origin=UTM'.  (If origin=LL, they do
not matter.)
;
; easting
; northing
; utmZone
; inNorthernHemisphere
;
; The program converts UTM coordinates into latitude and longitude
; for display in Google Earth earth browser. Also note that UTM
; coordinates require the UTM "zone" to be set in AERPLOT.inp.
```

```
;
; PLEASE NOTE: If the whole UTM is in the .PLT file, then a UTM of (0,0) in the
;              correct zone is appropriate. But if you were to want to use
;              LatLong with such a file, you would want to specify the same
;              spot. To avoid having to look up the longitude of the center
;              of the different zones, please just stick to a UTM of (0,0).
easting=0
northing=0
utmZone=15
inNorthernHemisphere=true
;
; 'inNorthernHemisphere' needs to know if this run is in the Southern Hemisphere or
not.
; If right on the equator, set this to True.
;
;- FOR LL
;  ------
;
; These two parameters will be used for 'origin=LL'.  (If origin=UTM, they do not
matter.)
originLatitude =0.0
originLongitude=-84.0
; If southern hemisphere, originLatitude will be negative.
; If western  hemisphere, originLongitude will be negative.
;
; Note that all seven UTM+LL parameters must be set,
; but only five will be used for UTM, or three for LL will be used.
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- altitude parameters
;  ====================
;
; Receptors can be plotted relative to the ground,
; or at a specific height level above or below sea level.
; If the ZELEV field can be isolated, "flagpole" also can be used as
relativeToGround .
;
altitudeChoice = relativeToGround
; or
; altitudeChoice = absolute
; or
; altitudeChoice = flagpole
;
; The altitude of the receptors is offset from the height indicated in the .PLT
file.
; ( Note: Specify an expected altitude even if 'flagpole' is the altitudeChoice.
;         This parameter is part of the calculation for the height of the initial
```

```
viewpoint.)
altitude=0
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- the source data file
;  ===================
;  (output from aermod, presumably)
;
; The input file name, that is, the plotfile.
PlotFileName             =SHV02_1hr.PLT

; If one wishes to plot the sources as well, set this to the aermod.inp file.
; If not, leave it empty.
SourceDisplayInputFileName=

;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- output parameters
;  =================
;
; The output file names.
;
; Pick a name for this run, and it will be applied to a number of files,
; plus the objects that may be manipulated within Google Earth.
;
OutputFileNameBase        =1hrStyrene
;
; The name that will be displayed in Google Earth for the dataset.
NameDisplayedInGoogleEarth=StyreneEmission1hrSite2
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- control parameters on the procedure
;  ===================================
;
; To assure the user that the program has not halted, progress
; meters are provided that show up in a text window.
;
sDisableProgressMeter              = false
;
;
; This parameter controls whether the program will
; automatically launch Google Earth after processing the
; .PLT file ("TRUE") or not ("FALSE").
;
```

```
sDisableEarthBrowser               = false
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- receptor display
;  ================
;
; This IconScale parameter "scales" the circles that are drawn in
; the Earth Browser for each receptor. If too big, the display can
; become so cramped that it becomes useless.
;
;             For Google Earth and ArcGIS,
;             The suggested icon scale default is 0.70 .
IconScale     = 0.40
;             (For the NASA "WorldWind" earth browser, a value of
;              IconScale = 1.99 may look better.)
;
; The sIconSetChoice color scheme for the concentration scale. The
; red and green is less preferred because a common color blindness
; won't see the difference; however, it is provided for use.
;
sIconSetChoice=redBlue
;sIconSetChoice=redGreen
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- concentration binning  (for receptors and contours)
;  =====================
;
; The user has the choice between a "Linear" or "Log" color scale. The user
; also can provide one of their own.
;
; There must, however, be eleven "levels" or thresholds that will
; define the ranges for the twelve bins.
minbin=data
maxbin=data
binningChoice = Linear
; or binningChoice = Linear
; or binningChoice = custom
;
;
; These examples could be realistic binning schemes.
customBinningElevenLevels=1,2,3,4,5,6,7,8,9,10,11
;customBinningElevenLevels=.0001,.0003,.0005,.0007,.001, .004,.008,.01,.02,.03,.05
;
; If custom binning is not used, one may prefer to supply this value, "na",
; to help indicate that custom binning is not used.
;customBinningElevenLevels=na
```

```
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- concentration legend   (for receptors and contours)
;  ====================
;
; The program will insert this line into the HTML used to create the legend.
;
; The following will not show up onscreen in the initial dump of variables.
contourLegendTitleHTML
=C O N C E N T R A T I O 
;N S
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- line mappings          (for contours and gradients)
;  =============
;
; To plot any of the lines, an evenly spaced grid needs to be constructed
; by means of a combination of interpolating the data and extending the
; data.
;
; For particularly large model domains, the "numberOfGridCols" and
; "numberOfGridRows" may need to be increased beyond the default
; values of 400.
;
numberOfGridCols                   = 400
numberOfGridRows                   = 400
;
;
; Normally, the 'numberOfTimesToSmoothContourSurface=' parameter
; should be set to one. One smoothing can make the contours much
; less chaotic, while a second one can result in moving the
; contours farther from their proper locations according to the
; receptor values. However, a setting greater than one may be
; beneficial when there is greater spacing between receptors.
;
numberOfTimesToSmoothContourSurface = 0
; Note that the smoothing applies to both the contour and the gradient.
;
; Note: although these last three parameters are not frequently
; used, they are required to be present.
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- contour parameters
```

```
;  ==================
;
; The parameter 'makeContours' enables ("TRUE") or disables
; ("FALSE") contours.
;
makeContours                        = true
;
;
; When drawing lines, each little bit of a line will only
; be drawn if both ends of the segment are within
; this many meters of one of the plot file's receptors.
;
; The contour lines seem less sensitive to the edge than the gradient.
; (If set to 0.0 or less, most lines won't be drawn.)
; (If set to 9999999, almost the diameter of the Earth, then all lines will be
drawn.)
;
contourExtension =  9999999
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;
;- gradient parameters
;  ===================
;
; The parameter 'makeGradients' enables ("TRUE") or disables
; ("FALSE") gradients.
;
makeGradients                       = false
;
;
; When drawing lines, each little bit of a line will only
; be drawn if both ends of the segment are within
; this many meters of one of the plot file's receptors.
gradientExtension=  9999999
; (If set to 0.0 or less, most lines won't be drawn.)
; (If set to 9999999, almost the diameter of the Earth, then all lines will be
drawn.)
;
;
;- gradient binning
;  ================
;
; While contour lines share binning with the receptors, gradient
; binning is done separately.
;
; The user has the choice between a "Linear" or "Log" color scale. The user
```

```
; also can provide one of their own.
;
; There must, however, be eleven "levels" or thresholds that will
; define the ranges for the twelve bins.
;
gradientMaxBin=.5e-9
gradientMinBin=.1e-11
gradientBinningChoice=Log
; or gradientBinningChoice = Linear
; or gradientBinningChoice = custom
;
; These examples could be realistic binning schemes.
customGradBinElevenLevels=1,2,3,4,5,6,7,8,9,10,11
;customGradBinElevenLevels=.0001,.0003,.0005,.0007,.001, .004,.008,.01,.02,.03,.05
;
; If custom binning is not used, one may prefer to supply this value, "na",
; to help indicate that custom binning is not used.
;customGradBinElevenLevels=na
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- gradient legend (not generated if gradients are not generated)
;  ===============
;
; The program will insert this line into the HTML used to create the legend.
;
; The following will not show up onscreen in the initial dump of variables.
gradientLegendTitleHTML=Gradient Magnitudes
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- hidden_grid
;  ===========
; For display of evenly spaced grid. Debugging purposes only.
;
; Warning: This will substantially increase the size of the
; resulting KMZ file. It is not an extrapolated grid.
;
provideEvenlySpacedInterpolatedGrid = false
;
; end
```

```
startend 01 2018 12 2018
ifwgroup y 06 07 2007

DATAFILE STARTING
1-MIN\64050KSHV201801.dat
1-MIN\64050KSHV201802.dat
1-MIN\64050KSHV201803.dat
1-MIN\64050KSHV201804.dat
1-MIN\64050KSHV201805.dat
1-MIN\64050KSHV201806.dat
1-MIN\64050KSHV201807.dat
1-MIN\64050KSHV201808.dat
1-MIN\64050KSHV201809.dat
1-MIN\64050KSHV201810.dat
1-MIN\64050KSHV201811.dat
1-MIN\64050KSHV201812.dat
1-MIN\64050KSHV201901.dat
DATAFILE FINISHED

SURFDATA STARTING
..\AERMET\SURFACE\722480-13957_18
SURFDATA FINISHED

OUTFILES STARTING
hourfile SHV_02_1MIN_18.DAT
summfile SHV_02_1MIN_18_SUMM.DAT
compfile SHV_02_1MIN_18_COMP.DAT
OUTFILES FINISHED
```

```
 Generated by AERSURFACE, dated 13016                        07/11/2019 21:57

 Land Cover input file opened: louisiana_NLCD_080300_flat.bin
 State Postal Code: LA
 AERMET-formatted output file opened: SHV02_AERSURF.OUT
 Type of Coordinates Entered: LATLON
   Latitude (decimal degrees):     32.470000
   Longitude (decimal degrees):   -93.820000
   Datum: NAD83
 Study Radius for surface roughness (km):     1.0
 Is surface roughness varied by sector? Y
  # Sectors = 12
    Sector beginning directions:     0   30   60   90  120  150  180  210  240  270
300  330
 Temporal resolution (ANNUAL, MONTHLY, SEASONAL): MONTHLY
 Continuous snow cover for at least one month? N
 Reassign months to seasons? N
 Is site located at an airport? Y
 Is site considered an arid region? N
 Characterization of surface moisture at site: Wet
 Log file opened: SHV02_AERSURF.log


 Based on the following input coordinates, converted if needed to LATLON/NAD83:
    Latitude:     32.470000
    Longitude:   -93.820000

 The study center is located at
    Albers projection X-coordinate:    203793.
    Albers projection Y-coordinate:   1046507.
    Row in data file:    2300
    Column in data file:     748

 Rotation of Albers grid to true North (deg):   -1.31433


 Land cover grid for Albedo and Bowen Ratio.
 These data are included in: albedo_bowen_domain.txt

    1051530. : 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11
11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 81 85 81 81 81 81 81
81 82 82 82 82 82 91 42 81 82 81 81 82 82 81 91 11 11 11 11 11 11 11 42 82 82 82 81
81 81 81 81 82 82 81 82 82 82 82 82 82 81 81 43 43 42 42 42 11 11 11 11 11 11 11 11
11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11
11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11
11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 23
23 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11
41 41 41 41 41 41 41 41 41 41 41 41 41 41 41 92 91 42 41 42 91 91 91 91 41 91 41
```

SHV02_AMET_S1.INP

```
JOB
  REPORT      SHV02_AMET_S1.RPT
  MESSAGES    SHV02_AMET_S1.MSG


UPPERAIR
  DATA        UA\13957_SHV_18.FSL  FSL
  EXTRACT     UAEXOUT_SHV02.DSK
  XDATES      18/01/01 TO 19/01/01
  LOCATION    13957  32.47N  93.82W  6
  QAOUT       UAQAOUT_SHV02.DSK
  AUDIT       UATT  UAWS  UALR  UAWD


SURFACE
  DATA        SURFACE\722480-13957_18 ISHD
  EXTRACT     SFEXOUT_SHV02.DSK
  XDATES      18/01/01  TO  19/01/01
  LOCATION    13957 32.47N 93.82W 6 77.0
  QAOUT       SFQAOUT_SHV02.DSK
  AUDIT       SLVP PRES CLHT TSKC PWTH ASKY HZVS DPTP RHUM
  NO_MISSING  PRES
```

SHV02_AMET_S2.INP

```
JOB
  REPORT      SHV02_AMET_S2.RPT
  MESSAGES    SHV02_AMET_S2.MSG

UPPERAIR
  QAOUT       UAQAOUT_SHV02.DSK

SURFACE
  QAOUT       SFQAOUT_SHV02.DSK

ASOS1MIN      ..\AERMINUTE\SHV_02_1MIN_18.DAT

MERGE
  OUTPUT      MERGE_SHV02.DSK
  XDATES      18/01/01 18/12/31
```

SHV02_AMET_S3 (1).INP

```
JOB
  REPORT      SHV02_AMET_S3.RPT
  MESSAGES    SHV02_AMET_S3.MSG

METPREP
  DATA        MERGE_SHV02.DSK
  METHOD      REFLEVEL SUBNWS
  METHOD      WIND_DIR RANDOM
  NWS_HGT     WIND     10.0
  METHOD      UASELECT SUNRISE
  AERSURF     ..\AERSURFACE\SHV02_AERSURF.OUT
  OUTPUT      SHV02_AMET.SFC
  PROFILE     SHV02_AMET.PFL
```

```
CO STARTING
   TITLEONE 412 Delaware St. Shreveport, LA
   DATATYPE NED
   DATAFILE Shreveport02.geotiff
   ANCHORXY 430718.7 3591936.8 430718.7 3591936.8 15 4
   DOMAINXY 430218.7 3591536.8 15 431218.7 3592336.8 15
   RUNORNOT RUN
CO FINISHED

SO STARTING
   LOCATION STACK1 POINT 430718.7 3591936.8
SO FINISHED

RE STARTING
RE GRIDPOLR POL1 STA
                ORIG  STACK1
                DIST  2. 3. 4. 6. 8. 15. 20. 45.
                GDIR  36 10 10
RE GRIDPOLR POL1 END
RE FINISHED

OU STARTING
   RECEPTOR SHV02.RE
   SOURCLOC SHV02.SO
OU FINISHED
```

```
'412 Delaware St. Shreveport, LA'
'P'
'METERS' 1.0
'UTMN', 210.
8
'BUILD01' 1 48.57
6 2.4
  430743.51 3591926.60
  430750.90 3591926.87
  430750.94 3591899.20
  430733.57 3591899.47
  430734.41 3591919.44
  430742.77 3591919.64
'BUILD02' 1 48.62
12 2.4
   430733.88 3591894.05
   430744.71 3591893.67
   430744.66 3591883.69
   430750.42 3591883.55
   430750.04 3591871.19
   430745.69 3591870.98
   430745.18 3591869.71
   430738.87 3591869.63
   430738.72 3591871.26
   430731.76 3591871.29
   430732.02 3591876.83
   430733.36 3591877.19
'BUILD03'  1  50.53
8 2.4
  430668.86 3591910.60
  430686.73 3591911.09
  430686.67 3591891.03
  430679.29 3591890.79
  430678.85 3591897.55
  430675.02 3591897.56
  430674.63 3591888.32
  430667.83 3591888.05
'BUILD04'  1  50.87
8 2.4
  430682.78 3591876.49
  430682.78 3591863.01
  430680.34 3591862.57
  430679.54 3591851.42
  430668.80 3591851.30
  430668.77 3591862.62
  430665.58 3591862.23
  430666.05 3591876.69
'BUILD05' 1 50.62
```

```
8 2.7
  430687.96 3591947.66
  430661.84 3591947.80
  430661.51 3591961.11
  430655.10 3591961.01
  430655.12 3591969.93
  430663.90 3591970.25
  430663.83 3591963.73
  430688.25 3591963.52
'BUILD06' 1 48.91
12 2.4
   430748.23 3591986.25
   430732.69 3591986.12
   430732.76 3591992.37
   430735.45 3591992.56
   430735.63 3592006.19
   430750.10 3592006.20
   430750.28 3592011.85
   430760.42 3592011.99
   430760.16 3592005.98
   430750.27 3592005.57
   430750.31 3592000.06
   430748.74 3591999.75
'BUILD07' 1 50.02
10 3.0
   430675.25 3591985.65
   430661.10 3591985.70
   430661.35 3591995.48
   430664.25 3591995.55
   430664.22 3592000.63
   430655.46 3592000.86
   430656.23 3592007.68
   430674.20 3592007.49
   430673.86 3591991.42
   430675.32 3591991.37
'BUILD08' 1 48.72
6 2.7
  430725.41 3591961.34
  430725.54 3591969.14
  430735.66 3591969.28
  430735.71 3591981.64
  430748.03 3591981.66
  430747.17 3591961.16
1
'STACK01'  48.14  0.52    430718.70   3591936.80
```

Site 3 (Shreveport, LA)

```
CO STARTING
CO TITLEONE 3734 Dilg League Dr., Shreveport, LA
CO TITLETWO Styrene Emission Modeling
CO MODELOPT DFAULT CONC
CO AVERTIME 1
CO POLLUTID STYRENE
CO RUNORNOT RUN
CO FINISHED

SO STARTING
SO EMISUNIT 215.21 GRAM/SEC PPM
**           EPN      TYPE    X(m)       Y(m)      Elev(m)
**          ----------------------------------------------
   LOCATION STACK01  POINT  424900.6   3595013.9   65.5
**
**              EPN    QS(g/s)    HS(m)  TS(K)  VS(m/s)  DS(m)
**          ----------------------------------------------
   SRCPARAM STACK01  0.01  1.78  371.15  21.23   0.056


SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
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SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00

   SRCGROUP ALL

SO FINISHED

RE STARTING
RE ELEVUNIT METERS
RE GRIDPOLR POL1 STA
                ORIG  STACK01
                DIST  2. 3. 4. 6. 8. 15. 20. 45.
                GDIR  36 10 10
   GRIDPOLR POL1     ELEV    1     65.5     65.5     65.6     65.7     65.7     66.0
   GRIDPOLR POL1     ELEV    1     66.2     66.7
   GRIDPOLR POL1     ELEV    2     65.5     65.5     65.6     65.7     65.7     66.0
   GRIDPOLR POL1     ELEV    2     66.2     66.7
   GRIDPOLR POL1     ELEV    3     65.5     65.5     65.6     65.6     65.7     66.0
   GRIDPOLR POL1     ELEV    3     66.1     66.7
   GRIDPOLR POL1     ELEV    4     65.5     65.5     65.5     65.6     65.7     65.9
   GRIDPOLR POL1     ELEV    4     66.1     66.6
   GRIDPOLR POL1     ELEV    5     65.5     65.5     65.5     65.6     65.6     65.9
   GRIDPOLR POL1     ELEV    5     66.0     66.5
   GRIDPOLR POL1     ELEV    6     65.5     65.5     65.5     65.5     65.6     65.8
   GRIDPOLR POL1     ELEV    6     65.9     66.4
   GRIDPOLR POL1     ELEV    7     65.5     65.5     65.5     65.5     65.6     65.7
   GRIDPOLR POL1     ELEV    7     65.8     66.2
   GRIDPOLR POL1     ELEV    8     65.5     65.5     65.5     65.5     65.5     65.6
   GRIDPOLR POL1     ELEV    8     65.7     66.1
   GRIDPOLR POL1     ELEV    9     65.5     65.5     65.5     65.5     65.5     65.6
   GRIDPOLR POL1     ELEV    9     65.7     66.1
   GRIDPOLR POL1     ELEV   10     65.5     65.5     65.5     65.5     65.5     65.6
   GRIDPOLR POL1     ELEV   10     65.7     66.0
   GRIDPOLR POL1     ELEV   11     65.5     65.5     65.5     65.5     65.5     65.6
   GRIDPOLR POL1     ELEV   11     65.6     65.8
   GRIDPOLR POL1     ELEV   12     65.5     65.5     65.5     65.5     65.5     65.5
   GRIDPOLR POL1     ELEV   12     65.5     65.6
   GRIDPOLR POL1     ELEV   13     65.5     65.5     65.5     65.5     65.5     65.4
   GRIDPOLR POL1     ELEV   13     65.3     65.4
   GRIDPOLR POL1     ELEV   14     65.5     65.5     65.4     65.4     65.4     65.2
   GRIDPOLR POL1     ELEV   14     65.0     65.4
   GRIDPOLR POL1     ELEV   15     65.5     65.5     65.4     65.4     65.4     65.1
   GRIDPOLR POL1     ELEV   15     64.8     65.2
   GRIDPOLR POL1     ELEV   16     65.5     65.4     65.4     65.4     65.4     65.0
   GRIDPOLR POL1     ELEV   16     64.7     65.1
   GRIDPOLR POL1     ELEV   17     65.5     65.4     65.4     65.4     65.4     64.9
   GRIDPOLR POL1     ELEV   17     64.6     64.8
   GRIDPOLR POL1     ELEV   18     65.5     65.4     65.4     65.4     65.3     64.8
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GRIDPOLR POL1     ELEV   18     64.5     64.5
GRIDPOLR POL1     ELEV   19     65.5     65.4     65.4     65.4     65.3     64.8
GRIDPOLR POL1     ELEV   19     64.4     64.0
GRIDPOLR POL1     ELEV   20     65.5     65.4     65.4     65.4     65.3     64.8
GRIDPOLR POL1     ELEV   20     64.4     63.6
GRIDPOLR POL1     ELEV   21     65.5     65.4     65.4     65.4     65.3     64.9
GRIDPOLR POL1     ELEV   21     64.5     63.3
GRIDPOLR POL1     ELEV   22     65.5     65.5     65.4     65.4     65.3     65.0
GRIDPOLR POL1     ELEV   22     64.7     63.5
GRIDPOLR POL1     ELEV   23     65.5     65.5     65.4     65.4     65.4     65.1
GRIDPOLR POL1     ELEV   23     64.9     64.0
GRIDPOLR POL1     ELEV   24     65.5     65.5     65.5     65.4     65.4     65.3
GRIDPOLR POL1     ELEV   24     65.0     64.1
GRIDPOLR POL1     ELEV   25     65.5     65.5     65.5     65.5     65.4     65.3
GRIDPOLR POL1     ELEV   25     65.2     64.3
GRIDPOLR POL1     ELEV   26     65.5     65.5     65.5     65.5     65.5     65.4
GRIDPOLR POL1     ELEV   26     65.2     64.6
GRIDPOLR POL1     ELEV   27     65.5     65.5     65.5     65.5     65.5     65.4
GRIDPOLR POL1     ELEV   27     65.3     65.0
GRIDPOLR POL1     ELEV   28     65.5     65.5     65.5     65.5     65.5     65.5
GRIDPOLR POL1     ELEV   28     65.5     65.3
GRIDPOLR POL1     ELEV   29     65.5     65.5     65.5     65.6     65.6     65.6
GRIDPOLR POL1     ELEV   29     65.6     65.7
GRIDPOLR POL1     ELEV   30     65.5     65.5     65.6     65.6     65.6     65.7
GRIDPOLR POL1     ELEV   30     65.8     65.9
GRIDPOLR POL1     ELEV   31     65.5     65.5     65.6     65.6     65.7     65.8
GRIDPOLR POL1     ELEV   31     65.9     66.1
GRIDPOLR POL1     ELEV   32     65.5     65.6     65.6     65.6     65.7     65.9
GRIDPOLR POL1     ELEV   32     66.0     66.2
GRIDPOLR POL1     ELEV   33     65.5     65.6     65.6     65.7     65.7     65.9
GRIDPOLR POL1     ELEV   33     66.1     66.3
GRIDPOLR POL1     ELEV   34     65.5     65.6     65.6     65.7     65.7     66.0
GRIDPOLR POL1     ELEV   34     66.1     66.5
GRIDPOLR POL1     ELEV   35     65.5     65.6     65.6     65.7     65.8     66.0
GRIDPOLR POL1     ELEV   35     66.2     66.7
GRIDPOLR POL1     ELEV   36     65.5     65.6     65.6     65.7     65.8     66.0
GRIDPOLR POL1     ELEV   36     66.2     66.7
GRIDPOLR POL1     HILL    1     65.5     65.5     65.6     65.7     65.7     66.0
GRIDPOLR POL1     HILL    1     66.2     66.7
GRIDPOLR POL1     HILL    2     65.5     65.5     65.6     65.7     65.7     66.0
GRIDPOLR POL1     HILL    2     66.2     66.7
GRIDPOLR POL1     HILL    3     65.5     65.5     65.6     65.6     65.7     66.0
GRIDPOLR POL1     HILL    3     66.1     66.7
GRIDPOLR POL1     HILL    4     65.5     65.5     65.5     65.6     65.7     65.9
GRIDPOLR POL1     HILL    4     66.1     66.6
GRIDPOLR POL1     HILL    5     65.5     65.5     65.5     65.6     65.6     65.9
GRIDPOLR POL1     HILL    5     66.0     66.5
GRIDPOLR POL1     HILL    6     65.5     65.5     65.5     65.5     65.6     65.8
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GRIDPOLR POL1     HILL    6     65.9     66.4
GRIDPOLR POL1     HILL    7     65.5     65.5     65.5     65.5     65.6     65.7
GRIDPOLR POL1     HILL    7     65.8     66.2
GRIDPOLR POL1     HILL    8     65.5     65.5     65.5     65.5     65.5     65.6
GRIDPOLR POL1     HILL    8     65.7     66.1
GRIDPOLR POL1     HILL    9     65.5     65.5     65.5     65.5     65.5     65.6
GRIDPOLR POL1     HILL    9     65.7     66.1
GRIDPOLR POL1     HILL   10     65.5     65.5     65.5     65.5     65.5     65.6
GRIDPOLR POL1     HILL   10     65.7     66.0
GRIDPOLR POL1     HILL   11     65.5     65.5     65.5     65.5     65.5     65.6
GRIDPOLR POL1     HILL   11     65.6     65.8
GRIDPOLR POL1     HILL   12     65.5     65.5     65.5     65.5     65.5     65.5
GRIDPOLR POL1     HILL   12     65.5     65.6
GRIDPOLR POL1     HILL   13     65.5     65.5     65.5     65.5     65.5     65.4
GRIDPOLR POL1     HILL   13     65.3     65.4
GRIDPOLR POL1     HILL   14     65.5     65.5     65.4     65.4     65.4     65.2
GRIDPOLR POL1     HILL   14     65.0     65.4
GRIDPOLR POL1     HILL   15     65.5     65.5     65.4     65.4     65.4     65.1
GRIDPOLR POL1     HILL   15     64.8     65.2
GRIDPOLR POL1     HILL   16     65.5     65.4     65.4     65.4     65.4     65.0
GRIDPOLR POL1     HILL   16     64.7     65.1
GRIDPOLR POL1     HILL   17     65.5     65.4     65.4     65.4     65.4     64.9
GRIDPOLR POL1     HILL   17     64.6     64.8
GRIDPOLR POL1     HILL   18     65.5     65.4     65.4     65.4     65.3     64.8
GRIDPOLR POL1     HILL   18     64.5     64.5
GRIDPOLR POL1     HILL   19     65.5     65.4     65.4     65.4     65.3     64.8
GRIDPOLR POL1     HILL   19     64.4     64.0
GRIDPOLR POL1     HILL   20     65.5     65.4     65.4     65.4     65.3     64.8
GRIDPOLR POL1     HILL   20     64.4     63.6
GRIDPOLR POL1     HILL   21     65.5     65.4     65.4     65.4     65.3     64.9
GRIDPOLR POL1     HILL   21     64.5     63.3
GRIDPOLR POL1     HILL   22     65.5     65.5     65.4     65.4     65.3     65.0
GRIDPOLR POL1     HILL   22     64.7     64.2
GRIDPOLR POL1     HILL   23     65.5     65.5     65.4     65.4     65.4     65.1
GRIDPOLR POL1     HILL   23     64.9     64.0
GRIDPOLR POL1     HILL   24     65.5     65.5     65.5     65.4     65.4     65.3
GRIDPOLR POL1     HILL   24     65.0     64.1
GRIDPOLR POL1     HILL   25     65.5     65.5     65.5     65.5     65.4     65.3
GRIDPOLR POL1     HILL   25     65.2     64.3
GRIDPOLR POL1     HILL   26     65.5     65.5     65.5     65.5     65.5     65.4
GRIDPOLR POL1     HILL   26     65.2     64.6
GRIDPOLR POL1     HILL   27     65.5     65.5     65.5     65.5     65.5     65.4
GRIDPOLR POL1     HILL   27     65.3     65.0
GRIDPOLR POL1     HILL   28     65.5     65.5     65.5     65.5     65.5     65.5
GRIDPOLR POL1     HILL   28     65.5     65.3
GRIDPOLR POL1     HILL   29     65.5     65.5     65.5     65.6     65.6     65.6
GRIDPOLR POL1     HILL   29     65.6     65.7
GRIDPOLR POL1     HILL   30     65.5     65.5     65.6     65.6     65.6     65.7
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   GRIDPOLR POL1     HILL   30     65.8     65.9
   GRIDPOLR POL1     HILL   31     65.5     65.5     65.6     65.6     65.7     65.8
   GRIDPOLR POL1     HILL   31     65.9     66.1
   GRIDPOLR POL1     HILL   32     65.5     65.6     65.6     65.6     65.7     65.9
   GRIDPOLR POL1     HILL   32     66.0     66.2
   GRIDPOLR POL1     HILL   33     65.5     65.6     65.6     65.7     65.7     65.9
   GRIDPOLR POL1     HILL   33     66.1     66.3
   GRIDPOLR POL1     HILL   34     65.5     65.6     65.6     65.7     65.7     66.0
   GRIDPOLR POL1     HILL   34     66.1     66.5
   GRIDPOLR POL1     HILL   35     65.5     65.6     65.6     65.7     65.8     66.0
   GRIDPOLR POL1     HILL   35     66.2     66.7
   GRIDPOLR POL1     HILL   36     65.5     65.6     65.6     65.7     65.8     66.0
   GRIDPOLR POL1     HILL   36     66.2     66.7
RE GRIDPOLR POL1 END
RE FINISHED

ME STARTING
   SURFFILE SHV03_AMET.SFC
   PROFFILE SHV03_AMET.PFL
   SURFDATA 13957 2018 SHREVEPORT,LA
   UAIRDATA 13957 2018 SHREVEPORT,LA
   PROFBASE 78.5
ME FINISHED

OU STARTING
   RECTABLE ALLAVE 1ST 8TH
   SUMMFILE SHV03.SUM
   PLOTFILE 1 ALL 1ST SHV03_1hr.PLT 31
OU FINISHED
```

```
CO STARTING
CO TITLEONE 3734 Dilg League Dr., Shreveport, LA
CO TITLETWO Styrene Emission Modeling
CO MODELOPT DFAULT CONC
CO AVERTIME 1
CO POLLUTID STYRENE
CO RUNORNOT RUN
CO FINISHED

SO STARTING
SO EMISUNIT 215.21 GRAM/SEC PPM
**           EPN      TYPE    X(m)       Y(m)      Elev(m)
**          ----------------------------------------------
   LOCATION STACK01  POINT  424900.6   3595013.9   65.5
**
**              EPN    QS(g/s)    HS(m)  TS(K)  VS(m/s)  DS(m)
**          ----------------------------------------------
   SRCPARAM STACK01  0.01  1.78  371.15  21.23   0.056


SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
```

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SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00

   SRCGROUP ALL

SO FINISHED

RE STARTING
RE ELEVUNIT METERS
RE GRIDPOLR POL1 STA
                 ORIG  STACK01
                 DIST  2. 3. 4. 6. 8. 15. 20. 45.
                 GDIR  36 10 10
   GRIDPOLR POL1     ELEV    1     65.5     65.5     65.6     65.7     65.7     66.0
   GRIDPOLR POL1     ELEV    1     66.2     66.7
   GRIDPOLR POL1     ELEV    2     65.5     65.5     65.6     65.7     65.7     66.0
   GRIDPOLR POL1     ELEV    2     66.2     66.7
   GRIDPOLR POL1     ELEV    3     65.5     65.5     65.6     65.6     65.7     66.0
   GRIDPOLR POL1     ELEV    3     66.1     66.7
   GRIDPOLR POL1     ELEV    4     65.5     65.5     65.5     65.6     65.7     65.9
   GRIDPOLR POL1     ELEV    4     66.1     66.6
   GRIDPOLR POL1     ELEV    5     65.5     65.5     65.5     65.6     65.6     65.9
   GRIDPOLR POL1     ELEV    5     66.0     66.5
   GRIDPOLR POL1     ELEV    6     65.5     65.5     65.5     65.5     65.6     65.8
   GRIDPOLR POL1     ELEV    6     65.9     66.4
   GRIDPOLR POL1     ELEV    7     65.5     65.5     65.5     65.5     65.6     65.7
   GRIDPOLR POL1     ELEV    7     65.8     66.2
   GRIDPOLR POL1     ELEV    8     65.5     65.5     65.5     65.5     65.5     65.6
   GRIDPOLR POL1     ELEV    8     65.7     66.1
   GRIDPOLR POL1     ELEV    9     65.5     65.5     65.5     65.5     65.5     65.6
   GRIDPOLR POL1     ELEV    9     65.7     66.1
   GRIDPOLR POL1     ELEV   10     65.5     65.5     65.5     65.5     65.5     65.6
   GRIDPOLR POL1     ELEV   10     65.7     66.0
   GRIDPOLR POL1     ELEV   11     65.5     65.5     65.5     65.5     65.5     65.6
   GRIDPOLR POL1     ELEV   11     65.6     65.8
   GRIDPOLR POL1     ELEV   12     65.5     65.5     65.5     65.5     65.5     65.5
   GRIDPOLR POL1     ELEV   12     65.5     65.6
   GRIDPOLR POL1     ELEV   13     65.5     65.5     65.5     65.5     65.5     65.4
   GRIDPOLR POL1     ELEV   13     65.3     65.4
   GRIDPOLR POL1     ELEV   14     65.5     65.5     65.4     65.4     65.4     65.2
   GRIDPOLR POL1     ELEV   14     65.0     65.4
   GRIDPOLR POL1     ELEV   15     65.5     65.5     65.4     65.4     65.4     65.1
   GRIDPOLR POL1     ELEV   15     64.8     65.2
   GRIDPOLR POL1     ELEV   16     65.5     65.4     65.4     65.4     65.4     65.0
   GRIDPOLR POL1     ELEV   16     64.7     65.1
   GRIDPOLR POL1     ELEV   17     65.5     65.4     65.4     65.4     65.4     64.9
   GRIDPOLR POL1     ELEV   17     64.6     64.8
   GRIDPOLR POL1     ELEV   18     65.5     65.4     65.4     65.4     65.3     64.8
```

GRIDPOLR	POL1	ELEV	18	64.5	64.5			
GRIDPOLR	POL1	ELEV	19	65.5	65.4	65.4	65.4	65.3	64.8
GRIDPOLR	POL1	ELEV	19	64.4	64.0			
GRIDPOLR	POL1	ELEV	20	65.5	65.4	65.4	65.4	65.3	64.8
GRIDPOLR	POL1	ELEV	20	64.4	63.6			
GRIDPOLR	POL1	ELEV	21	65.5	65.4	65.4	65.4	65.3	64.9
GRIDPOLR	POL1	ELEV	21	64.5	63.3			
GRIDPOLR	POL1	ELEV	22	65.5	65.5	65.4	65.4	65.3	65.0
GRIDPOLR	POL1	ELEV	22	64.7	63.5			
GRIDPOLR	POL1	ELEV	23	65.5	65.5	65.4	65.4	65.4	65.1
GRIDPOLR	POL1	ELEV	23	64.9	64.0			
GRIDPOLR	POL1	ELEV	24	65.5	65.5	65.5	65.4	65.4	65.3
GRIDPOLR	POL1	ELEV	24	65.0	64.1			
GRIDPOLR	POL1	ELEV	25	65.5	65.5	65.5	65.5	65.4	65.3
GRIDPOLR	POL1	ELEV	25	65.2	64.3			
GRIDPOLR	POL1	ELEV	26	65.5	65.5	65.5	65.5	65.5	65.4
GRIDPOLR	POL1	ELEV	26	65.2	64.6			
GRIDPOLR	POL1	ELEV	27	65.5	65.5	65.5	65.5	65.5	65.4
GRIDPOLR	POL1	ELEV	27	65.3	65.0			
GRIDPOLR	POL1	ELEV	28	65.5	65.5	65.5	65.5	65.5	65.5
GRIDPOLR	POL1	ELEV	28	65.5	65.3			
GRIDPOLR	POL1	ELEV	29	65.5	65.5	65.5	65.6	65.6	65.6
GRIDPOLR	POL1	ELEV	29	65.6	65.7			
GRIDPOLR	POL1	ELEV	30	65.5	65.5	65.6	65.6	65.6	65.7
GRIDPOLR	POL1	ELEV	30	65.8	65.9			
GRIDPOLR	POL1	ELEV	31	65.5	65.5	65.6	65.6	65.7	65.8
GRIDPOLR	POL1	ELEV	31	65.9	66.1			
GRIDPOLR	POL1	ELEV	32	65.5	65.6	65.6	65.6	65.7	65.9
GRIDPOLR	POL1	ELEV	32	66.0	66.2			
GRIDPOLR	POL1	ELEV	33	65.5	65.6	65.6	65.7	65.7	65.9
GRIDPOLR	POL1	ELEV	33	66.1	66.3			
GRIDPOLR	POL1	ELEV	34	65.5	65.6	65.6	65.7	65.7	66.0
GRIDPOLR	POL1	ELEV	34	66.1	66.5			
GRIDPOLR	POL1	ELEV	35	65.5	65.6	65.6	65.7	65.8	66.0
GRIDPOLR	POL1	ELEV	35	66.2	66.7			
GRIDPOLR	POL1	ELEV	36	65.5	65.6	65.6	65.7	65.8	66.0
GRIDPOLR	POL1	ELEV	36	66.2	66.7			
GRIDPOLR	POL1	HILL	1	65.5	65.5	65.6	65.7	65.7	66.0
GRIDPOLR	POL1	HILL	1	66.2	66.7			
GRIDPOLR	POL1	HILL	2	65.5	65.5	65.6	65.7	65.7	66.0
GRIDPOLR	POL1	HILL	2	66.2	66.7			
GRIDPOLR	POL1	HILL	3	65.5	65.5	65.6	65.6	65.7	66.0
GRIDPOLR	POL1	HILL	3	66.1	66.7			
GRIDPOLR	POL1	HILL	4	65.5	65.5	65.5	65.6	65.7	65.9
GRIDPOLR	POL1	HILL	4	66.1	66.6			
GRIDPOLR	POL1	HILL	5	65.5	65.5	65.5	65.6	65.6	65.9
GRIDPOLR	POL1	HILL	5	66.0	66.5			
GRIDPOLR	POL1	HILL	6	65.5	65.5	65.5	65.5	65.6	65.8

GRIDPOLR	POL1	HILL	6	65.9	66.4			
GRIDPOLR	POL1	HILL	7	65.5	65.5	65.5	65.5	65.6	65.7
GRIDPOLR	POL1	HILL	7	65.8	66.2			
GRIDPOLR	POL1	HILL	8	65.5	65.5	65.5	65.5	65.5	65.6
GRIDPOLR	POL1	HILL	8	65.7	66.1			
GRIDPOLR	POL1	HILL	9	65.5	65.5	65.5	65.5	65.5	65.6
GRIDPOLR	POL1	HILL	9	65.7	66.1			
GRIDPOLR	POL1	HILL	10	65.5	65.5	65.5	65.5	65.5	65.6
GRIDPOLR	POL1	HILL	10	65.7	66.0			
GRIDPOLR	POL1	HILL	11	65.5	65.5	65.5	65.5	65.5	65.6
GRIDPOLR	POL1	HILL	11	65.6	65.8			
GRIDPOLR	POL1	HILL	12	65.5	65.5	65.5	65.5	65.5	65.5
GRIDPOLR	POL1	HILL	12	65.5	65.6			
GRIDPOLR	POL1	HILL	13	65.5	65.5	65.5	65.5	65.5	65.4
GRIDPOLR	POL1	HILL	13	65.3	65.4			
GRIDPOLR	POL1	HILL	14	65.5	65.5	65.4	65.4	65.4	65.2
GRIDPOLR	POL1	HILL	14	65.0	65.4			
GRIDPOLR	POL1	HILL	15	65.5	65.5	65.4	65.4	65.4	65.1
GRIDPOLR	POL1	HILL	15	64.8	65.2			
GRIDPOLR	POL1	HILL	16	65.5	65.4	65.4	65.4	65.4	65.0
GRIDPOLR	POL1	HILL	16	64.7	65.1			
GRIDPOLR	POL1	HILL	17	65.5	65.4	65.4	65.4	65.4	64.9
GRIDPOLR	POL1	HILL	17	64.6	64.8			
GRIDPOLR	POL1	HILL	18	65.5	65.4	65.4	65.4	65.3	64.8
GRIDPOLR	POL1	HILL	18	64.5	64.5			
GRIDPOLR	POL1	HILL	19	65.5	65.4	65.4	65.4	65.3	64.8
GRIDPOLR	POL1	HILL	19	64.4	64.0			
GRIDPOLR	POL1	HILL	20	65.5	65.4	65.4	65.4	65.3	64.8
GRIDPOLR	POL1	HILL	20	64.4	63.6			
GRIDPOLR	POL1	HILL	21	65.5	65.4	65.4	65.4	65.3	64.9
GRIDPOLR	POL1	HILL	21	64.5	63.3			
GRIDPOLR	POL1	HILL	22	65.5	65.5	65.4	65.4	65.3	65.0
GRIDPOLR	POL1	HILL	22	64.7	64.2			
GRIDPOLR	POL1	HILL	23	65.5	65.5	65.4	65.4	65.4	65.1
GRIDPOLR	POL1	HILL	23	64.9	64.0			
GRIDPOLR	POL1	HILL	24	65.5	65.5	65.5	65.4	65.4	65.3
GRIDPOLR	POL1	HILL	24	65.0	64.1			
GRIDPOLR	POL1	HILL	25	65.5	65.5	65.5	65.5	65.4	65.3
GRIDPOLR	POL1	HILL	25	65.2	64.3			
GRIDPOLR	POL1	HILL	26	65.5	65.5	65.5	65.5	65.5	65.4
GRIDPOLR	POL1	HILL	26	65.2	64.6			
GRIDPOLR	POL1	HILL	27	65.5	65.5	65.5	65.5	65.5	65.4
GRIDPOLR	POL1	HILL	27	65.3	65.0			
GRIDPOLR	POL1	HILL	28	65.5	65.5	65.5	65.5	65.5	65.5
GRIDPOLR	POL1	HILL	28	65.5	65.3			
GRIDPOLR	POL1	HILL	29	65.5	65.5	65.5	65.6	65.6	65.6
GRIDPOLR	POL1	HILL	29	65.6	65.7			
GRIDPOLR	POL1	HILL	30	65.5	65.5	65.6	65.6	65.6	65.7

```
   GRIDPOLR POL1     HILL   30     65.8     65.9
   GRIDPOLR POL1     HILL   31     65.5     65.5     65.6     65.6     65.7     65.8
   GRIDPOLR POL1     HILL   31     65.9     66.1
   GRIDPOLR POL1     HILL   32     65.5     65.6     65.6     65.6     65.7     65.9
   GRIDPOLR POL1     HILL   32     66.0     66.2
   GRIDPOLR POL1     HILL   33     65.5     65.6     65.6     65.7     65.7     65.9
   GRIDPOLR POL1     HILL   33     66.1     66.3
   GRIDPOLR POL1     HILL   34     65.5     65.6     65.6     65.7     65.7     66.0
   GRIDPOLR POL1     HILL   34     66.1     66.5
   GRIDPOLR POL1     HILL   35     65.5     65.6     65.6     65.7     65.8     66.0
   GRIDPOLR POL1     HILL   35     66.2     66.7
   GRIDPOLR POL1     HILL   36     65.5     65.6     65.6     65.7     65.8     66.0
   GRIDPOLR POL1     HILL   36     66.2     66.7
RE GRIDPOLR POL1 END
RE FINISHED

ME STARTING
   SURFFILE SHV03_AMET.SFC
   PROFFILE SHV03_AMET.PFL
   SURFDATA 13957 2018 SHREVEPORT,LA
   UAIRDATA 13957 2018 SHREVEPORT,LA
   PROFBASE 78.5
ME FINISHED

OU STARTING
   RECTABLE ALLAVE 1ST 8TH
   SUMMFILE SHV03.SUM
   PLOTFILE 1 ALL 1ST SHV03_1hr.PLT 31
OU FINISHED

 **********************************
 *** SETUP Finishes Successfully ***
 **********************************

 *** AERMOD - VERSION  18081 ***   *** 3734 Dilg League Dr., Shreveport, LA
                          ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                         ***       10:46:46

                                   PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                            ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.
```

```
  --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.

 **Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  STYRENE

 **Model Calculates  1 Short Term Average(s) of:   1-HR

 **This Run Includes:      1 Source(s);       1 Source Group(s); and     288
Receptor(s)

                with:      1 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:      0 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  18081

 **Output Options Selected:
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
```

Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 78.50 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAM/SEC ;
Emission Rate Unit Factor = 215.21
Output Units = PPM

**Approximate Storage Requirements of Model = 3.6 MB of RAM.

**Input Runstream File: aermod.inp

**Output Print File: aermod.out

**File for Summary of Results: SHV03.SUM

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (USER UNITS)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/ HOR VARY BY	EMIS RATE SCALAR
STACK01	0	0.10000E-01	424900.6	3595013.9	65.5	1.78	371.15	21.23	0.06	NO	NO	NO	

*** AERMOD - VERSION 18081 *** *** 3734 Dilg League Dr., Shreveport, LA
*** 02/22/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
*** 10:46:46

PAGE 3
*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	STACK01 ,

*** AERMOD - VERSION 18081 *** *** 3734 Dilg League Dr., Shreveport, LA
*** 02/22/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

*** ORIGIN FOR POLAR NETWORK ***
X-ORIG = 424900.60 ; Y-ORIG = 3595013.90 (METERS)

*** DISTANCE RANGES OF NETWORK ***
(METERS)

2.0, 3.0, 4.0, 6.0, 8.0, 15.0, 20.0, 45.0,

*** DIRECTION RADIALS OF NETWORK ***
(DEGREES)

10.0, 20.0, 30.0, 40.0, 50.0, 60.0, 70.0, 80.0, 90.0, 100.0,
110.0, 120.0, 130.0, 140.0, 150.0, 160.0, 170.0, 180.0, 190.0, 200.0,
210.0, 220.0, 230.0, 240.0, 250.0, 260.0, 270.0, 280.0, 290.0, 300.0,
310.0, 320.0, 330.0, 340.0, 350.0, 360.0,

*** AERMOD - VERSION 18081 *** *** 3734 Dilg League Dr., Shreveport, LA
*** 02/22/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
*** 10:46:46

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

* ELEVATION HEIGHTS IN METERS *

DIRECTION (DEGREES)	DISTANCE (METERS)										
	2.00	3.00	4.00	6.00	8.00	15.00	20.00	45.00			
10.00	65.50	65.50	65.60	65.70	65.70	66.00	66.20	66.70			
20.00	65.50	65.50	65.60	65.70	65.70	66.00	66.20	66.70			
30.00	65.50	65.50	65.60	65.60	65.70	66.00	66.10	66.70			
40.00	65.50	65.50	65.50	65.60	65.70	65.90	66.10	66.60			
50.00	65.50	65.50	65.50	65.60	65.60	65.90	66.00	66.50			
60.00	65.50	65.50	65.50	65.50	65.60	65.80	65.90	66.40			
70.00	65.50	65.50	65.50	65.50	65.60	65.70	65.80	66.20			
80.00	65.50	65.50	65.50	65.50	65.50	65.60	65.70	66.10			
90.00	65.50	65.50	65.50	65.50	65.50	65.60	65.70	66.10			
100.00	65.50	65.50	65.50	65.50	65.50	65.60	65.70	66.00			
110.00	65.50	65.50	65.50	65.50	65.50	65.60	65.60	65.80			
120.00	65.50	65.50	65.50	65.50	65.50	65.50	65.50	65.60			
130.00	65.50	65.50	65.50	65.50	65.50	65.40	65.30	65.40			
140.00	65.50	65.50	65.40	65.40	65.40	65.20	65.00	65.40			
150.00	65.50	65.50	65.40	65.40	65.40	65.10	64.80	65.20			
160.00	65.50	65.40	65.40	65.40	65.40	65.00	64.70	65.10			
170.00	65.50	65.40	65.40	65.40	65.40						

```
  64.90        64.60        64.80
     180.00 |         65.50        65.40        65.40        65.40        65.30
  64.80        64.50        64.50
     190.00 |         65.50        65.40        65.40        65.40        65.30
  64.80        64.40        64.00
     200.00 |         65.50        65.40        65.40        65.40        65.30
  64.80        64.40        63.60
     210.00 |         65.50        65.40        65.40        65.40        65.30
  64.90        64.50        63.30
     220.00 |         65.50        65.50        65.40        65.40        65.30
  65.00        64.70        63.50
     230.00 |         65.50        65.50        65.40        65.40        65.40
  65.10        64.90        64.00
     240.00 |         65.50        65.50        65.50        65.40        65.40
  65.30        65.00        64.10
     250.00 |         65.50        65.50        65.50        65.50        65.40
  65.30        65.20        64.30
     260.00 |         65.50        65.50        65.50        65.50        65.50
  65.40        65.20        64.60
     270.00 |         65.50        65.50        65.50        65.50        65.50
  65.40        65.30        65.00
     280.00 |         65.50        65.50        65.50        65.50        65.50
  65.50        65.50        65.30
     290.00 |         65.50        65.50        65.50        65.60        65.60
  65.60        65.60        65.70
     300.00 |         65.50        65.50        65.60        65.60        65.60
  65.70        65.80        65.90
     310.00 |         65.50        65.50        65.60        65.60        65.70
  65.80        65.90        66.10
     320.00 |         65.50        65.60        65.60        65.60        65.70
  65.90        66.00        66.20
     330.00 |         65.50        65.60        65.60        65.70        65.70
  65.90        66.10        66.30
     340.00 |         65.50        65.60        65.60        65.70        65.70
  66.00        66.10        66.50
     350.00 |         65.50        65.60        65.60        65.70        65.80
  66.00        66.20        66.70
     360.00 |         65.50        65.60        65.60        65.70        65.80
  66.00        66.20        66.70
 *** AERMOD - VERSION  18081 ***   *** 3734 Dilg League Dr., Shreveport, LA
                        ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                       ***        10:46:46

                                  PAGE   6
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                  *** NETWORK ID: POL1     ;  NETWORK TYPE: GRIDPOLR
```

***

* HILL HEIGHT SCALES IN METERS *

DIRECTION (DEGREES)	DISTANCE (METERS)								
	2.00	3.00	4.00	6.00	8.00	15.00	20.00	45.00	
10.00	65.50	65.50	65.60	65.70	65.70	66.00	66.20	66.70	
20.00	65.50	65.50	65.60	65.70	65.70	66.00	66.20	66.70	
30.00	65.50	65.50	65.60	65.60	65.70	66.00	66.10	66.70	
40.00	65.50	65.50	65.50	65.60	65.70	65.90	66.10	66.60	
50.00	65.50	65.50	65.50	65.60	65.60	65.90	66.00	66.50	
60.00	65.50	65.50	65.50	65.50	65.60	65.80	65.90	66.40	
70.00	65.50	65.50	65.50	65.50	65.60	65.70	65.80	66.20	
80.00	65.50	65.50	65.50	65.50	65.50	65.60	65.70	66.10	
90.00	65.50	65.50	65.50	65.50	65.50	65.60	65.70	66.10	
100.00	65.50	65.50	65.50	65.50	65.50	65.60	65.70	66.00	
110.00	65.50	65.50	65.50	65.50	65.50	65.60	65.60	65.80	
120.00	65.50	65.50	65.50	65.50	65.50	65.50	65.50	65.60	
130.00	65.50	65.50	65.50	65.50	65.50	65.40	65.30	65.40	
140.00	65.50	65.50	65.40	65.40	65.40	65.20	65.00	65.40	
150.00	65.50	65.50	65.40	65.40	65.40	65.10	64.80	65.20	
160.00	65.50	65.40	65.40	65.40	65.40	65.00	64.70	65.10	
170.00	65.50	65.40	65.40	65.40	65.40	64.90	64.60	64.80	
180.00	65.50	65.40	65.40	65.40	65.30	64.80	64.50	64.50	
190.00	65.50	65.40	65.40	65.40	65.30	64.80	64.40	64.00	

```
   200.00 |         65.50        65.40        65.40        65.40        65.30
  64.80        64.40        63.60
   210.00 |         65.50        65.40        65.40        65.40        65.30
  64.90        64.50        63.30
   220.00 |         65.50        65.50        65.40        65.40        65.30
  65.00        64.70        64.20
   230.00 |         65.50        65.50        65.40        65.40        65.40
  65.10        64.90        64.00
   240.00 |         65.50        65.50        65.50        65.40        65.40
  65.30        65.00        64.10
   250.00 |         65.50        65.50        65.50        65.50        65.40
  65.30        65.20        64.30
   260.00 |         65.50        65.50        65.50        65.50        65.50
  65.40        65.20        64.60
   270.00 |         65.50        65.50        65.50        65.50        65.50
  65.40        65.30        65.00
   280.00 |         65.50        65.50        65.50        65.50        65.50
  65.50        65.50        65.30
   290.00 |         65.50        65.50        65.50        65.60        65.60
  65.60        65.60        65.70
   300.00 |         65.50        65.50        65.60        65.60        65.60
  65.70        65.80        65.90
   310.00 |         65.50        65.50        65.60        65.60        65.70
  65.80        65.90        66.10
   320.00 |         65.50        65.60        65.60        65.60        65.70
  65.90        66.00        66.20
   330.00 |         65.50        65.60        65.60        65.70        65.70
  65.90        66.10        66.30
   340.00 |         65.50        65.60        65.60        65.70        65.70
  66.00        66.10        66.50
   350.00 |         65.50        65.60        65.60        65.70        65.80
  66.00        66.20        66.70
   360.00 |         65.50        65.60        65.60        65.70        65.80
  66.00        66.20        66.70
 *** AERMOD - VERSION  18081 ***   *** 3734 Dilg League Dr., Shreveport, LA
                       ***         02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                       ***         10:46:46

                                  PAGE   7
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                          *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
                                                          (1=YES; 0=NO)

           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 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
```

```
            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 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
            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 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
            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 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
            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 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
            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 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
            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 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
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1

                NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON
WHAT IS INCLUDED IN THE DATA FILE.



                                  *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED
CATEGORIES ***
                                                           (METERS/SEC)

                                                 1.54,   3.09,   5.14,   8.23,
10.80,
↑ *** AERMOD - VERSION  18081 ***   *** 3734 Dilg League Dr., Shreveport, LA
                         ***       02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                       ***       10:46:46

                                  PAGE   8
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                    *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL
DATA ***

   Surface file:   SHV03_AMET.SFC
                 Met Version:  18081
   Profile file:   SHV03_AMET.PFL

   Surface format: FREE

   Profile format: FREE

   Surface station no.:    13957               Upper air station no.:    13957
                  Name: SHREVEPORT,LA                            Name:
SHREVEPORT,LA
                  Year:   2018                                   Year:   2018
```

```
 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -
 18 01 01   1 01  -64.0  0.586 -9.000 -9.000 -999. 1076.    288.0  0.59   0.41
1.00    4.41    2.   10.0  269.2    2.0
 18 01 01   1 02  -63.3  0.602 -9.000 -9.000 -999. 1121.    316.1  0.59   0.41
1.00    4.51   12.   10.0  269.2    2.0
 18 01 01   1 03  -64.0  0.681 -9.000 -9.000 -999. 1347.    453.1  0.59   0.41
1.00    5.02   21.   10.0  268.8    2.0
 18 01 01   1 04  -64.0  0.766 -9.000 -9.000 -999. 1604.    643.6  0.59   0.41
1.00    5.58   20.   10.0  268.1    2.0
 18 01 01   1 05  -64.0  0.806 -9.000 -9.000 -999. 1733.    750.8  0.59   0.41
1.00    5.85   21.   10.0  268.1    2.0
 18 01 01   1 06  -64.0  0.822 -9.000 -9.000 -999. 1788.    797.8  0.59   0.41
1.00    5.96   16.   10.0  267.5    2.0
 18 01 01   1 07  -54.3  0.894 -9.000 -9.000 -999. 2021.   1208.2  0.59   0.41
1.00    6.43   16.   10.0  267.0    2.0
 18 01 01   1 08  -49.6  0.825 -9.000 -9.000 -999. 1810.   1041.2  0.59   0.41
0.67    5.95   15.   10.0  267.0    2.0
 18 01 01   1 09    6.4  0.856  0.380  0.008  311. 1897.  -8888.0  0.59   0.41
0.34    6.06   18.   10.0  267.5    2.0
 18 01 01   1 10   33.1  0.939  0.837  0.010  651. 2175.  -2301.2  0.59   0.41
0.23    6.62   14.   10.0  268.1    2.0
 18 01 01   1 11   51.8  0.775  1.055  0.009  835. 1677.   -825.7  0.59   0.41
0.19    5.41   21.   10.0  269.9    2.0
 18 01 01   1 12   70.1  0.746  1.176  0.009  853. 1550.   -543.9  0.59   0.41
0.18    5.17   19.   10.0  270.4    2.0
 18 01 01   1 13   77.8  0.743  1.227  0.009  874. 1538.   -484.8  0.59   0.41
0.18    5.14    8.   10.0  272.0    2.0
 18 01 01   1 14   70.9  0.755  1.198  0.009  891. 1574.   -558.0  0.59   0.41
0.19    5.24   10.   10.0  272.0    2.0
 18 01 01   1 15   55.7  0.748  1.112  0.009  905. 1553.   -689.3  0.59   0.41
0.20    5.21   13.   10.0  272.5    2.0
 18 01 01   1 16   28.8  0.729  0.894  0.010  912. 1497.  -1236.8  0.59   0.41
0.26    5.12    6.   10.0  272.0    2.0
 18 01 01   1 17  -18.3  0.708 -9.000 -9.000 -999. 1431.   1777.7  0.59   0.41
0.42    5.07    8.   10.0  271.4    2.0
 18 01 01   1 18  -62.0  0.592 -9.000 -9.000 -999. 1110.    306.6  0.59   0.41
1.00    4.44   10.   10.0  270.4    2.0
 18 01 01   1 19  -64.0  0.615 -9.000 -9.000 -999. 1155.    332.9  0.59   0.41
1.00    4.59   21.   10.0  269.9    2.0
 18 01 01   1 20  -64.0  0.579 -9.000 -9.000 -999. 1061.    279.1  0.59   0.41
1.00    4.37   29.   10.0  269.2    2.0
 18 01 01   1 21  -64.0  0.843 -9.000 -9.000 -999. 1856.    860.7  0.71   0.41
1.00    5.70   38.   10.0  269.2    2.0
```

```
 18 01 01   1 22  -64.0  0.706 -9.000 -9.000 -999. 1453.    505.8  0.55   0.41
1.00    5.31   60.   10.0  268.1    2.0
 18 01 01   1 23  -64.0  0.785 -9.000 -9.000 -999. 1666.    695.0  0.55   0.41
1.00    5.85   64.   10.0  267.5    2.0
 18 01 01   1 24  -64.0  0.820 -9.000 -9.000 -999. 1779.    791.0  0.55   0.41
1.00    6.09   62.   10.0  267.0    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 18 01 01 01   10.0 1    2.    4.41   269.3   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION  18081 ***   *** 3734 Dilg League Dr., Shreveport, LA
                          ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                         ***       10:46:46

                                   PAGE   9
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                   INCLUDING SOURCE(S):     STACK01     ,

                                    *** NETWORK ID: POL1     ;  NETWORK TYPE:
GRIDPOLR ***

                                        ** CONC OF STYRENE  IN PPM
                   **

 DIRECTION |                                                 DISTANCE (METERS)
 (DEGREES) |            2.00                    3.00                    4.00
          6.00                    8.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - -

      10.0 |      0.00399 (18110717)      0.01104 (18110708)      0.01329 (18110708)
     0.01339 (18021519)      0.01487 (18022806)
      20.0 |      0.00399 (18110717)      0.01104 (18110708)      0.01329 (18110708)
     0.01304 (18120122)      0.01465 (18122222)
      30.0 |      0.00399 (18110717)      0.01104 (18110708)      0.01329 (18110708)
     0.01288 (18120121)      0.01438 (18122721)
      40.0 |      0.00399 (18110717)      0.01104 (18110708)      0.01328 (18110708)
     0.01258 (18123108)      0.01343 (18120205)
      50.0 |      0.00399 (18110717)      0.01104 (18110708)      0.01328 (18110708)
     0.01325 (18120107)      0.01419 (18012205)
      60.0 |      0.00399 (18110717)      0.01104 (18110708)      0.01328 (18110708)
```

0.01307 (18120107) 0.01518 (18120118)
 70.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01328 (18110708)
0.01280 (18121408) 0.01482 (18120118)
 80.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01328 (18110708)
0.01277 (18122722) 0.01454 (18122223)
 90.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01328 (18110708)
0.01274 (18071220) 0.01543 (18071220)
100.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01328 (18110708)
0.01316 (18071220) 0.01613 (18070321)
110.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01328 (18110708)
0.01267 (18090907) 0.01560 (18041820)
120.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01328 (18110708)
0.01315 (18101018) 0.01538 (18102522)
130.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01328 (18110708)
0.01364 (18071320) 0.01571 (18120217)
140.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01271 (18110708)
0.01238 (18071320) 0.01477 (18050501)
150.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01271 (18110708)
0.01238 (18050422) 0.01451 (18032919)
160.0 | 0.00399 (18110717) 0.01026 (18110708) 0.01271 (18110708)
0.01180 (18120220) 0.01350 (18032919)
170.0 | 0.00399 (18110717) 0.01026 (18110708) 0.01271 (18110708)
0.01170 (18120223) 0.01259 (18122319)
180.0 | 0.00399 (18110717) 0.01026 (18110708) 0.01271 (18110708)
0.01192 (18012722) 0.01256 (18012807)
190.0 | 0.00399 (18110717) 0.01026 (18110708) 0.01271 (18110708)
0.01207 (18012721) 0.01258 (18020421)
200.0 | 0.00399 (18110717) 0.01026 (18110708) 0.01271 (18110708)
0.01192 (18012719) 0.01247 (18020421)
210.0 | 0.00399 (18110717) 0.01026 (18110708) 0.01271 (18110708)
0.01161 (18123005) 0.01242 (18122818)
220.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01271 (18110708)
0.01150 (18091307) 0.01154 (18122818)
230.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01271 (18110708)
0.01150 (18091307) 0.01243 (18021305)
240.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01328 (18110708)
0.01215 (18020618) 0.01322 (18020608)
250.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01328 (18110708)
0.01292 (18022508) 0.01323 (18021623)
260.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01328 (18110708)
0.01284 (18022506) 0.01456 (18092220)
270.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01328 (18110708)
0.01381 (18072401) 0.01549 (18092220)
280.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01328 (18110708)
0.01365 (18092304) 0.01589 (18022318)
290.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01328 (18110708)
0.01365 (18061906) 0.01564 (18021818)
300.0 | 0.00399 (18110717) 0.01104 (18110708) 0.01329 (18110708)

	0.01371 (18083121)	0.01606 (18083020)	
310.0	0.00399 (18110717)	0.01104 (18110708)	0.01329 (18110708)
	0.01377 (18070222)	0.01549 (18011020)	
320.0	0.00399 (18110717)	0.01108 (18110708)	0.01329 (18110708)
	0.01388 (18082520)	0.01587 (18022406)	
330.0	0.00399 (18110717)	0.01108 (18110708)	0.01329 (18110708)
	0.01380 (18082420)	0.01551 (18012623)	
340.0	0.00399 (18110717)	0.01108 (18110708)	0.01329 (18110708)
	0.01372 (18051921)	0.01535 (18012620)	
350.0	0.00399 (18110717)	0.01108 (18110708)	0.01329 (18110708)
	0.01364 (18053020)	0.01584 (18021520)	
360.0	0.00399 (18110717)	0.01108 (18110708)	0.01329 (18110708)
	0.01365 (18051019)	0.01575 (18022105)	

*** AERMOD - VERSION 18081 *** *** 3734 Dilg League Dr., Shreveport, LA
*** *** 02/22/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
*** 10:46:46

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STACK01 ,

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

** CONC OF STYRENE IN PPM **

DIRECTION (DEGREES)	DISTANCE (METERS) 15.00	20.00	45.00
10.0	0.01195 (18021419)	0.00992 (18122720)	0.00618 (18052524)
20.0	0.01067 (18121619)	0.00917 (18051421)	0.00624 (18051424)
30.0	0.01133 (18120119)	0.00845 (18051421)	0.00623 (18060721)
40.0	0.01157 (18120119)	0.00834 (18021707)	0.00603 (18051501)
50.0	0.01126 (18122302)	0.00900 (18122302)	0.00623 (18052601)
60.0	0.01188 (18122302)	0.01005 (18052504)	0.00633 (18052122)
70.0	0.01161 (18010318)	0.00989 (18052504)	0.00648 (18091620)
80.0	0.01221 (18042402)	0.01011 (18042402)	0.00652 (18070505)
90.0	0.01373 (18042402)	0.01130 (18042402)	0.00712 (18042703)
100.0	0.01395 (18120423)	0.01137 (18042802)	0.00689 (18082104)
110.0	0.01420 (18052023)	0.01146 (18052023)	0.00670 (18042404)
120.0	0.01401 (18121403)	0.01155 (18012903)	0.00693 (18050524)

130.0	0.01336 (18122002)	0.01144 (18120218)	0.00696 (18052905)
140.0	0.01234 (18122002)	0.01039 (18120923)	0.00663 (18091503)
150.0	0.01224 (18121904)	0.01001 (18012401)	0.00600 (18091506)
160.0	0.01052 (18121904)	0.00851 (18012401)	0.00572 (18052906)
170.0	0.00866 (18012320)	0.00753 (18120420)	0.00516 (18052906)
180.0	0.00892 (18022602)	0.00736 (18011720)	0.00504 (18040923)
190.0	0.00954 (18022602)	0.00739 (18022602)	0.00494 (18121819)
200.0	0.00913 (18022602)	0.00709 (18022602)	0.00453 (18091402)
210.0	0.00928 (18011719)	0.00703 (18022519)	0.00447 (18072723)
220.0	0.00876 (18011719)	0.00668 (18011719)	0.00450 (18020603)
230.0	0.00934 (18013007)	0.00765 (18013007)	0.00469 (18090601)
240.0	0.01057 (18013007)	0.00837 (18013007)	0.00507 (18121818)
250.0	0.01025 (18020606)	0.00818 (18013007)	0.00511 (18011518)
260.0	0.01129 (18022320)	0.00933 (18022507)	0.00545 (18050803)
270.0	0.01341 (18022320)	0.01078 (18022507)	0.00670 (18020919)
280.0	0.01371 (18022320)	0.01096 (18052722)	0.00689 (18052221)
290.0	0.01297 (18070722)	0.01129 (18022321)	0.00715 (18091819)
300.0	0.01319 (18022718)	0.01178 (18022321)	0.00703 (18020824)
310.0	0.01340 (18021820)	0.01090 (18021821)	0.00698 (18021007)
320.0	0.01292 (18122507)	0.01090 (18022403)	0.00686 (18052606)
330.0	0.01288 (18020924)	0.01048 (18121319)	0.00692 (18051306)
340.0	0.01263 (18020102)	0.01002 (18021008)	0.00662 (18052421)
350.0	0.01278 (18022402)	0.01019 (18122219)	0.00655 (18022620)
360.0	0.01319 (18021419)	0.01081 (18122718)	0.00654 (18070306)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 8TH HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STACK01 ,

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

** CONC OF STYRENE IN PPM **

DIRECTION (DEGREES)	DISTANCE (METERS)				
	2.00	3.00	4.00	6.00	8.00

10.0	0.00365 (18102423)	0.01058 (18101818)	0.01274 (18070706)	0.01290 (18011102)	0.01416 (18021519)
20.0	0.00365 (18102423)	0.01058 (18101818)	0.01274 (18070706)	0.01274 (18120201)	0.01412 (18011017)
30.0	0.00365 (18102423)	0.01058 (18101818)	0.01274 (18070706)	0.01240 (18051304)	0.01314 (18011017)
40.0	0.00365 (18102423)	0.01058 (18101818)	0.01272 (18070706)	0.01203 (18120204)	0.01259 (18050720)
50.0	0.00365 (18102423)	0.01058 (18101818)	0.01272 (18070706)	0.01181 (18091307)	0.01293 (18123108)
60.0	0.00365 (18102423)	0.01058 (18101818)	0.01272 (18070706)	0.01241 (18012206)	0.01366 (18120205)
70.0	0.00365 (18102423)	0.01058 (18101818)	0.01272 (18070706)	0.01217 (18040319)	0.01349 (18042324)
80.0	0.00365 (18102423)	0.01058 (18101818)	0.01272 (18070706)	0.01207 (18012221)	0.01351 (18053006)
90.0	0.00365 (18102423)	0.01058 (18101818)	0.01272 (18070706)	0.01199 (18071321)	0.01467 (18102604)
100.0	0.00365 (18102423)	0.01058 (18101818)	0.01272 (18070706)	0.01159 (18030622)	0.01516 (18102603)
110.0	0.00365 (18102423)	0.01058 (18101818)	0.01272 (18070706)	0.01201 (18030622)	0.01516 (18032021)
120.0	0.00365 (18102423)	0.01058 (18101818)	0.01272 (18070706)	0.01258 (18102606)	0.01491 (18072505)
130.0	0.00365 (18102423)	0.01058 (18101818)	0.01272 (18070706)	0.01265 (18030518)	0.01494 (18042224)
140.0	0.00365 (18102423)	0.01058 (18101818)	0.01214 (18082219)	0.01187 (18101019)	0.01420 (18122703)
150.0	0.00365 (18102423)	0.01058 (18101818)	0.01214 (18082219)	0.01171 (18030519)	0.01383 (18022304)
160.0	0.00365 (18102423)	0.00985 (18101805)	0.01214 (18082219)	0.01143 (18121921)	0.01216 (18021118)
170.0	0.00365 (18102423)	0.00985 (18101805)	0.01214 (18082219)	0.01151 (18012808)	0.01200 (18122823)
180.0	0.00365 (18102423)	0.00985 (18101805)	0.01214 (18082219)	0.01166 (18022521)	0.01199 (18122318)
190.0	0.00365 (18102423)	0.00985 (18101805)	0.01214 (18082219)	0.01169 (18012820)	0.01216 (18020420)
200.0	0.00365 (18102423)	0.00985 (18101805)	0.01214 (18082219)	0.01167 (18020420)	0.01199 (18020420)
210.0	0.00365 (18102423)	0.00985 (18101805)	0.01214 (18082219)	0.01141 (18010820)	0.01138 (18012924)
220.0	0.00365 (18102423)	0.01058 (18101818)	0.01214 (18082219)	0.01104 (18091405)	0.01037 (18021305)
230.0	0.00365 (18102423)	0.01058 (18101818)	0.01214 (18082219)	0.01121 (18020618)	0.01135 (18010208)
240.0	0.00365 (18102423)	0.01058 (18101818)	0.01272 (18070706)	0.01147 (18022118)	0.01251 (18013005)

250.0	0.00365 (18102423)	0.01058 (18101818)	0.01272 (18070706)	0.01219 (18013004)	0.01289 (18013004)
260.0	0.00365 (18102423)	0.01058 (18101818)	0.01272 (18070706)	0.01255 (18072401)	0.01389 (18091101)
270.0	0.00365 (18102423)	0.01058 (18101818)	0.01272 (18070706)	0.01305 (18070401)	0.01498 (18092221)
280.0	0.00365 (18102423)	0.01058 (18101818)	0.01272 (18070706)	0.01343 (18090405)	0.01511 (18100820)
290.0	0.00365 (18102423)	0.01058 (18101818)	0.01272 (18070706)	0.01344 (18092302)	0.01534 (18021702)
300.0	0.00365 (18102423)	0.01058 (18101818)	0.01274 (18070706)	0.01334 (18070404)	0.01495 (18032603)
310.0	0.00365 (18102423)	0.01058 (18101818)	0.01274 (18070706)	0.01347 (18090323)	0.01519 (18010618)
320.0	0.00365 (18102423)	0.01063 (18101818)	0.01274 (18070706)	0.01344 (18082323)	0.01532 (18010924)
330.0	0.00365 (18102423)	0.01063 (18101818)	0.01274 (18070706)	0.01351 (18051920)	0.01517 (18020107)
340.0	0.00365 (18102423)	0.01063 (18101818)	0.01274 (18070706)	0.01330 (18050303)	0.01510 (18012706)
350.0	0.00365 (18102423)	0.01063 (18101818)	0.01274 (18070706)	0.01328 (18051904)	0.01535 (18122503)
360.0	0.00365 (18102423)	0.01063 (18101818)	0.01274 (18070706)	0.01325 (18062620)	0.01517 (18011004)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 8TH HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STACK01 ,

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

** CONC OF STYRENE IN PPM **

DIRECTION (DEGREES)	DISTANCE (METERS) 15.00	20.00	45.00
10.0	0.01108 (18051323)	0.00893 (18021419)	0.00572 (18110603)

20.0	0.00981 (18122220)	0.00770 (18121321)	0.00552 (18080905)
30.0	0.00937 (18082504)	0.00737 (18121619)	0.00573 (18071204)
40.0	0.00973 (18090702)	0.00759 (18071804)	0.00544 (18080706)
50.0	0.01018 (18050806)	0.00806 (18101501)	0.00587 (18060905)
60.0	0.01060 (18052205)	0.00873 (18032024)	0.00591 (18091620)
70.0	0.01092 (18122302)	0.00894 (18042424)	0.00610 (18091722)
80.0	0.01113 (18042622)	0.00880 (18122304)	0.00611 (18050522)
90.0	0.01238 (18032023)	0.00970 (18041422)	0.00643 (18091424)
100.0	0.01320 (18050423)	0.01060 (18122003)	0.00614 (18012323)
110.0	0.01340 (18050423)	0.01088 (18010321)	0.00633 (18012902)
120.0	0.01309 (18050605)	0.01084 (18121403)	0.00661 (18050606)
130.0	0.01257 (18121008)	0.01041 (18120501)	0.00622 (18110522)
140.0	0.01175 (18042405)	0.00961 (18010224)	0.00600 (18091502)
150.0	0.01115 (18051601)	0.00876 (18031403)	0.00476 (18070523)
160.0	0.00891 (18051601)	0.00724 (18120219)	0.00481 (18070523)
170.0	0.00800 (18010805)	0.00627 (18011720)	0.00454 (18012824)
180.0	0.00798 (18011718)	0.00614 (18121919)	0.00422 (18051621)
190.0	0.00814 (18012320)	0.00591 (18022601)	0.00433 (18040924)
200.0	0.00799 (18012924)	0.00628 (18010804)	0.00406 (18070624)
210.0	0.00777 (18021720)	0.00559 (18052806)	0.00380 (18012418)
220.0	0.00709 (18012924)	0.00542 (18101904)	0.00386 (18090601)
230.0	0.00731 (18011719)	0.00599 (18040804)	0.00400 (18012418)
240.0	0.00866 (18011321)	0.00672 (18070822)	0.00428 (18013008)
250.0	0.00937 (18022219)	0.00719 (18020604)	0.00436 (18121818)
260.0	0.01041 (18011321)	0.00838 (18022320)	0.00493 (18032120)
270.0	0.01163 (18022608)	0.00953 (18092201)	0.00589 (18080222)
280.0	0.01240 (18072302)	0.01033 (18031807)	0.00615 (18110701)
290.0	0.01251 (18022718)	0.00993 (18032606)	0.00689 (18090504)
300.0	0.01278 (18121318)	0.01026 (18020904)	0.00661 (18072801)
310.0	0.01251 (18011418)	0.01030 (18021820)	0.00670 (18093001)
320.0	0.01254 (18020924)	0.01012 (18122507)	0.00654 (18120604)
330.0	0.01226 (18122423)	0.00989 (18121906)	0.00635 (18060602)
340.0	0.01194 (18011823)	0.00936 (18121807)	0.00634 (18080321)
350.0	0.01234 (18013106)	0.00954 (18081001)	0.00607 (18080704)
360.0	0.01217 (18013106)	0.00974 (18051224)	0.00599 (18052523)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF STYRENE IN PPM

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              **

                                                          DATE
                                             NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       0.01613  ON 18070321: AT (  424908.48,
3595012.51,    65.50,    65.50,    0.00)  GP  POL1
         HIGH   8TH HIGH VALUE IS       0.01535  ON 18122503: AT (  424899.21,
3595021.78,    65.80,    65.80,    0.00)  GP  POL1


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION  18081 ***   *** 3734 Dilg League Dr., Shreveport, LA
                           ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                         ***       10:46:46

                                  PAGE  14
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of           0 Fatal Error Message(s)
 A Total of           0 Warning Message(s)
 A Total of         111 Informational Message(s)

 A Total of        8760 Hours Were Processed

 A Total of          63 Calm Hours Identified

 A Total of          48 Missing Hours Identified (  0.55 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
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**********************************
*** AERMOD Finishes Successfully ***
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* AERMOD ( 18081): 3734 Dilg League Dr., Shreveport, LA
      02/22/20
* AERMET ( 18081): Styrene Emission Modeling
      10:46:46
* MODELING OPTIONS USED:   RegDFAULT  CONC  ELEV  RURAL
*         PLOT FILE OF  HIGH   1ST HIGH  1-HR VALUES FOR SOURCE GROUP: ALL
*         FOR A TOTAL OF   288 RECEPTORS.
*         FORMAT: (3(1X,F13.5),3(1X,F8.2),3X,A5,2X,A8,2X,A5,5X,A8,2X,I8)


*        X             Y      AVERAGE CONC    ZELEV    ZHILL    ZFLAG    AVE     GRP
      RANK     NET ID   DATE(CONC)
* ____________  ____________  ____________   ______   ______   ______  ______
________  ________  ________  ________
  424900.94730 3595015.86962       0.00399    65.50    65.50     0.00    1-HR  ALL
      1ST     POL1      18110717
  424901.12094 3595016.85442       0.01104    65.50    65.50     0.00    1-HR  ALL
      1ST     POL1      18110708
  424901.29459 3595017.83923       0.01329    65.60    65.60     0.00    1-HR  ALL
      1ST     POL1      18110708
  424901.64189 3595019.80885       0.01339    65.70    65.70     0.00    1-HR  ALL
      1ST     POL1      18021519
  424901.98919 3595021.77846       0.01487    65.70    65.70     0.00    1-HR  ALL
      1ST     POL1      18022806
  424903.20472 3595028.67212       0.01195    66.00    66.00     0.00    1-HR  ALL
      1ST     POL1      18021419
  424904.07296 3595033.59616       0.00992    66.20    66.20     0.00    1-HR  ALL
      1ST     POL1      18122720
  424908.41417 3595058.21635       0.00618    66.70    66.70     0.00    1-HR  ALL
      1ST     POL1      18052524
  424901.28404 3595015.77939       0.00399    65.50    65.50     0.00    1-HR  ALL
      1ST     POL1      18110717
  424901.62606 3595016.71908       0.01104    65.50    65.50     0.00    1-HR  ALL
      1ST     POL1      18110708
  424901.96808 3595017.65877       0.01329    65.60    65.60     0.00    1-HR  ALL
      1ST     POL1      18110708
  424902.65212 3595019.53816       0.01304    65.70    65.70     0.00    1-HR  ALL
      1ST     POL1      18120122
  424903.33616 3595021.41754       0.01465    65.70    65.70     0.00    1-HR  ALL
      1ST     POL1      18122222
  424905.73030 3595027.99539       0.01067    66.00    66.00     0.00    1-HR  ALL
      1ST     POL1      18121619
  424907.44040 3595032.69385       0.00917    66.20    66.20     0.00    1-HR  ALL
      1ST     POL1      18051421
  424915.99091 3595056.18617       0.00624    66.70    66.70     0.00    1-HR  ALL
      1ST     POL1      18051424
  424901.60000 3595015.63205       0.00399    65.50    65.50     0.00    1-HR  ALL
      1ST     POL1      18110717
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424902.10000 3595016.49808       0.01104    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110708
424902.60000 3595017.36410       0.01329    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18110708
424903.60000 3595019.09615       0.01288    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18120121
424904.60000 3595020.82820       0.01438    65.70    65.70     0.00    1-HR  ALL
    1ST     POL1      18122721
424908.10000 3595026.89038       0.01133    66.00    66.00     0.00    1-HR  ALL
    1ST     POL1      18120119
424910.60000 3595031.22051       0.00845    66.10    66.10     0.00    1-HR  ALL
    1ST     POL1      18051421
424923.10000 3595052.87114       0.00623    66.70    66.70     0.00    1-HR  ALL
    1ST     POL1      18060721
424901.88558 3595015.43209       0.00399    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110717
424902.52836 3595016.19813       0.01104    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110708
424903.17115 3595016.96418       0.01328    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110708
424904.45673 3595018.49627       0.01258    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18123108
424905.74230 3595020.02836       0.01343    65.70    65.70     0.00    1-HR  ALL
    1ST     POL1      18120205
424910.24181 3595025.39067       0.01157    65.90    65.90     0.00    1-HR  ALL
    1ST     POL1      18120119
424913.45575 3595029.22089       0.00834    66.10    66.10     0.00    1-HR  ALL
    1ST     POL1      18021707
424929.52544 3595048.37200       0.00603    66.60    66.60     0.00    1-HR  ALL
    1ST     POL1      18051501
424902.13209 3595015.18558       0.00399    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110717
424902.89813 3595015.82836       0.01104    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110708
424903.66418 3595016.47115       0.01328    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110708
424905.19627 3595017.75673       0.01325    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18120107
424906.72836 3595019.04230       0.01419    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18012205
424912.09067 3595023.54181       0.01126    65.90    65.90     0.00    1-HR  ALL
    1ST     POL1      18122302
424915.92089 3595026.75575       0.00900    66.00    66.00     0.00    1-HR  ALL
    1ST     POL1      18122302
424935.07200 3595042.82544       0.00623    66.50    66.50     0.00    1-HR  ALL
    1ST     POL1      18052601
424902.33205 3595014.90000       0.00399    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110717
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424903.19808 3595015.40000       0.01104    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110708
424904.06410 3595015.90000       0.01328    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110708
424905.79615 3595016.90000       0.01307    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18120107
424907.52820 3595017.90000       0.01518    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18120118
424913.59038 3595021.40000       0.01188    65.80    65.80     0.00    1-HR  ALL
    1ST     POL1      18122302
424917.92051 3595023.90000       0.01005    65.90    65.90     0.00    1-HR  ALL
    1ST     POL1      18052504
424939.57114 3595036.40000       0.00633    66.40    66.40     0.00    1-HR  ALL
    1ST     POL1      18052122
424902.47939 3595014.58404       0.00399    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110717
424903.41908 3595014.92606       0.01104    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110708
424904.35877 3595015.26808       0.01328    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110708
424906.23816 3595015.95212       0.01280    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18121408
424908.11754 3595016.63616       0.01482    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18120118
424914.69539 3595019.03030       0.01161    65.70    65.70     0.00    1-HR  ALL
    1ST     POL1      18010318
424919.39385 3595020.74040       0.00989    65.80    65.80     0.00    1-HR  ALL
    1ST     POL1      18052504
424942.88617 3595029.29091       0.00648    66.20    66.20     0.00    1-HR  ALL
    1ST     POL1      18091620
424902.56962 3595014.24730       0.00399    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110717
424903.55442 3595014.42094       0.01104    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110708
424904.53923 3595014.59459       0.01328    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110708
424906.50885 3595014.94189       0.01277    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18122722
424908.47846 3595015.28919       0.01454    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18122223
424915.37212 3595016.50472       0.01221    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18042402
424920.29616 3595017.37296       0.01011    65.70    65.70     0.00    1-HR  ALL
    1ST     POL1      18042402
424944.91635 3595021.71417       0.00652    66.10    66.10     0.00    1-HR  ALL
    1ST     POL1      18070505
424902.60000 3595013.90000       0.00399    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110717
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424903.60000 3595013.90000       0.01104    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110708
424904.60000 3595013.90000       0.01328    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110708
424906.60000 3595013.90000       0.01274    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18071220
424908.60000 3595013.90000       0.01543    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18071220
424915.60000 3595013.90000       0.01373    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18042402
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    1ST     POL1      18110708
424895.40385 3595016.90000       0.01371    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18083121
424893.67180 3595017.90000       0.01606    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18083020
424887.60962 3595021.40000       0.01319    65.70    65.70     0.00    1-HR  ALL
    1ST     POL1      18022718
424883.27949 3595023.90000       0.01178    65.80    65.80     0.00    1-HR  ALL
    1ST     POL1      18022321
424861.62886 3595036.40000       0.00703    65.90    65.90     0.00    1-HR  ALL
    1ST     POL1      18020824
424899.06791 3595015.18558       0.00399    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110717
424898.30187 3595015.82836       0.01104    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110708
424897.53582 3595016.47115       0.01329    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18110708
424896.00373 3595017.75673       0.01377    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18070222
424894.47164 3595019.04230       0.01549    65.70    65.70     0.00    1-HR  ALL
    1ST     POL1      18011020
424889.10933 3595023.54181       0.01340    65.80    65.80     0.00    1-HR  ALL
    1ST     POL1      18021820
424885.27911 3595026.75575       0.01090    65.90    65.90     0.00    1-HR  ALL
    1ST     POL1      18021821
424866.12800 3595042.82544       0.00698    66.10    66.10     0.00    1-HR  ALL
    1ST     POL1      18021007
424899.31442 3595015.43209       0.00399    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110717
424898.67164 3595016.19813       0.01108    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18110708
424898.02885 3595016.96418       0.01329    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18110708
424896.74327 3595018.49627       0.01388    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18082520
424895.45770 3595020.02836       0.01587    65.70    65.70     0.00    1-HR  ALL
    1ST     POL1      18022406
424890.95819 3595025.39067       0.01292    65.90    65.90     0.00    1-HR  ALL
    1ST     POL1      18122507
424887.74425 3595029.22089       0.01090    66.00    66.00     0.00    1-HR  ALL
    1ST     POL1      18022403
424871.67456 3595048.37200       0.00686    66.20    66.20     0.00    1-HR  ALL
    1ST     POL1      18052606
424899.60000 3595015.63205       0.00399    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110717
```

```
424899.10000 3595016.49808       0.01108    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18110708
424898.60000 3595017.36410       0.01329    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18110708
424897.60000 3595019.09615       0.01380    65.70    65.70     0.00    1-HR  ALL
    1ST     POL1      18082420
424896.60000 3595020.82820       0.01551    65.70    65.70     0.00    1-HR  ALL
    1ST     POL1      18012623
424893.10000 3595026.89038       0.01288    65.90    65.90     0.00    1-HR  ALL
    1ST     POL1      18020924
424890.60000 3595031.22051       0.01048    66.10    66.10     0.00    1-HR  ALL
    1ST     POL1      18121319
424878.10000 3595052.87114       0.00692    66.30    66.30     0.00    1-HR  ALL
    1ST     POL1      18051306
424899.91596 3595015.77939       0.00399    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110717
424899.57394 3595016.71908       0.01108    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18110708
424899.23192 3595017.65877       0.01329    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18110708
424898.54788 3595019.53816       0.01372    65.70    65.70     0.00    1-HR  ALL
    1ST     POL1      18051921
424897.86384 3595021.41754       0.01535    65.70    65.70     0.00    1-HR  ALL
    1ST     POL1      18012620
424895.46970 3595027.99539       0.01263    66.00    66.00     0.00    1-HR  ALL
    1ST     POL1      18020102
424893.75960 3595032.69385       0.01002    66.10    66.10     0.00    1-HR  ALL
    1ST     POL1      18021008
424885.20909 3595056.18617       0.00662    66.50    66.50     0.00    1-HR  ALL
    1ST     POL1      18052421
424900.25270 3595015.86962       0.00399    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110717
424900.07906 3595016.85442       0.01108    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18110708
424899.90541 3595017.83923       0.01329    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18110708
424899.55811 3595019.80885       0.01364    65.70    65.70     0.00    1-HR  ALL
    1ST     POL1      18053020
424899.21081 3595021.77846       0.01584    65.80    65.80     0.00    1-HR  ALL
    1ST     POL1      18021520
424897.99528 3595028.67212       0.01278    66.00    66.00     0.00    1-HR  ALL
    1ST     POL1      18022402
424897.12704 3595033.59616       0.01019    66.20    66.20     0.00    1-HR  ALL
    1ST     POL1      18122219
424892.78583 3595058.21635       0.00655    66.70    66.70     0.00    1-HR  ALL
    1ST     POL1      18022620
424900.60000 3595015.90000       0.00399    65.50    65.50     0.00    1-HR  ALL
    1ST     POL1      18110717
```

```
424900.60000 3595016.90000       0.01108    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18110708
424900.60000 3595017.90000       0.01329    65.60    65.60     0.00    1-HR  ALL
    1ST     POL1      18110708
424900.60000 3595019.90000       0.01365    65.70    65.70     0.00    1-HR  ALL
    1ST     POL1      18051019
424900.60000 3595021.90000       0.01575    65.80    65.80     0.00    1-HR  ALL
    1ST     POL1      18022105
424900.60000 3595028.90000       0.01319    66.00    66.00     0.00    1-HR  ALL
    1ST     POL1      18021419
424900.60000 3595033.90000       0.01081    66.20    66.20     0.00    1-HR  ALL
    1ST     POL1      18122718
424900.60000 3595058.90000       0.00654    66.70    66.70     0.00    1-HR  ALL
    1ST     POL1      18070306
```

```
;- meta
version=2
; (That line must be the first non-comment and the value must be 2.)
;
; The following is not case sensitive.
;

;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- input parameters
;  ================
;
;- input for origin of coordinate system
;  =====================================
;
; There are three options for the model grid coordinate system:
;
; 1) X and Y are relative coordinates in meters: the UTM coordinates in
;    AERPLOT.inp should be set to the "zero origin" of that coordinate
;    system to show the plot in the right location within the browser.
;
; 2) X and Y parameters are absolute UTM coordinates: coordinates
;    in AERPLOT.inp should be set to zero.
;
; 3) X and Y are not relative to a real grographic location: UTM
;    coordinates in AERPLOT.inp can be used to select a neutral
;    background (e.g., the ocean, or a glacier field) for easy display.
;
;
; State where the coordinate system's origin is --
; either in "UTM" (in meters) or LatLong (in degrees, using decimal fractions).
origin=UTM
;origin=LL
;
;- FOR UTM
;  -------
;
; The four parameters below will be used for 'origin=UTM'.  (If origin=LL, they do
not matter.)
;
; easting
; northing
; utmZone
; inNorthernHemisphere
;
; The program converts UTM coordinates into latitude and longitude
; for display in Google Earth earth browser. Also note that UTM
; coordinates require the UTM "zone" to be set in AERPLOT.inp.
```

```
;
; PLEASE NOTE: If the whole UTM is in the .PLT file, then a UTM of (0,0) in the
;              correct zone is appropriate. But if you were to want to use
;              LatLong with such a file, you would want to specify the same
;              spot. To avoid having to look up the longitude of the center
;              of the different zones, please just stick to a UTM of (0,0).
easting=0
northing=0
utmZone=15
inNorthernHemisphere=true
;
; 'inNorthernHemisphere' needs to know if this run is in the Southern Hemisphere or
not.
; If right on the equator, set this to True.
;
;- FOR LL
;  ------
;
; These two parameters will be used for 'origin=LL'.  (If origin=UTM, they do not
matter.)
originLatitude =0.0
originLongitude=-84.0
; If southern hemisphere, originLatitude will be negative.
; If western  hemisphere, originLongitude will be negative.
;
; Note that all seven UTM+LL parameters must be set,
; but only five will be used for UTM, or three for LL will be used.
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- altitude parameters
;  ====================
;
; Receptors can be plotted relative to the ground,
; or at a specific height level above or below sea level.
; If the ZELEV field can be isolated, "flagpole" also can be used as
relativeToGround .
;
altitudeChoice = relativeToGround
; or
; altitudeChoice = absolute
; or
; altitudeChoice = flagpole
;
; The altitude of the receptors is offset from the height indicated in the .PLT
file.
; ( Note: Specify an expected altitude even if 'flagpole' is the altitudeChoice.
;         This parameter is part of the calculation for the height of the initial
```

```
viewpoint.)
altitude=0
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- the source data file
;  ===================
;  (output from aermod, presumably)
;
; The input file name, that is, the plotfile.
PlotFileName              =SHV03_1hr.PLT

; If one wishes to plot the sources as well, set this to the aermod.inp file.
; If not, leave it empty.
SourceDisplayInputFileName=

;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- output parameters
;  =================
;
; The output file names.
;
; Pick a name for this run, and it will be applied to a number of files,
; plus the objects that may be manipulated within Google Earth.
;
OutputFileNameBase        =1hrStyrene
;
; The name that will be displayed in Google Earth for the dataset.
NameDisplayedInGoogleEarth=StyreneEmission1hrSite3
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- control parameters on the procedure
;  ===================================
;
; To assure the user that the program has not halted, progress
; meters are provided that show up in a text window.
;
sDisableProgressMeter              = false
;
;
; This parameter controls whether the program will
; automatically launch Google Earth after processing the
; .PLT file ("TRUE") or not ("FALSE").
;
```

```
sDisableEarthBrowser              = false
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- receptor display
;  ================
;
; This IconScale parameter "scales" the circles that are drawn in
; the Earth Browser for each receptor. If too big, the display can
; become so cramped that it becomes useless.
;
;             For Google Earth and ArcGIS,
;             The suggested icon scale default is 0.70 .
IconScale     = 0.40
;             (For the NASA "WorldWind" earth browser, a value of
;              IconScale = 1.99 may look better.)
;
; The sIconSetChoice color scheme for the concentration scale. The
; red and green is less preferred because a common color blindness
; won't see the difference; however, it is provided for use.
;
sIconSetChoice=redBlue
;sIconSetChoice=redGreen
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- concentration binning  (for receptors and contours)
;  =====================
;
; The user has the choice between a "Linear" or "Log" color scale. The user
; also can provide one of their own.
;
; There must, however, be eleven "levels" or thresholds that will
; define the ranges for the twelve bins.
minbin=data
maxbin=data
binningChoice = Linear
; or binningChoice = Linear
; or binningChoice = custom
;
;
; These examples could be realistic binning schemes.
customBinningElevenLevels=1,2,3,4,5,6,7,8,9,10,11
;customBinningElevenLevels=.0001,.0003,.0005,.0007,.001, .004,.008,.01,.02,.03,.05
;
; If custom binning is not used, one may prefer to supply this value, "na",
; to help indicate that custom binning is not used.
;customBinningElevenLevels=na
```

```
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- concentration legend   (for receptors and contours)
;  ====================
;
; The program will insert this line into the HTML used to create the legend.
;
; The following will not show up onscreen in the initial dump of variables.
contourLegendTitleHTML
=C O N C E N T R A T I O 
;N S
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- line mappings          (for contours and gradients)
;  =============
;
; To plot any of the lines, an evenly spaced grid needs to be constructed
; by means of a combination of interpolating the data and extending the
; data.
;
; For particularly large model domains, the "numberOfGridCols" and
; "numberOfGridRows" may need to be increased beyond the default
; values of 400.
;
numberOfGridCols                   = 400
numberOfGridRows                   = 400
;
;
; Normally, the 'numberOfTimesToSmoothContourSurface=' parameter
; should be set to one. One smoothing can make the contours much
; less chaotic, while a second one can result in moving the
; contours farther from their proper locations according to the
; receptor values. However, a setting greater than one may be
; beneficial when there is greater spacing between receptors.
;
numberOfTimesToSmoothContourSurface = 0
; Note that the smoothing applies to both the contour and the gradient.
;
; Note: although these last three parameters are not frequently
; used, they are required to be present.
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- contour parameters
```

```
;  ==================
;
; The parameter 'makeContours' enables ("TRUE") or disables
; ("FALSE") contours.
;
makeContours                        = true
;
;
; When drawing lines, each little bit of a line will only
; be drawn if both ends of the segment are within
; this many meters of one of the plot file's receptors.
;
; The contour lines seem less sensitive to the edge than the gradient.
; (If set to 0.0 or less, most lines won't be drawn.)
; (If set to 9999999, almost the diameter of the Earth, then all lines will be
drawn.)
;
contourExtension =  9999999
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;
;- gradient parameters
;  ===================
;
; The parameter 'makeGradients' enables ("TRUE") or disables
; ("FALSE") gradients.
;
makeGradients                       = false
;
;
; When drawing lines, each little bit of a line will only
; be drawn if both ends of the segment are within
; this many meters of one of the plot file's receptors.
gradientExtension=  9999999
; (If set to 0.0 or less, most lines won't be drawn.)
; (If set to 9999999, almost the diameter of the Earth, then all lines will be
drawn.)
;
;
;- gradient binning
;  ================
;
; While contour lines share binning with the receptors, gradient
; binning is done separately.
;
; The user has the choice between a "Linear" or "Log" color scale. The user
```

```
; also can provide one of their own.
;
; There must, however, be eleven "levels" or thresholds that will
; define the ranges for the twelve bins.
;
gradientMaxBin=.5e-9
gradientMinBin=.1e-11
gradientBinningChoice=Log
; or gradientBinningChoice = Linear
; or gradientBinningChoice = custom
;
; These examples could be realistic binning schemes.
customGradBinElevenLevels=1,2,3,4,5,6,7,8,9,10,11
;customGradBinElevenLevels=.0001,.0003,.0005,.0007,.001, .004,.008,.01,.02,.03,.05
;
; If custom binning is not used, one may prefer to supply this value, "na",
; to help indicate that custom binning is not used.
;customGradBinElevenLevels=na
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- gradient legend (not generated if gradients are not generated)
;  ===============
;
; The program will insert this line into the HTML used to create the legend.
;
; The following will not show up onscreen in the initial dump of variables.
gradientLegendTitleHTML=Gradient Magnitudes
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- hidden_grid
;  ===========
; For display of evenly spaced grid. Debugging purposes only.
;
; Warning: This will substantially increase the size of the
; resulting KMZ file. It is not an extrapolated grid.
;
provideEvenlySpacedInterpolatedGrid = false
;
; end
```

```
startend 01 2018 12 2018
ifwgroup y 06 07 2007

DATAFILE STARTING
1-MIN\64050KSHV201801.dat
1-MIN\64050KSHV201802.dat
1-MIN\64050KSHV201803.dat
1-MIN\64050KSHV201804.dat
1-MIN\64050KSHV201805.dat
1-MIN\64050KSHV201806.dat
1-MIN\64050KSHV201807.dat
1-MIN\64050KSHV201808.dat
1-MIN\64050KSHV201809.dat
1-MIN\64050KSHV201810.dat
1-MIN\64050KSHV201811.dat
1-MIN\64050KSHV201812.dat
1-MIN\64050KSHV201901.dat
DATAFILE FINISHED

SURFDATA STARTING
..\AERMET\SURFACE\722480-13957_18
SURFDATA FINISHED

OUTFILES STARTING
hourfile SHV_03_1MIN_18.DAT
summfile SHV_03_1MIN_18_SUMM.DAT
compfile SHV_03_1MIN_18_COMP.DAT
OUTFILES FINISHED
```

```
 Generated by AERSURFACE, dated 13016                        07/11/2019 22:04

 Land Cover input file opened: louisiana_NLCD_080300_flat.bin
 State Postal Code: LA
 AERMET-formatted output file opened: SHV03_AERSUR.OUT
 Type of Coordinates Entered: LATLON
   Latitude (decimal degrees):     32.470000
   Longitude (decimal degrees):   -93.820000
   Datum: NAD83
 Study Radius for surface roughness (km):     1.0
 Is surface roughness varied by sector? Y
  # Sectors = 12
    Sector beginning directions:     0   30   60   90  120  150  180  210  240  270
300  330
 Temporal resolution (ANNUAL, MONTHLY, SEASONAL): MONTHLY
 Continuous snow cover for at least one month? N
 Reassign months to seasons? N
 Is site located at an airport? Y
 Is site considered an arid region? N
 Characterization of surface moisture at site: Wet
 Log file opened: SHV03_AERSUR.log


 Based on the following input coordinates, converted if needed to LATLON/NAD83:
    Latitude:     32.470000
    Longitude:   -93.820000

 The study center is located at
    Albers projection X-coordinate:    203793.
    Albers projection Y-coordinate:   1046507.
    Row in data file:    2300
    Column in data file:     748

 Rotation of Albers grid to true North (deg):   -1.31433


 Land cover grid for Albedo and Bowen Ratio.
 These data are included in: albedo_bowen_domain.txt

    1051530. : 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11
11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 81 85 81 81 81 81 81
81 82 82 82 82 82 91 42 81 82 81 81 82 82 81 91 11 11 11 11 11 11 11 42 82 82 82 81
81 81 81 81 82 82 81 82 82 82 82 82 82 81 81 43 43 42 42 42 11 11 11 11 11 11 11 11
11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11
11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11
11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 23
23 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11
41 41 41 41 41 41 41 41 41 41 41 41 41 41 41 92 91 42 41 42 91 91 91 91 41 91 41
```

SHV03_AMET_S1.INP

```
JOB
  REPORT      SHV03_AMET_S1.RPT
  MESSAGES    SHV03_AMET_S1.MSG


UPPERAIR
  DATA        UA\13957_SHV_18.FSL  FSL
  EXTRACT     UAEXOUT_SHV03.DSK
  XDATES      18/01/01 TO 19/01/01
  LOCATION    13957  32.47N  93.82W  6
  QAOUT       UAQAOUT_SHV03.DSK
  AUDIT       UATT  UAWS  UALR  UAWD


SURFACE
  DATA        SURFACE\722480-13957_18 ISHD
  EXTRACT     SFEXOUT_SHV03.DSK
  XDATES      18/01/01  TO  19/01/01
  LOCATION    13957 32.47N 93.82W 6 77.0
  QAOUT       SFQAOUT_SHV03.DSK
  AUDIT       SLVP PRES CLHT TSKC PWTH ASKY HZVS DPTP RHUM
  NO_MISSING  PRES
```

SHV03_AMET_S2.INP

```
JOB
  REPORT      SHV03_AMET_S2.RPT
  MESSAGES    SHV03_AMET_S2.MSG

UPPERAIR
  QAOUT       UAQAOUT_SHV03.DSK

SURFACE
  QAOUT       SFQAOUT_SHV03.DSK

ASOS1MIN      ..\AERMINUTE\SHV_03_1MIN_18.DAT

MERGE
  OUTPUT      MERGE_SHV03.DSK
  XDATES      18/01/01 18/12/31
```

SHV03_AMET_S3.INP

```
JOB
  REPORT      SHV03_AMET_S3.RPT
  MESSAGES    SHV03_AMET_S3.MSG

METPREP
  DATA        MERGE_SHV03.DSK
  METHOD      REFLEVEL SUBNWS
  METHOD      WIND_DIR RANDOM
  NWS_HGT     WIND     10.0
  METHOD      UASELECT SUNRISE
  AERSURF     ..\AERSURFACE\SHV03_AERSUR.OUT
  OUTPUT      SHV03_AMET.SFC
  PROFILE     SHV03_AMET.PFL
```

```
CO STARTING
   TITLEONE 3734 Dilg League Dr., Shreveport, LA
   DATATYPE NED
   DATAFILE Shreveport03.geotiff
   ANCHORXY 424900.6 3595013.9 424900.6 3595013.9 15 4
   DOMAINXY 424400.6 3594613.9 15 425400.6 3595413.9 15
   RUNORNOT RUN
CO FINISHED

SO STARTING
   LOCATION STACK1 POINT 424900.6 3595013.9
SO FINISHED

RE STARTING
RE GRIDPOLR POL1 STA
                ORIG  STACK1
                DIST  2. 3. 4. 6. 8. 15. 20. 45.
                GDIR  36 10 10
RE GRIDPOLR POL1 END
RE FINISHED

OU STARTING
   RECEPTOR SHV03.RE
   SOURCLOC SHV03.SO
OU FINISHED
```

```
'3734 Dilg League Dr., Shreveport, LA'
'P'
'METERS' 1.0
'UTMN', 210.
15
'BUILD01' 1 65.01
8 3.0
  424837.19  3595036.14
  424830.57  3595036.10
  424830.56  3595037.42
  424826.87  3595037.75
  424826.53  3595044.26
  424829.92  3595044.07
  424830.05  3595046.39
  424837.24  3595046.33
'BUILD02' 1 66.13
4 4.9
  424843.75 3595062.92
  424852.78 3595069.37
  424852.76 3595061.58
  424843.61 3595061.75
'BUILD03' 1 66.18
10 3.0
   424857.41 3595040.09
   424857.51 3595049.23
   424884.69 3595048.96
   424884.49 3595037.36
   424879.00 3595037.68
   424878.84 3595039.97
   424872.35 3595040.10
   424871.99 3595038.56
   424868.84 3595038.62
   424868.76 3595039.83
'BUILD04' 1 66.50
10 2.4
   424906.73 3595037.11
   424906.62 3595046.65
   424905.27 3595046.90
   424905.18 3595050.65
   424901.35 3595050.82
   424901.41 3595047.25
   424896.10 3595047.16
   424895.95 3595040.80
   424898.37 3595040.48
   424898.20 3595037.10
'BUILD05' 1 66.57
8 2.7
  424924.32 3595039.83
```

```
  424932.30 3595039.40
  424932.57 3595042.90
  424934.62 3595042.83
  424934.85 3595050.30
  424928.22 3595050.72
  424928.03 3595052.87
  424924.36 3595052.94
'BUILD06' 1 66.51
12 2.4
   424951.45 3595040.63
   424954.74 3595040.47
   424954.87 3595039.18
   424963.97 3595039.44
   424964.04 3595040.63
   424967.22 3595040.80
   424966.92 3595046.91
   424955.38 3595046.81
   424955.22 3595050.07
   424951.60 3595049.86
   424951.57 3595040.45
   424954.43 3595040.50
'BUILD07' 1 65.62
4 2.4
  424959.44 3594955.90
  424959.17 3594964.59
  424952.19 3594964.83
  424952.03 3594956.37
'BUILD08' 1 65.71
14 2.9
   424946.30 3594968.44
   424952.32 3594968.10
   424952.37 3594974.34
   424953.50 3594974.40
   424953.66 3594979.05
   424952.25 3594978.98
   424951.97 3594982.56
   424942.30 3594982.67
   424942.15 3594980.77
   424937.90 3594981.17
   424937.90 3594975.98
   424940.76 3594975.97
   424940.75 3594974.62
   424943.45 3594974.66
'BUILD09' 1 65.23
4 2.4
  424933.06 3594961.43
  424933.33 3594954.74
  424925.74 3594954.93
```

```
  424925.85 3594961.32
'BUILD10' 1 65.36
10 3.0
   424914.11 3594954.83
   424913.99 3594958.00
   424916.02 3594958.46
   424916.01 3594963.51
   424912.67 3594964.24
   424912.74 3594965.86
   424903.07 3594966.02
   424902.79 3594957.49
   424904.37 3594957.60
   424904.56 3594954.73
'BUILD11' 1 63.47
12 2.7
   424879.12 3594970.11
   424879.40 3594982.97
   424878.19 3594983.26
   424878.11 3594984.90
   424870.93 3594984.86
   424870.73 3594982.86
   424861.25 3594983.18
   424861.02 3594973.93
   424867.36 3594973.94
   424867.62 3594968.14
   424870.48 3594968.16
   424870.90 3594970.32
'BUILD12' 1 62.55
10 2.6
   424846.49 3594970.96
   424846.56 3594977.22
   424841.95 3594977.55
   424841.65 3594981.85
   424825.68 3594982.01
   424826.55 3594971.02
   424830.99 3594971.42
   424830.58 3594972.77
   424836.93 3594972.49
   424838.51 3594971.19
'BUILD13' 1 66.73
4 2.4
  424893.14 3595057.13
  424900.34 3595056.78
  424899.77 3595062.57
  424893.29 3595062.63
'BUILD14' 1 66.68
4 2.4
  424941.81 3595044.91
```

```
  424948.92 3595045.33
  424949.11 3595051.84
  424942.25 3595052.20
'BUILD15' 1 65.83
4 2.4
  424972.61 3594984.82
  424963.20 3594984.71
  424962.99 3594968.48
  424972.72 3594968.49
1
'STACK01'  65.46  1.78  424900.62 3595013.94
```

Site 4 (St. Louis, MO)

```
CO STARTING
   TITLEONE Affton Athletic Practice Fields, Affton, MO, USA
   TITLETWO Styrene Emission Modeling
   MODELOPT DFAULT CONC
   AVERTIME 1
   POLLUTID STYRENE
   RUNORNOT RUN
CO FINISHED

SO STARTING
SO EMISUNIT 215.21 GRAM/SEC PPM
**           EPN     TYPE     X(m)       Y(m)      Elev(m)
**          ----------------------------------------------
   LOCATION STACK01  POINT  731593.53  4268607.23   141.73
**
**              EPN    QS(g/s)    HS(m)  TS(K)  VS(m/s)  DS(m)
**          ------------------------------------------------
   SRCPARAM STACK01  0.02  2.29  341.20  35.48   0.058


SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
```

```
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00

   SRCGROUP ALL
SO FINISHED

RE STARTING
RE ELEVUNIT METERS
RE GRIDPOLR POL1 STA
                 ORIG  STACK01
                 DIST  2. 3. 4. 6. 8. 15. 20. 45.
                 GDIR  36 10 10
   GRIDPOLR POL1     ELEV    1    143.8    143.9    143.9    144.1    144.2    144.8
   GRIDPOLR POL1     ELEV    1    144.7    144.1
   GRIDPOLR POL1     ELEV    2    143.8    143.9    143.9    144.0    144.2    144.6
   GRIDPOLR POL1     ELEV    2    144.6    144.2
   GRIDPOLR POL1     ELEV    3    143.8    143.9    143.9    144.0    144.1    144.4
   GRIDPOLR POL1     ELEV    3    144.4    144.3
   GRIDPOLR POL1     ELEV    4    143.8    143.9    143.9    143.9    144.0    144.2
   GRIDPOLR POL1     ELEV    4    144.3    144.2
   GRIDPOLR POL1     ELEV    5    143.8    143.9    143.9    143.9    143.9    144.0
   GRIDPOLR POL1     ELEV    5    144.0    144.1
   GRIDPOLR POL1     ELEV    6    143.8    143.9    143.8    143.8    143.8    143.9
   GRIDPOLR POL1     ELEV    6    143.9    144.1
   GRIDPOLR POL1     ELEV    7    143.8    143.8    143.8    143.8    143.8    143.8
   GRIDPOLR POL1     ELEV    7    143.8    144.0
   GRIDPOLR POL1     ELEV    8    143.8    143.8    143.8    143.8    143.8    143.7
   GRIDPOLR POL1     ELEV    8    143.7    143.9
   GRIDPOLR POL1     ELEV    9    143.8    143.8    143.8    143.8    143.8    143.7
   GRIDPOLR POL1     ELEV    9    143.7    143.9
   GRIDPOLR POL1     ELEV   10    143.8    143.8    143.8    143.8    143.7    143.7
   GRIDPOLR POL1     ELEV   10    143.6    143.8
   GRIDPOLR POL1     ELEV   11    143.8    143.8    143.8    143.8    143.7    143.6
   GRIDPOLR POL1     ELEV   11    143.6    143.8
   GRIDPOLR POL1     ELEV   12    143.8    143.8    143.8    143.8    143.7    143.6
   GRIDPOLR POL1     ELEV   12    143.6    143.8
   GRIDPOLR POL1     ELEV   13    143.8    143.8    143.8    143.8    143.7    143.6
   GRIDPOLR POL1     ELEV   13    143.6    143.8
   GRIDPOLR POL1     ELEV   14    143.8    143.8    143.8    143.8    143.7    143.6
   GRIDPOLR POL1     ELEV   14    143.5    143.9
   GRIDPOLR POL1     ELEV   15    143.7    143.7    143.7    143.8    143.7    143.5
   GRIDPOLR POL1     ELEV   15    143.5    143.8
   GRIDPOLR POL1     ELEV   16    143.7    143.7    143.7    143.7    143.7    143.5
   GRIDPOLR POL1     ELEV   16    143.5    143.1
   GRIDPOLR POL1     ELEV   17    143.7    143.7    143.7    143.6    143.6    143.4
   GRIDPOLR POL1     ELEV   17    143.5    142.2
   GRIDPOLR POL1     ELEV   18    143.7    143.7    143.6    143.5    143.4    143.0
   GRIDPOLR POL1     ELEV   18    142.8    141.4
```

```
GRIDPOLR POL1     ELEV   19    143.7    143.6    143.6    143.5    143.3    142.6
GRIDPOLR POL1     ELEV   19    142.1    141.2
GRIDPOLR POL1     ELEV   20    143.7    143.6    143.6    143.4    143.2    142.3
GRIDPOLR POL1     ELEV   20    141.7    142.2
GRIDPOLR POL1     ELEV   21    143.7    143.6    143.5    143.4    143.2    142.0
GRIDPOLR POL1     ELEV   21    141.4    143.7
GRIDPOLR POL1     ELEV   22    143.7    143.6    143.5    143.4    143.2    141.7
GRIDPOLR POL1     ELEV   22    141.1    143.7
GRIDPOLR POL1     ELEV   23    143.7    143.6    143.5    143.4    143.0    141.4
GRIDPOLR POL1     ELEV   23    141.2    143.7
GRIDPOLR POL1     ELEV   24    143.7    143.6    143.6    143.4    142.9    141.1
GRIDPOLR POL1     ELEV   24    141.3    143.8
GRIDPOLR POL1     ELEV   25    143.7    143.7    143.6    143.4    142.8    141.1
GRIDPOLR POL1     ELEV   25    141.4    143.9
GRIDPOLR POL1     ELEV   26    143.7    143.7    143.6    143.4    142.8    141.2
GRIDPOLR POL1     ELEV   26    141.5    144.0
GRIDPOLR POL1     ELEV   27    143.7    143.7    143.7    143.5    142.8    141.2
GRIDPOLR POL1     ELEV   27    141.5    143.9
GRIDPOLR POL1     ELEV   28    143.8    143.7    143.7    143.6    143.0    141.1
GRIDPOLR POL1     ELEV   28    141.4    144.0
GRIDPOLR POL1     ELEV   29    143.8    143.8    143.8    143.8    143.2    141.1
GRIDPOLR POL1     ELEV   29    141.3    143.8
GRIDPOLR POL1     ELEV   30    143.8    143.8    143.8    143.9    143.5    141.3
GRIDPOLR POL1     ELEV   30    141.2    142.9
GRIDPOLR POL1     ELEV   31    143.8    143.8    143.9    144.0    143.8    141.9
GRIDPOLR POL1     ELEV   31    141.1    142.1
GRIDPOLR POL1     ELEV   32    143.8    143.9    143.9    144.0    144.1    142.7
GRIDPOLR POL1     ELEV   32    141.5    141.4
GRIDPOLR POL1     ELEV   33    143.8    143.9    143.9    144.0    144.1    143.6
GRIDPOLR POL1     ELEV   33    142.8    141.6
GRIDPOLR POL1     ELEV   34    143.8    143.9    143.9    144.0    144.2    144.4
GRIDPOLR POL1     ELEV   34    144.3    143.4
GRIDPOLR POL1     ELEV   35    143.8    143.9    143.9    144.1    144.2    144.6
GRIDPOLR POL1     ELEV   35    144.8    143.8
GRIDPOLR POL1     ELEV   36    143.8    143.9    143.9    144.1    144.2    144.7
GRIDPOLR POL1     ELEV   36    144.8    143.8
GRIDPOLR POL1     HILL    1    143.8    143.9    143.9    144.1    144.2    144.8
GRIDPOLR POL1     HILL    1    144.7    144.1
GRIDPOLR POL1     HILL    2    143.8    143.9    143.9    144.0    144.2    144.6
GRIDPOLR POL1     HILL    2    144.6    144.2
GRIDPOLR POL1     HILL    3    143.8    143.9    143.9    144.0    144.1    144.4
GRIDPOLR POL1     HILL    3    144.4    144.3
GRIDPOLR POL1     HILL    4    143.8    143.9    143.9    143.9    144.0    144.2
GRIDPOLR POL1     HILL    4    144.3    144.2
GRIDPOLR POL1     HILL    5    143.8    143.9    143.9    143.9    143.9    144.0
GRIDPOLR POL1     HILL    5    144.0    144.1
GRIDPOLR POL1     HILL    6    143.8    143.9    143.8    143.8    143.8    143.9
GRIDPOLR POL1     HILL    6    143.9    144.1
```

```
GRIDPOLR POL1     HILL    7    143.8    143.8    143.8    143.8    143.8    143.8
GRIDPOLR POL1     HILL    7    143.8    144.0
GRIDPOLR POL1     HILL    8    143.8    143.8    143.8    143.8    143.8    143.7
GRIDPOLR POL1     HILL    8    143.7    143.9
GRIDPOLR POL1     HILL    9    143.8    143.8    143.8    143.8    143.8    143.7
GRIDPOLR POL1     HILL    9    143.7    143.9
GRIDPOLR POL1     HILL   10    143.8    143.8    143.8    143.8    143.7    143.7
GRIDPOLR POL1     HILL   10    143.6    143.8
GRIDPOLR POL1     HILL   11    143.8    143.8    143.8    143.8    143.7    143.6
GRIDPOLR POL1     HILL   11    143.6    143.8
GRIDPOLR POL1     HILL   12    143.8    143.8    143.8    143.8    143.7    143.6
GRIDPOLR POL1     HILL   12    143.6    143.8
GRIDPOLR POL1     HILL   13    143.8    143.8    143.8    143.8    143.7    143.6
GRIDPOLR POL1     HILL   13    143.6    143.8
GRIDPOLR POL1     HILL   14    143.8    143.8    143.8    143.8    143.7    143.6
GRIDPOLR POL1     HILL   14    143.5    143.9
GRIDPOLR POL1     HILL   15    143.7    143.7    143.7    143.8    143.7    143.5
GRIDPOLR POL1     HILL   15    143.5    143.8
GRIDPOLR POL1     HILL   16    143.7    143.7    143.7    143.7    143.7    143.5
GRIDPOLR POL1     HILL   16    143.5    143.1
GRIDPOLR POL1     HILL   17    143.7    143.7    143.7    143.6    143.6    143.4
GRIDPOLR POL1     HILL   17    143.5    143.7
GRIDPOLR POL1     HILL   18    143.7    143.7    143.6    143.5    143.4    143.5
GRIDPOLR POL1     HILL   18    143.5    143.8
GRIDPOLR POL1     HILL   19    143.7    143.6    143.6    143.5    143.3    143.7
GRIDPOLR POL1     HILL   19    143.7    143.8
GRIDPOLR POL1     HILL   20    143.7    143.6    143.6    143.4    143.2    143.7
GRIDPOLR POL1     HILL   20    144.0    143.8
GRIDPOLR POL1     HILL   21    143.7    143.6    143.5    143.4    143.2    144.0
GRIDPOLR POL1     HILL   21    144.0    143.7
GRIDPOLR POL1     HILL   22    143.7    143.6    143.5    143.4    143.2    144.8
GRIDPOLR POL1     HILL   22    144.8    143.7
GRIDPOLR POL1     HILL   23    143.7    143.6    143.5    143.4    144.0    145.1
GRIDPOLR POL1     HILL   23    145.1    143.7
GRIDPOLR POL1     HILL   24    143.7    143.6    143.6    143.4    144.0    145.1
GRIDPOLR POL1     HILL   24    145.1    143.8
GRIDPOLR POL1     HILL   25    143.7    143.7    143.6    143.4    144.8    145.1
GRIDPOLR POL1     HILL   25    145.1    143.9
GRIDPOLR POL1     HILL   26    143.7    143.7    143.6    144.0    144.8    145.1
GRIDPOLR POL1     HILL   26    145.1    144.0
GRIDPOLR POL1     HILL   27    143.7    143.7    143.7    144.0    144.8    145.1
GRIDPOLR POL1     HILL   27    145.1    143.9
GRIDPOLR POL1     HILL   28    143.8    143.7    143.7    144.0    144.8    145.1
GRIDPOLR POL1     HILL   28    145.1    144.0
GRIDPOLR POL1     HILL   29    143.8    143.8    143.8    144.0    144.8    145.1
GRIDPOLR POL1     HILL   29    145.1    143.8
GRIDPOLR POL1     HILL   30    143.8    143.8    143.8    143.9    144.0    145.1
GRIDPOLR POL1     HILL   30    145.1    144.0
```

```
   GRIDPOLR POL1     HILL   31    143.8    143.8    143.9    144.0    144.0    145.1
   GRIDPOLR POL1     HILL   31    145.1    145.1
   GRIDPOLR POL1     HILL   32    143.8    143.9    143.9    144.0    144.1    145.1
   GRIDPOLR POL1     HILL   32    145.1    145.1
   GRIDPOLR POL1     HILL   33    143.8    143.9    143.9    144.0    144.1    145.1
   GRIDPOLR POL1     HILL   33    145.1    145.1
   GRIDPOLR POL1     HILL   34    143.8    143.9    143.9    144.0    144.2    144.4
   GRIDPOLR POL1     HILL   34    145.1    143.9
   GRIDPOLR POL1     HILL   35    143.8    143.9    143.9    144.1    144.2    144.6
   GRIDPOLR POL1     HILL   35    144.8    143.8
   GRIDPOLR POL1     HILL   36    143.8    143.9    143.9    144.1    144.2    144.7
   GRIDPOLR POL1     HILL   36    144.8    143.8
RE GRIDPOLR POL1 END
RE FINISHED

ME STARTING
   SURFFILE STL01_AMET.SFC
   PROFFILE STL01_AMET.PFL
   SURFDATA 13994 2018 ST. LOUIS,MO
   UAIRDATA 13995 2018 SRINGFIELD,MO
   PROFBASE 188.4
ME FINISHED

OU STARTING
   RECTABLE ALLAVE 1ST 8TH
   SUMMFILE STL01.SUM
   PLOTFILE 1 ALL 1ST STL01_1hr.PLT 31
OU FINISHED
```

```
CO STARTING
   TITLEONE Affton Athletic Practice Fields, Affton, MO, USA
   TITLETWO Styrene Emission Modeling
   MODELOPT DFAULT CONC
   AVERTIME 1
   POLLUTID STYRENE
   RUNORNOT RUN
CO FINISHED

SO STARTING
SO EMISUNIT 215.21 GRAM/SEC PPM
**           EPN     TYPE     X(m)       Y(m)      Elev(m)
**          ----------------------------------------------
   LOCATION STACK01  POINT  731593.53  4268607.23   141.73
**
**              EPN    QS(g/s)    HS(m)  TS(K)  VS(m/s)  DS(m)
**          ------------------------------------------------
   SRCPARAM STACK01  0.02  2.29  341.20  35.48   0.058


SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
```

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SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00

   SRCGROUP ALL
SO FINISHED

RE STARTING
RE ELEVUNIT METERS
RE GRIDPOLR POL1 STA
                 ORIG  STACK01
                 DIST  2. 3. 4. 6. 8. 15. 20. 45.
                 GDIR  36 10 10
   GRIDPOLR POL1     ELEV    1    143.8    143.9    143.9    144.1    144.2    144.8
   GRIDPOLR POL1     ELEV    1    144.7    144.1
   GRIDPOLR POL1     ELEV    2    143.8    143.9    143.9    144.0    144.2    144.6
   GRIDPOLR POL1     ELEV    2    144.6    144.2
   GRIDPOLR POL1     ELEV    3    143.8    143.9    143.9    144.0    144.1    144.4
   GRIDPOLR POL1     ELEV    3    144.4    144.3
   GRIDPOLR POL1     ELEV    4    143.8    143.9    143.9    143.9    144.0    144.2
   GRIDPOLR POL1     ELEV    4    144.3    144.2
   GRIDPOLR POL1     ELEV    5    143.8    143.9    143.9    143.9    143.9    144.0
   GRIDPOLR POL1     ELEV    5    144.0    144.1
   GRIDPOLR POL1     ELEV    6    143.8    143.9    143.8    143.8    143.8    143.9
   GRIDPOLR POL1     ELEV    6    143.9    144.1
   GRIDPOLR POL1     ELEV    7    143.8    143.8    143.8    143.8    143.8    143.8
   GRIDPOLR POL1     ELEV    7    143.8    144.0
   GRIDPOLR POL1     ELEV    8    143.8    143.8    143.8    143.8    143.8    143.7
   GRIDPOLR POL1     ELEV    8    143.7    143.9
   GRIDPOLR POL1     ELEV    9    143.8    143.8    143.8    143.8    143.8    143.7
   GRIDPOLR POL1     ELEV    9    143.7    143.9
   GRIDPOLR POL1     ELEV   10    143.8    143.8    143.8    143.8    143.7    143.7
   GRIDPOLR POL1     ELEV   10    143.6    143.8
   GRIDPOLR POL1     ELEV   11    143.8    143.8    143.8    143.8    143.7    143.6
   GRIDPOLR POL1     ELEV   11    143.6    143.8
   GRIDPOLR POL1     ELEV   12    143.8    143.8    143.8    143.8    143.7    143.6
   GRIDPOLR POL1     ELEV   12    143.6    143.8
   GRIDPOLR POL1     ELEV   13    143.8    143.8    143.8    143.8    143.7    143.6
   GRIDPOLR POL1     ELEV   13    143.6    143.8
   GRIDPOLR POL1     ELEV   14    143.8    143.8    143.8    143.8    143.7    143.6
   GRIDPOLR POL1     ELEV   14    143.5    143.9
   GRIDPOLR POL1     ELEV   15    143.7    143.7    143.7    143.8    143.7    143.5
   GRIDPOLR POL1     ELEV   15    143.5    143.8
   GRIDPOLR POL1     ELEV   16    143.7    143.7    143.7    143.7    143.7    143.5
   GRIDPOLR POL1     ELEV   16    143.5    143.1
   GRIDPOLR POL1     ELEV   17    143.7    143.7    143.7    143.6    143.6    143.4
   GRIDPOLR POL1     ELEV   17    143.5    142.2
   GRIDPOLR POL1     ELEV   18    143.7    143.7    143.6    143.5    143.4    143.0
   GRIDPOLR POL1     ELEV   18    142.8    141.4
```

```
GRIDPOLR POL1     ELEV   19    143.7    143.6    143.6    143.5    143.3    142.6
GRIDPOLR POL1     ELEV   19    142.1    141.2
GRIDPOLR POL1     ELEV   20    143.7    143.6    143.6    143.4    143.2    142.3
GRIDPOLR POL1     ELEV   20    141.7    142.2
GRIDPOLR POL1     ELEV   21    143.7    143.6    143.5    143.4    143.2    142.0
GRIDPOLR POL1     ELEV   21    141.4    143.7
GRIDPOLR POL1     ELEV   22    143.7    143.6    143.5    143.4    143.2    141.7
GRIDPOLR POL1     ELEV   22    141.1    143.7
GRIDPOLR POL1     ELEV   23    143.7    143.6    143.5    143.4    143.0    141.4
GRIDPOLR POL1     ELEV   23    141.2    143.7
GRIDPOLR POL1     ELEV   24    143.7    143.6    143.6    143.4    142.9    141.1
GRIDPOLR POL1     ELEV   24    141.3    143.8
GRIDPOLR POL1     ELEV   25    143.7    143.7    143.6    143.4    142.8    141.1
GRIDPOLR POL1     ELEV   25    141.4    143.9
GRIDPOLR POL1     ELEV   26    143.7    143.7    143.6    143.4    142.8    141.2
GRIDPOLR POL1     ELEV   26    141.5    144.0
GRIDPOLR POL1     ELEV   27    143.7    143.7    143.7    143.5    142.8    141.2
GRIDPOLR POL1     ELEV   27    141.5    143.9
GRIDPOLR POL1     ELEV   28    143.8    143.7    143.7    143.6    143.0    141.1
GRIDPOLR POL1     ELEV   28    141.4    144.0
GRIDPOLR POL1     ELEV   29    143.8    143.8    143.8    143.8    143.2    141.1
GRIDPOLR POL1     ELEV   29    141.3    143.8
GRIDPOLR POL1     ELEV   30    143.8    143.8    143.8    143.9    143.5    141.3
GRIDPOLR POL1     ELEV   30    141.2    142.9
GRIDPOLR POL1     ELEV   31    143.8    143.8    143.9    144.0    143.8    141.9
GRIDPOLR POL1     ELEV   31    141.1    142.1
GRIDPOLR POL1     ELEV   32    143.8    143.9    143.9    144.0    144.1    142.7
GRIDPOLR POL1     ELEV   32    141.5    141.4
GRIDPOLR POL1     ELEV   33    143.8    143.9    143.9    144.0    144.1    143.6
GRIDPOLR POL1     ELEV   33    142.8    141.6
GRIDPOLR POL1     ELEV   34    143.8    143.9    143.9    144.0    144.2    144.4
GRIDPOLR POL1     ELEV   34    144.3    143.4
GRIDPOLR POL1     ELEV   35    143.8    143.9    143.9    144.1    144.2    144.6
GRIDPOLR POL1     ELEV   35    144.8    143.8
GRIDPOLR POL1     ELEV   36    143.8    143.9    143.9    144.1    144.2    144.7
GRIDPOLR POL1     ELEV   36    144.8    143.8
GRIDPOLR POL1     HILL    1    143.8    143.9    143.9    144.1    144.2    144.8
GRIDPOLR POL1     HILL    1    144.7    144.1
GRIDPOLR POL1     HILL    2    143.8    143.9    143.9    144.0    144.2    144.6
GRIDPOLR POL1     HILL    2    144.6    144.2
GRIDPOLR POL1     HILL    3    143.8    143.9    143.9    144.0    144.1    144.4
GRIDPOLR POL1     HILL    3    144.4    144.3
GRIDPOLR POL1     HILL    4    143.8    143.9    143.9    143.9    144.0    144.2
GRIDPOLR POL1     HILL    4    144.3    144.2
GRIDPOLR POL1     HILL    5    143.8    143.9    143.9    143.9    143.9    144.0
GRIDPOLR POL1     HILL    5    144.0    144.1
GRIDPOLR POL1     HILL    6    143.8    143.9    143.8    143.8    143.8    143.9
GRIDPOLR POL1     HILL    6    143.9    144.1
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GRIDPOLR POL1     HILL    7    143.8    143.8    143.8    143.8    143.8    143.8
GRIDPOLR POL1     HILL    7    143.8    144.0
GRIDPOLR POL1     HILL    8    143.8    143.8    143.8    143.8    143.8    143.7
GRIDPOLR POL1     HILL    8    143.7    143.9
GRIDPOLR POL1     HILL    9    143.8    143.8    143.8    143.8    143.8    143.7
GRIDPOLR POL1     HILL    9    143.7    143.9
GRIDPOLR POL1     HILL   10    143.8    143.8    143.8    143.8    143.7    143.7
GRIDPOLR POL1     HILL   10    143.6    143.8
GRIDPOLR POL1     HILL   11    143.8    143.8    143.8    143.8    143.7    143.6
GRIDPOLR POL1     HILL   11    143.6    143.8
GRIDPOLR POL1     HILL   12    143.8    143.8    143.8    143.8    143.7    143.6
GRIDPOLR POL1     HILL   12    143.6    143.8
GRIDPOLR POL1     HILL   13    143.8    143.8    143.8    143.8    143.7    143.6
GRIDPOLR POL1     HILL   13    143.6    143.8
GRIDPOLR POL1     HILL   14    143.8    143.8    143.8    143.8    143.7    143.6
GRIDPOLR POL1     HILL   14    143.5    143.9
GRIDPOLR POL1     HILL   15    143.7    143.7    143.7    143.8    143.7    143.5
GRIDPOLR POL1     HILL   15    143.5    143.8
GRIDPOLR POL1     HILL   16    143.7    143.7    143.7    143.7    143.7    143.5
GRIDPOLR POL1     HILL   16    143.5    143.1
GRIDPOLR POL1     HILL   17    143.7    143.7    143.7    143.6    143.6    143.4
GRIDPOLR POL1     HILL   17    143.5    143.7
GRIDPOLR POL1     HILL   18    143.7    143.7    143.6    143.5    143.4    143.5
GRIDPOLR POL1     HILL   18    143.5    143.8
GRIDPOLR POL1     HILL   19    143.7    143.6    143.6    143.5    143.3    143.7
GRIDPOLR POL1     HILL   19    143.7    143.8
GRIDPOLR POL1     HILL   20    143.7    143.6    143.6    143.4    143.2    143.7
GRIDPOLR POL1     HILL   20    144.0    143.8
GRIDPOLR POL1     HILL   21    143.7    143.6    143.5    143.4    143.2    144.0
GRIDPOLR POL1     HILL   21    144.0    143.7
GRIDPOLR POL1     HILL   22    143.7    143.6    143.5    143.4    143.2    144.8
GRIDPOLR POL1     HILL   22    144.8    143.7
GRIDPOLR POL1     HILL   23    143.7    143.6    143.5    143.4    144.0    145.1
GRIDPOLR POL1     HILL   23    145.1    143.7
GRIDPOLR POL1     HILL   24    143.7    143.6    143.6    143.4    144.0    145.1
GRIDPOLR POL1     HILL   24    145.1    143.8
GRIDPOLR POL1     HILL   25    143.7    143.7    143.6    143.4    144.8    145.1
GRIDPOLR POL1     HILL   25    145.1    143.9
GRIDPOLR POL1     HILL   26    143.7    143.7    143.6    144.0    144.8    145.1
GRIDPOLR POL1     HILL   26    145.1    144.0
GRIDPOLR POL1     HILL   27    143.7    143.7    143.7    144.0    144.8    145.1
GRIDPOLR POL1     HILL   27    145.1    143.9
GRIDPOLR POL1     HILL   28    143.8    143.7    143.7    144.0    144.8    145.1
GRIDPOLR POL1     HILL   28    145.1    144.0
GRIDPOLR POL1     HILL   29    143.8    143.8    143.8    144.0    144.8    145.1
GRIDPOLR POL1     HILL   29    145.1    143.8
GRIDPOLR POL1     HILL   30    143.8    143.8    143.8    143.9    144.0    145.1
GRIDPOLR POL1     HILL   30    145.1    144.0
```

```
   GRIDPOLR POL1     HILL   31    143.8    143.8    143.9    144.0    144.0    145.1
   GRIDPOLR POL1     HILL   31    145.1    145.1
   GRIDPOLR POL1     HILL   32    143.8    143.9    143.9    144.0    144.1    145.1
   GRIDPOLR POL1     HILL   32    145.1    145.1
   GRIDPOLR POL1     HILL   33    143.8    143.9    143.9    144.0    144.1    145.1
   GRIDPOLR POL1     HILL   33    145.1    145.1
   GRIDPOLR POL1     HILL   34    143.8    143.9    143.9    144.0    144.2    144.4
   GRIDPOLR POL1     HILL   34    145.1    143.9
   GRIDPOLR POL1     HILL   35    143.8    143.9    143.9    144.1    144.2    144.6
   GRIDPOLR POL1     HILL   35    144.8    143.8
   GRIDPOLR POL1     HILL   36    143.8    143.9    143.9    144.1    144.2    144.7
   GRIDPOLR POL1     HILL   36    144.8    143.8
RE GRIDPOLR POL1 END
RE FINISHED

ME STARTING
   SURFFILE STL01_AMET.SFC
   PROFFILE STL01_AMET.PFL
   SURFDATA 13994 2018 ST. LOUIS,MO
   UAIRDATA 13995 2018 SRINGFIELD,MO
   PROFBASE 188.4
ME FINISHED

OU STARTING
   RECTABLE ALLAVE 1ST 8TH
   SUMMFILE STL01.SUM
   PLOTFILE 1 ALL 1ST STL01_1hr.PLT 31
OU FINISHED

 **********************************
 *** SETUP Finishes Successfully ***
 **********************************

 *** AERMOD - VERSION  18081 ***   *** Affton Athletic Practice Fields, Affton,
MO, USA                      ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                       ***        09:55:29

                                  PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                          ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.
```

```
  --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.

 **Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  STYRENE

 **Model Calculates  1 Short Term Average(s) of:   1-HR

 **This Run Includes:      1 Source(s);       1 Source Group(s); and     288
Receptor(s)

               with:      1 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      0 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  18081

 **Output Options Selected:
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)
```

 **NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and
Missing Hours

 **Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   188.40 ; Decay
Coef. =   0.000   ; Rot. Angle =   0.0
                 Emission Units = GRAM/SEC   ;
Emission Rate Unit Factor =   215.21
                 Output Units   = PPM

 **Approximate Storage Requirements of Model =   3.6 MB of RAM.

 **Input Runstream File: aermod.inp

 **Output Print File: aermod.out

 **File for Summary of Results: STL01.SUM

 *** MODELOPTs: RegDFAULT CONC ELEV RURAL

                                                  *** POINT SOURCE DATA ***

               NUMBER EMISSION RATE   BASE   STACK   STACK
STACK   STACK   BLDG   URBAN CAP/ EMIS RATE
   SOURCE   PART. (USER UNITS)   X   Y   ELEV.   HEIGHT TEMP.   EXIT
VEL. DIAMETER EXISTS SOURCE HOR   SCALAR
     ID   CATS.   (METERS) (METERS) (METERS) (METERS) (DEG.K)
(M/SEC) (METERS)   VARY BY
 -
- -

 STACK01   0   0.20000E-01 731593.5 4268607.2   141.7   2.29   341.20
35.48   0.06   NO   NO   NO

*** AERMOD - VERSION 18081 ***   *** Affton Athletic Practice Fields, Affton,
MO, USA   ***   02/22/20
 *** AERMET - VERSION 18081 ***   *** Styrene Emission Modeling
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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	STACK01 ,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

*** ORIGIN FOR POLAR NETWORK ***
X-ORIG = 731593.53 ; Y-ORIG = 4268607.23 (METERS)

*** DISTANCE RANGES OF NETWORK ***
(METERS)

2.0, 3.0, 4.0, 6.0, 8.0, 15.0, 20.0, 45.0,

*** DIRECTION RADIALS OF NETWORK ***
(DEGREES)

10.0, 20.0, 30.0, 40.0, 50.0, 60.0, 70.0, 80.0, 90.0, 100.0,
110.0, 120.0, 130.0, 140.0, 150.0, 160.0, 170.0, 180.0, 190.0, 200.0,
210.0, 220.0, 230.0, 240.0, 250.0, 260.0, 270.0, 280.0, 290.0, 300.0,
310.0, 320.0, 330.0, 340.0, 350.0, 360.0,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

* ELEVATION HEIGHTS IN METERS *

DIRECTION (DEGREES)	DISTANCE (METERS)								
	2.00	3.00	4.00	6.00	8.00	15.00	20.00	45.00	
10.00	143.80	143.90	143.90	144.10	144.20	144.80	144.70	144.10	
20.00	143.80	143.90	143.90	144.00	144.20	144.60	144.60	144.20	
30.00	143.80	143.90	143.90	144.00	144.10	144.40	144.40	144.30	
40.00	143.80	143.90	143.90	143.90	144.00	144.20	144.30	144.20	
50.00	143.80	143.90	143.90	143.90	143.90	144.00	144.00	144.10	
60.00	143.80	143.90	143.80	143.80	143.80	143.90	143.90	144.10	
70.00	143.80	143.80	143.80	143.80	143.80	143.80	143.80	144.00	
80.00	143.80	143.80	143.80	143.80	143.80	143.70	143.70	143.90	
90.00	143.80	143.80	143.80	143.80	143.80	143.70	143.70	143.90	
100.00	143.80	143.80	143.80	143.80	143.70	143.70	143.60	143.80	
110.00	143.80	143.80	143.80	143.80	143.70	143.60	143.60	143.80	
120.00	143.80	143.80	143.80	143.80	143.70	143.60	143.60	143.80	
130.00	143.80	143.80	143.80	143.80	143.70	143.60	143.60	143.80	
140.00	143.80	143.80	143.80	143.80	143.70	143.60	143.50	143.90	
150.00	143.70	143.70	143.70	143.80	143.70	143.50	143.50	143.80	
160.00	143.70	143.70	143.70	143.70	143.70	143.50	143.50	143.10	
170.00	143.70	143.70	143.70	143.60	143.60	143.40	143.50	142.20	

```
     180.00 |        143.70       143.70       143.60       143.50       143.40
  143.00       142.80       141.40
     190.00 |        143.70       143.60       143.60       143.50       143.30
  142.60       142.10       141.20
     200.00 |        143.70       143.60       143.60       143.40       143.20
  142.30       141.70       142.20
     210.00 |        143.70       143.60       143.50       143.40       143.20
  142.00       141.40       143.70
     220.00 |        143.70       143.60       143.50       143.40       143.20
  141.70       141.10       143.70
     230.00 |        143.70       143.60       143.50       143.40       143.00
  141.40       141.20       143.70
     240.00 |        143.70       143.60       143.60       143.40       142.90
  141.10       141.30       143.80
     250.00 |        143.70       143.70       143.60       143.40       142.80
  141.10       141.40       143.90
     260.00 |        143.70       143.70       143.60       143.40       142.80
  141.20       141.50       144.00
     270.00 |        143.70       143.70       143.70       143.50       142.80
  141.20       141.50       143.90
     280.00 |        143.80       143.70       143.70       143.60       143.00
  141.10       141.40       144.00
     290.00 |        143.80       143.80       143.80       143.80       143.20
  141.10       141.30       143.80
     300.00 |        143.80       143.80       143.80       143.90       143.50
  141.30       141.20       142.90
     310.00 |        143.80       143.80       143.90       144.00       143.80
  141.90       141.10       142.10
     320.00 |        143.80       143.90       143.90       144.00       144.10
  142.70       141.50       141.40
     330.00 |        143.80       143.90       143.90       144.00       144.10
  143.60       142.80       141.60
     340.00 |        143.80       143.90       143.90       144.00       144.20
  144.40       144.30       143.40
     350.00 |        143.80       143.90       143.90       144.10       144.20
  144.60       144.80       143.80
     360.00 |        143.80       143.90       143.90       144.10       144.20
  144.70       144.80       143.80
 *** AERMOD - VERSION  18081 ***   *** Affton Athletic Practice Fields, Affton,
MO, USA                     ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                    *** NETWORK ID: POL1     ;  NETWORK TYPE: GRIDPOLR
***
```

* HILL HEIGHT SCALES IN METERS *

DIRECTION (DEGREES)	DISTANCE (METERS)								
	2.00	3.00	4.00	6.00	8.00	15.00	20.00	45.00	
10.00	143.80	143.90	143.90	144.10	144.20	144.80	144.70	144.10	
20.00	143.80	143.90	143.90	144.00	144.20	144.60	144.60	144.20	
30.00	143.80	143.90	143.90	144.00	144.10	144.40	144.40	144.30	
40.00	143.80	143.90	143.90	143.90	144.00	144.20	144.30	144.20	
50.00	143.80	143.90	143.90	143.90	143.90	144.00	144.00	144.10	
60.00	143.80	143.90	143.80	143.80	143.80	143.90	143.90	144.10	
70.00	143.80	143.80	143.80	143.80	143.80	143.80	143.80	144.00	
80.00	143.80	143.80	143.80	143.80	143.80	143.70	143.70	143.90	
90.00	143.80	143.80	143.80	143.80	143.80	143.70	143.70	143.90	
100.00	143.80	143.80	143.80	143.80	143.70	143.70	143.60	143.80	
110.00	143.80	143.80	143.80	143.80	143.70	143.60	143.60	143.80	
120.00	143.80	143.80	143.80	143.80	143.70	143.60	143.60	143.80	
130.00	143.80	143.80	143.80	143.80	143.70	143.60	143.60	143.80	
140.00	143.80	143.80	143.80	143.80	143.70	143.60	143.50	143.90	
150.00	143.70	143.70	143.70	143.80	143.70	143.50	143.50	143.80	
160.00	143.70	143.70	143.70	143.70	143.70	143.50	143.50	143.10	
170.00	143.70	143.70	143.70	143.60	143.60	143.40	143.50	143.70	
180.00	143.70	143.70	143.60	143.50	143.40	143.50	143.50	143.80	
190.00	143.70	143.60	143.60	143.50	143.30	143.70	143.70	143.80	
200.00	143.70	143.60	143.60	143.40	143.20				

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  143.70       144.00       143.80
      210.00 |        143.70       143.60       143.50       143.40       143.20
  144.00       144.00       143.70
      220.00 |        143.70       143.60       143.50       143.40       143.20
  144.80       144.80       143.70
      230.00 |        143.70       143.60       143.50       143.40       144.00
  145.10       145.10       143.70
      240.00 |        143.70       143.60       143.60       143.40       144.00
  145.10       145.10       143.80
      250.00 |        143.70       143.70       143.60       143.40       144.80
  145.10       145.10       143.90
      260.00 |        143.70       143.70       143.60       144.00       144.80
  145.10       145.10       144.00
      270.00 |        143.70       143.70       143.70       144.00       144.80
  145.10       145.10       143.90
      280.00 |        143.80       143.70       143.70       144.00       144.80
  145.10       145.10       144.00
      290.00 |        143.80       143.80       143.80       144.00       144.80
  145.10       145.10       143.80
      300.00 |        143.80       143.80       143.80       143.90       144.00
  145.10       145.10       144.00
      310.00 |        143.80       143.80       143.90       144.00       144.00
  145.10       145.10       145.10
      320.00 |        143.80       143.90       143.90       144.00       144.10
  145.10       145.10       145.10
      330.00 |        143.80       143.90       143.90       144.00       144.10
  145.10       145.10       145.10
      340.00 |        143.80       143.90       143.90       144.00       144.20
  144.40       145.10       143.90
      350.00 |        143.80       143.90       143.90       144.10       144.20
  144.60       144.80       143.80
      360.00 |        143.80       143.90       143.90       144.10       144.20
  144.70       144.80       143.80
 *** AERMOD - VERSION  18081 ***   *** Affton Athletic Practice Fields, Affton,
MO, USA                     ***       02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                             ***       09:55:29

                                    PAGE   7
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                                *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
                                                                  (1=YES; 0=NO)

            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 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 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 1 1 1 1   1 1 1
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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 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
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 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
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 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
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 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
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 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
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 1 1   1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

↑ *** AERMOD - VERSION 18081 *** *** Affton Athletic Practice Fields, Affton, MO, USA *** 02/22/20

*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling *** 09:55:29

PAGE 8

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: STL01_AMET.SFC
Met Version: 18081
Profile file: STL01_AMET.PFL

Surface format: FREE

Profile format: FREE

Surface station no.: 13994	Upper air station no.: 13995
Name: ST.	Name: SRINGFIELD,MO
Year: 2018	Year: 2018

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
18	01	01	1	01	-36.9	0.295	-9.000	-9.000	-999.	384.	62.9	0.03	1.09	1.00	4.95	316.	10.0	255.3	2.0
18	01	01	1	02	-42.6	0.339	-9.000	-9.000	-999.	474.	83.1	0.03	1.09	1.00	5.53	316.	10.0	254.8	2.0
18	01	01	1	03	-35.9	0.285	-9.000	-9.000	-999.	367.	58.6	0.03	1.09	1.00	4.83	315.	10.0	254.2	2.0
18	01	01	1	04	-35.0	0.277	-9.000	-9.000	-999.	350.	55.3	0.03	1.09	1.00	4.73	317.	10.0	253.8	2.0
18	01	01	1	05	-39.8	0.315	-9.000	-9.000	-999.	424.	71.0	0.03	1.09	1.00	5.21	320.	10.0	253.1	2.0
18	01	01	1	06	-41.2	0.322	-9.000	-9.000	-999.	439.	74.3	0.03	1.09	1.00	5.31	320.	10.0	252.5	2.0
18	01	01	1	07	-28.4	0.223	-9.000	-9.000	-999.	258.	35.6	0.03	1.09	1.00	4.09	316.	10.0	252.0	2.0
18	01	01	1	08	-23.8	0.188	-9.000	-9.000	-999.	196.	25.5	0.03	1.09	0.72	3.71	306.	10.0	252.5	2.0
18	01	01	1	09	-3.1	0.312	-9.000	-9.000	-999.	418.	881.6	0.05	1.09	0.39	4.12	298.	10.0	253.8	2.0
18	01	01	1	10	44.9	0.380	0.727	0.016	312.	561.	-110.7	0.05	1.09	0.28	4.71	293.	10.0	254.2	2.0
18	01	01	1	11	80.2	0.375	0.912	0.016	344.	550.	-59.6	0.05	1.09	0.23	4.51	294.	10.0	255.9	2.0
18	01	01	1	12	99.1	0.334	1.008	0.016	378.	465.	-34.5	0.03	1.09	0.22	4.46	303.	10.0	257.0	2.0
18	01	01	1	13	100.4	0.365	1.049	0.016	417.	528.	-43.8	0.05	1.09	0.22	4.31	293.	10.0	258.1	2.0
18	01	01	1	14	84.0	0.356	1.030	0.017	472.	510.	-48.8	0.05	1.09	0.23	4.24	299.	10.0	259.9	2.0
18	01	01	1	15	51.0	0.304	0.882	0.017	488.	403.	-49.7	0.03	1.09	0.27	4.14	304.	10.0	259.9	2.0
18	01	01	1	16	4.9	0.297	0.405	0.017	490.	389.	-487.5	0.05	1.09	0.36	3.83	293.	10.0	260.4	2.0
18	01	01	1	17	-27.7	0.235	-9.000	-9.000	-999.	275.	42.5	0.05	1.09	0.64	3.76	290.	10.0	258.8	2.0
18	01	01	1	18	-27.6	0.221	-9.000	-9.000	-999.	249.	35.7	0.05	1.09	1.00	3.66	291.	10.0	258.1	2.0
18	01	01	1	19	-19.3	0.155	-9.000	-9.000	-999.	148.	17.6	0.03	1.09	1.00	3.40	303.	10.0	258.1	2.0
18	01	01	1	20	-11.9	0.101	-9.000	-9.000	-999.	78.	8.0	0.03	1.09	1.00	3.00	306.	10.0	257.5	2.0
18	01	01	1	21	-7.3	0.079	-9.000	-9.000	-999.	54.	6.2	0.03	1.09	1.00	2.35	305.	10.0	257.5	2.0
18	01	01	1	22	-8.2	0.084	-9.000	-9.000	-999.	59.	6.6	0.03	1.09						

```
1.00    2.50  309.   10.0  256.4    2.0
 18 01 01   1 23   -6.4  0.074 -9.000 -9.000 -999.   49.      5.8  0.03   1.09
1.00    2.20  319.   10.0  257.0    2.0
 18 01 01   1 24   -5.7  0.070 -9.000 -9.000 -999.   45.      5.6  0.03   1.09
1.00    2.01  337.   10.0  255.9    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 18 01 01 01   10.0 1  316.    4.95   255.4   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                   INCLUDING SOURCE(S):     STACK01     ,

                                    *** NETWORK ID: POL1     ;  NETWORK TYPE:
GRIDPOLR ***

                                        ** CONC OF STYRENE  IN PPM
                   **

 DIRECTION |                                                 DISTANCE (METERS)
 (DEGREES) |            2.00                    3.00                    4.00
          6.00                    8.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

      10.0 |      0.09000 (18022008)      0.20078 (18022005)      0.15465 (18100319)
     0.13197 (18090122)      0.09455 (18080323)
      20.0 |      0.08962 (18022007)      0.19887 (18103022)      0.15737 (18051219)
     0.11560 (18092023)      0.09460 (18051221)
      30.0 |      0.08509 (18050323)      0.19749 (18082502)      0.15198 (18082502)
     0.11345 (18082520)      0.08675 (18061724)
      40.0 |      0.08509 (18050323)      0.20120 (18080624)      0.15617 (18080624)
     0.09933 (18061820)      0.07754 (18061820)
      50.0 |      0.07674 (18012218)      0.18967 (18080701)      0.14361 (18080701)
     0.09574 (18051402)      0.06675 (18051403)
      60.0 |      0.08538 (18120203)      0.20264 (18092105)      0.11300 (18092105)
     0.07579 (18062002)      0.05858 (18100404)
```

70.0		0.08023	(18120216)		0.11360	(18120216)		0.10679 (18072006)
0.08065	(18050919)		0.05921	(18092518)				
80.0		0.07702	(18112519)		0.11378	(18112519)		0.10539 (18092106)
0.07274	(18102807)		0.05455	(18081624)				
90.0		0.09499	(18022423)		0.10735	(18123117)		0.10038 (18042723)
0.07426	(18042723)		0.05528	(18061205)				
100.0		0.09814	(18022422)		0.11816	(18101020)		0.10503 (18101020)
0.07054	(18101018)		0.04467	(18081701)				
110.0		0.10814	(18040318)		0.11569	(18101023)		0.10368 (18101023)
0.07583	(18072106)		0.04797	(18081701)				
120.0		0.09095	(18041818)		0.11356	(18040323)		0.10117 (18041819)
0.07807	(18060319)		0.05216	(18060319)				
130.0		0.05997	(18080702)		0.11156	(18080702)		0.10647 (18080702)
0.07509	(18060223)		0.05109	(18060223)				
140.0		0.05439	(18080702)		0.10190	(18080702)		0.09752 (18080702)
0.07603	(18030118)		0.04707	(18030118)				
150.0		0.01305	(18102017)		0.05456	(18102017)		0.06996 (18102017)
0.07827	(18092601)		0.04895	(18092601)				
160.0		0.00765	(18102017)		0.04102	(18102018)		0.06046 (18102018)
0.06312	(18092118)		0.05189	(18072020)				
170.0		0.00650	(18102018)		0.03722	(18102018)		0.05513 (18102018)
0.04637	(18072119)		0.04211	(18072119)				
180.0		0.00916	(18092818)		0.04793	(18092818)		0.03902 (18092818)
0.03458	(18092818)		0.02805	(18100407)				
190.0		0.00659	(18092818)		0.01337	(18092818)		0.02923 (18092818)
0.03241	(18092819)		0.02127	(18092819)				
200.0		0.00214	(18031924)		0.00693	(18031924)		0.02249 (18051520)
0.01955	(18051520)		0.01513	(18051520)				
210.0		0.00493	(18090818)		0.01119	(18090818)		0.01329 (18090818)
0.01873	(18031923)		0.01450	(18031923)				
220.0		0.00909	(18052701)		0.01684	(18052701)		0.01827 (18090818)
0.02393	(18090818)		0.01617	(18090818)				
230.0		0.00909	(18052701)		0.01684	(18052701)		0.01797 (18052701)
0.02369	(18090807)		0.00890	(18090807)				
240.0		0.00333	(18090804)		0.00982	(18090804)		0.02914 (18090804)
0.02190	(18090804)		0.00576	(18090804)				
250.0		0.00189	(18090801)		0.02195	(18090801)		0.02275 (18090801)
0.01823	(18090801)		0.00287	(18090801)				
260.0		0.00238	(18031605)		0.02236	(18031605)		0.02079 (18031606)
0.01674	(18042201)		0.00265	(18042201)				
270.0		0.00342	(18031607)		0.03037	(18031607)		0.05431 (18031607)
0.02946	(18031607)		0.00303	(18031607)				
280.0		0.02526	(18032405)		0.03041	(18032405)		0.05460 (18032405)
0.04263	(18032405)		0.00687	(18032405)				
290.0		0.04864	(18041402)		0.09370	(18032319)		0.10131 (18032319)
0.08359	(18081922)		0.01549	(18081922)				
300.0		0.09441	(18041402)		0.11995	(18041402)		0.09859 (18030508)
0.10555	(18061021)		0.03559	(18061021)				

310.0	0.08029 (18041402)	0.11445 (18050820)	0.15284 (18050820)	0.11072 (18071321)	0.05856 (18071222)
320.0	0.07599 (18122708)	0.19314 (18082003)	0.15419 (18083121)	0.11221 (18061124)	0.08250 (18100821)
330.0	0.07852 (18110405)	0.20678 (18100923)	0.15651 (18100918)	0.11920 (18090319)	0.08527 (18090321)
340.0	0.10953 (18041406)	0.19297 (18080421)	0.15856 (18080421)	0.11912 (18090419)	0.09807 (18090420)
350.0	0.10180 (18050119)	0.20886 (18050119)	0.15739 (18082621)	0.13272 (18061623)	0.09509 (18083122)
360.0	0.08784 (18050120)	0.20669 (18082819)	0.16064 (18082819)	0.13428 (18061722)	0.09789 (18080320)

*** AERMOD - VERSION 18081 *** *** Affton Athletic Practice Fields, Affton, MO, USA *** 02/22/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
*** 09:55:29

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STACK01 ,

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

** CONC OF STYRENE IN PPM **

DIRECTION (DEGREES)	DISTANCE (METERS) 15.00	20.00	45.00
10.0	0.05246 (18061702)	0.03423 (18061702)	0.01539 (18061602)
20.0	0.04619 (18080201)	0.03175 (18060720)	0.01536 (18061705)
30.0	0.04150 (18080403)	0.02986 (18081602)	0.01532 (18051323)
40.0	0.03882 (18051023)	0.02964 (18082604)	0.01544 (18053102)
50.0	0.03428 (18080303)	0.02675 (18080303)	0.01509 (18060703)
60.0	0.03246 (18052620)	0.02687 (18052620)	0.01521 (18052620)
70.0	0.03134 (18051019)	0.02586 (18051019)	0.01575 (18091719)
80.0	0.02829 (18051501)	0.02371 (18051501)	0.01533 (18091722)
90.0	0.02804 (18061205)	0.02449 (18091821)	0.01501 (18091823)
100.0	0.02845 (18051919)	0.02392 (18051919)	0.01521 (18070120)
110.0	0.02746 (18050920)	0.02306 (18050920)	0.01443 (18051906)
120.0	0.02681 (18092521)	0.02234 (18092521)	0.01449 (18060320)
130.0	0.02604 (18062219)	0.02240 (18062219)	0.01477 (18062220)

140.0	0.02744 (18100406)	0.02225 (18100406)	0.01543 (18071701)
150.0	0.02295 (18092607)	0.02180 (18081719)	0.01512 (18082122)
160.0	0.02540 (18072023)	0.02185 (18072023)	0.01509 (18070606)
170.0	0.02313 (18082123)	0.02252 (18082123)	0.01406 (18052006)
180.0	0.01678 (18100407)	0.01791 (18051619)	0.01348 (18072306)
190.0	0.01147 (18081819)	0.01415 (18081819)	0.01336 (18071706)
200.0	0.00857 (18051520)	0.01267 (18102317)	0.01388 (18051819)
210.0	0.00728 (18092202)	0.01080 (18092202)	0.01488 (18061321)
220.0	0.00644 (18090818)	0.01065 (18081119)	0.01531 (18081120)
230.0	0.00555 (18090807)	0.00997 (18090720)	0.01590 (18052219)
240.0	0.00508 (18090722)	0.00997 (18090721)	0.01572 (18070220)
250.0	0.00384 (18090801)	0.00919 (18091518)	0.01564 (18070221)
260.0	0.00389 (18042119)	0.00961 (18042119)	0.01489 (18050623)
270.0	0.00381 (18071901)	0.01010 (18071901)	0.01502 (18100704)
280.0	0.00403 (18062520)	0.00959 (18071823)	0.01572 (18083020)
290.0	0.00485 (18081922)	0.01002 (18081922)	0.01565 (18070320)
300.0	0.00777 (18072906)	0.01266 (18071306)	0.01457 (18070321)
310.0	0.01050 (18081920)	0.01222 (18081421)	0.01437 (18071520)
320.0	0.01563 (18081923)	0.01409 (18081923)	0.01287 (18070402)
330.0	0.02772 (18061020)	0.01830 (18061020)	0.01402 (18063003)
340.0	0.04376 (18093019)	0.03000 (18093019)	0.01482 (18063004)
350.0	0.04996 (18090423)	0.03563 (18090423)	0.01528 (18090423)
360.0	0.05030 (18051320)	0.03573 (18070922)	0.01523 (18070922)

*** AERMOD - VERSION 18081 *** *** Affton Athletic Practice Fields, Affton, MO, USA *** 02/22/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
*** 09:55:29

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 8TH HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STACK01 ,

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

** CONC OF STYRENE IN PPM **

DIRECTION (DEGREES)	DISTANCE (METERS) 2.00	3.00	4.00	6.00	8.00
10.0	0.06209 (18050220)	0.18794 (18041122)	0.14622 (18041119)		

```
0.12725 (18100119)      0.09119 (18100119)
 20.0 |      0.05322 (18050319)      0.18295 (18100321)      0.14881 (18051119)
0.10616 (18100321)      0.09110 (18061723)
 30.0 |      0.04817 (18082424)      0.17647 (18082424)      0.14419 (18120202)
0.10844 (18050303)      0.08262 (18052523)
 40.0 |      0.04181 (18050404)      0.15146 (18100606)      0.13678 (18092103)
0.09194 (18092103)      0.07434 (18051304)
 50.0 |      0.04127 (18092105)      0.14552 (18120207)      0.12568 (18012220)
0.08637 (18062102)      0.06377 (18051402)
 60.0 |      0.06553 (18120205)      0.18007 (18012222)      0.09968 (18120203)
0.07209 (18100405)      0.05348 (18031422)
 70.0 |      0.06334 (18112518)      0.10299 (18112518)      0.09773 (18092106)
0.07202 (18110417)      0.05121 (18110602)
 80.0 |      0.05455 (18012304)      0.09230 (18122802)      0.09526 (18122802)
0.06814 (18061204)      0.05045 (18102807)
 90.0 |      0.05470 (18041506)      0.09886 (18101019)      0.09374 (18051921)
0.06654 (18031506)      0.05048 (18042723)
100.0 |      0.07676 (18101020)      0.10679 (18022423)      0.09473 (18030720)
0.06689 (18122817)      0.04283 (18123121)
110.0 |      0.07482 (18041518)      0.10933 (18041607)      0.09612 (18041524)
0.06657 (18012317)      0.04398 (18120303)
120.0 |      0.07422 (18040320)      0.10632 (18040322)      0.09650 (18101103)
0.07091 (18041820)      0.04296 (18030704)
130.0 |      0.04469 (18112523)      0.07950 (18112604)      0.08351 (18011124)
0.06978 (18080702)      0.04502 (18030701)
140.0 |      0.02602 (18011118)      0.07497 (18011204)      0.08816 (18011203)
0.07103 (18041903)      0.04568 (18101502)
150.0 |      0.00312 (18092601)      0.02606 (18011208)      0.04770 (18011221)
0.06779 (18031318)      0.04422 (18022105)
160.0 |      0.00259 (18072119)      0.02251 (18072119)      0.04409 (18072119)
0.05194 (18072119)      0.04454 (18041904)
170.0 |      0.00271 (18040620)      0.02272 (18040622)      0.04399 (18040620)
0.03891 (18040621)      0.03697 (18033123)
180.0 |      0.00271 (18040701)      0.02337 (18040620)      0.02457 (18040701)
0.02932 (18033120)      0.02431 (18040704)
190.0 |      0.00265 (18121420)      0.00807 (18121420)      0.02300 (18040619)
0.02725 (18102020)      0.01816 (18121423)
200.0 |      0.00134 (18121421)      0.00404 (18032001)      0.01436 (18092124)
0.01342 (18092819)      0.01059 (18031920)
210.0 |      0.00170 (18092820)      0.00543 (18090822)      0.00865 (18092201)
0.01691 (18090819)      0.01304 (18092201)
220.0 |      0.00184 (18090901)      0.00640 (18090901)      0.01016 (18090901)
0.01704 (18090822)      0.01316 (18090822)
230.0 |      0.00209 (18090821)      0.00630 (18090821)      0.00859 (18090818)
0.01513 (18103124)      0.00602 (18090804)
240.0 |      0.00148 (18090721)      0.00497 (18090806)      0.01625 (18090806)
0.01464 (18070620)      0.00405 (18031108)
250.0 |      0.00065 (18090724)      0.01010 (18090724)      0.01322 (18090724)
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	0.01246 (18042223)	0.00197 (18090722)		
260.0	0.00101 (18031603)	0.01247 (18042119)	0.01421 (18030921)	0.01429 (18030921)
	0.00229 (18030921)			
270.0	0.00149 (18032406)	0.01749 (18120102)	0.03806 (18120102)	0.02183 (18120102)
	0.00217 (18031018)			
280.0	0.01929 (18120103)	0.02282 (18032322)	0.04338 (18120103)	0.03729 (18032320)
	0.00549 (18041806)			
290.0	0.02505 (18032402)	0.07417 (18032401)	0.09111 (18031618)	0.07679 (18122618)
	0.01372 (18032323)			
300.0	0.02834 (18032324)	0.07487 (18032324)	0.08541 (18030423)	0.09181 (18052921)
	0.03159 (18121917)			
310.0	0.04527 (18110317)	0.08988 (18122708)	0.13423 (18030504)	0.09834 (18032619)
	0.05287 (18100502)			
320.0	0.05567 (18110321)	0.18112 (18071422)	0.14137 (18100921)	0.10800 (18100907)
	0.07698 (18090320)			
330.0	0.06751 (18041406)	0.19016 (18050824)	0.14337 (18050901)	0.10837 (18100822)
	0.08318 (18090319)			
340.0	0.05845 (18050901)	0.18345 (18041322)	0.14640 (18043021)	0.11009 (18062920)
	0.09000 (18062421)			
350.0	0.05984 (18022001)	0.18204 (18080520)	0.14394 (18080422)	0.12675 (18050302)
	0.09261 (18062923)			
360.0	0.06269 (18082819)	0.19513 (18050320)	0.14973 (18082720)	0.12875 (18070102)
	0.09104 (18041302)			

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 8TH HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STACK01 ,

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

** CONC OF STYRENE IN PPM **

DIRECTION (DEGREES)	DISTANCE (METERS) 15.00	20.00	45.00
10.0	0.04889 (18080124)	0.03228 (18100219)	0.01449 (18082703)
20.0	0.04393 (18100218)	0.03073 (18081705)	0.01425 (18061102)

30.0	0.04043 (18081602)	0.02894 (18051224)	0.01389 (18061005)
40.0	0.03638 (18061821)	0.02778 (18053102)	0.01353 (18051024)
50.0	0.03171 (18100403)	0.02430 (18051021)	0.01429 (18052005)
60.0	0.03075 (18062105)	0.02463 (18082102)	0.01359 (18061224)
70.0	0.02828 (18060420)	0.02333 (18062624)	0.01342 (18091720)
80.0	0.02558 (18050621)	0.02174 (18022304)	0.01268 (18042701)
90.0	0.02566 (18110618)	0.02221 (18012708)	0.01282 (18051502)
100.0	0.02454 (18012324)	0.01997 (18061303)	0.01266 (18102002)
110.0	0.02509 (18013117)	0.02196 (18062204)	0.01273 (18031121)
120.0	0.02330 (18122821)	0.02015 (18012402)	0.01374 (18060419)
130.0	0.02394 (18032020)	0.02026 (18030120)	0.01311 (18031721)
140.0	0.02381 (18031719)	0.01965 (18101118)	0.01355 (18030121)
150.0	0.02215 (18060301)	0.02001 (18042803)	0.01295 (18072205)
160.0	0.02268 (18103104)	0.02078 (18082201)	0.01314 (18072022)
170.0	0.02079 (18032907)	0.02032 (18103105)	0.01229 (18121520)
180.0	0.01500 (18040606)	0.01545 (18042404)	0.01208 (18082919)
190.0	0.00995 (18031921)	0.01195 (18031921)	0.01127 (18120716)
200.0	0.00680 (18092203)	0.01073 (18110105)	0.01252 (18022206)
210.0	0.00622 (18092821)	0.00968 (18090823)	0.01310 (18022207)
220.0	0.00561 (18092207)	0.00869 (18090903)	0.01353 (18073020)
230.0	0.00406 (18070620)	0.00877 (18071720)	0.01330 (18022324)
240.0	0.00402 (18103124)	0.00892 (18092903)	0.01385 (18090622)
250.0	0.00332 (18042120)	0.00872 (18042122)	0.01405 (18051522)
260.0	0.00343 (18090801)	0.00884 (18031603)	0.01393 (18072919)
270.0	0.00336 (18031606)	0.00870 (18113020)	0.01367 (18061120)
280.0	0.00349 (18071821)	0.00841 (18062520)	0.01388 (18052306)
290.0	0.00381 (18121917)	0.00845 (18061123)	0.01434 (18072905)
300.0	0.00645 (18112816)	0.01079 (18010921)	0.01299 (18092323)
310.0	0.00910 (18110317)	0.01137 (18040818)	0.01229 (18123018)
320.0	0.01461 (18071320)	0.01331 (18082406)	0.01173 (18052420)
330.0	0.02642 (18100822)	0.01748 (18100822)	0.01285 (18070404)
340.0	0.04071 (18090322)	0.02846 (18070422)	0.01386 (18100804)
350.0	0.04627 (18082805)	0.03271 (18082805)	0.01428 (18071504)
360.0	0.04698 (18092720)	0.03310 (18091119)	0.01423 (18092720)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF STYRENE IN PPM

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                                                                              DATE
                                                                 NETWORK
GROUP ID                                  AVERAGE CONC      (YYMMDDHH)              RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       0.20886  ON 18050119: AT (  731593.01,
4268610.18,   143.90,   143.90,    0.00)  GP  POL1
         HIGH   8TH HIGH VALUE IS       0.19513  ON 18050320: AT (  731593.53,
4268610.23,   143.90,   143.90,    0.00)  GP  POL1


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION  18081 ***   *** Affton Athletic Practice Fields, Affton,
MO, USA                      ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                       ***        09:55:29

                                  PAGE  14
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of           22 Informational Message(s)

 A Total of         8760 Hours Were Processed

 A Total of           10 Calm Hours Identified

 A Total of           12 Missing Hours Identified (  0.14 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
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**********************************
*** AERMOD Finishes Successfully ***
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* AERMOD ( 18081): Affton Athletic Practice Fields, Affton, MO, USA
      02/22/20
* AERMET ( 18081): Styrene Emission Modeling
      09:55:29
* MODELING OPTIONS USED:   RegDFAULT  CONC  ELEV  RURAL
*         PLOT FILE OF  HIGH   1ST HIGH  1-HR VALUES FOR SOURCE GROUP: ALL
*         FOR A TOTAL OF   288 RECEPTORS.
*         FORMAT: (3(1X,F13.5),3(1X,F8.2),3X,A5,2X,A8,2X,A5,5X,A8,2X,I8)


*        X             Y      AVERAGE CONC    ZELEV    ZHILL    ZFLAG    AVE     GRP
     RANK     NET ID   DATE(CONC)
* _____________  _____________  _____________   _______   _______   _______  _______
_________  _________  _________  _________
  731593.87730 4268609.19962       0.09000   143.80   143.80     0.00    1-HR  ALL
      1ST     POL1      18022008
  731594.05094 4268610.18442       0.20078   143.90   143.90     0.00    1-HR  ALL
      1ST     POL1      18022005
  731594.22459 4268611.16923       0.15465   143.90   143.90     0.00    1-HR  ALL
      1ST     POL1      18100319
  731594.57189 4268613.13885       0.13197   144.10   144.10     0.00    1-HR  ALL
      1ST     POL1      18090122
  731594.91919 4268615.10846       0.09455   144.20   144.20     0.00    1-HR  ALL
      1ST     POL1      18080323
  731596.13472 4268622.00212       0.05246   144.80   144.80     0.00    1-HR  ALL
      1ST     POL1      18061702
  731597.00296 4268626.92616       0.03423   144.70   144.70     0.00    1-HR  ALL
      1ST     POL1      18061702
  731601.34417 4268651.54635       0.01539   144.10   144.10     0.00    1-HR  ALL
      1ST     POL1      18061602
  731594.21404 4268609.10939       0.08962   143.80   143.80     0.00    1-HR  ALL
      1ST     POL1      18022007
  731594.55606 4268610.04908       0.19887   143.90   143.90     0.00    1-HR  ALL
      1ST     POL1      18103022
  731594.89808 4268610.98877       0.15737   143.90   143.90     0.00    1-HR  ALL
      1ST     POL1      18051219
  731595.58212 4268612.86816       0.11560   144.00   144.00     0.00    1-HR  ALL
      1ST     POL1      18092023
  731596.26616 4268614.74754       0.09460   144.20   144.20     0.00    1-HR  ALL
      1ST     POL1      18051221
  731598.66030 4268621.32539       0.04619   144.60   144.60     0.00    1-HR  ALL
      1ST     POL1      18080201
  731600.37040 4268626.02385       0.03175   144.60   144.60     0.00    1-HR  ALL
      1ST     POL1      18060720
  731608.92091 4268649.51617       0.01536   144.20   144.20     0.00    1-HR  ALL
      1ST     POL1      18061705
  731594.53000 4268608.96205       0.08509   143.80   143.80     0.00    1-HR  ALL
      1ST     POL1      18050323
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731595.03000 4268609.82808 0.19749 143.90 143.90 0.00 1-HR ALL
1ST POL1 18082502
731595.53000 4268610.69410 0.15198 143.90 143.90 0.00 1-HR ALL
1ST POL1 18082502
731596.53000 4268612.42615 0.11345 144.00 144.00 0.00 1-HR ALL
1ST POL1 18082520
731597.53000 4268614.15820 0.08675 144.10 144.10 0.00 1-HR ALL
1ST POL1 18061724
731601.03000 4268620.22038 0.04150 144.40 144.40 0.00 1-HR ALL
1ST POL1 18080403
731603.53000 4268624.55051 0.02986 144.40 144.40 0.00 1-HR ALL
1ST POL1 18081602
731616.03000 4268646.20114 0.01532 144.30 144.30 0.00 1-HR ALL
1ST POL1 18051323
731594.81558 4268608.76209 0.08509 143.80 143.80 0.00 1-HR ALL
1ST POL1 18050323
731595.45836 4268609.52813 0.20120 143.90 143.90 0.00 1-HR ALL
1ST POL1 18080624
731596.10115 4268610.29418 0.15617 143.90 143.90 0.00 1-HR ALL
1ST POL1 18080624
731597.38673 4268611.82627 0.09933 143.90 143.90 0.00 1-HR ALL
1ST POL1 18061820
731598.67230 4268613.35836 0.07754 144.00 144.00 0.00 1-HR ALL
1ST POL1 18061820
731603.17181 4268618.72067 0.03882 144.20 144.20 0.00 1-HR ALL
1ST POL1 18051023
731606.38575 4268622.55089 0.02964 144.30 144.30 0.00 1-HR ALL
1ST POL1 18082604
731622.45544 4268641.70200 0.01544 144.20 144.20 0.00 1-HR ALL
1ST POL1 18053102
731595.06209 4268608.51558 0.07674 143.80 143.80 0.00 1-HR ALL
1ST POL1 18012218
731595.82813 4268609.15836 0.18967 143.90 143.90 0.00 1-HR ALL
1ST POL1 18080701
731596.59418 4268609.80115 0.14361 143.90 143.90 0.00 1-HR ALL
1ST POL1 18080701
731598.12627 4268611.08673 0.09574 143.90 143.90 0.00 1-HR ALL
1ST POL1 18051402
731599.65836 4268612.37230 0.06675 143.90 143.90 0.00 1-HR ALL
1ST POL1 18051403
731605.02067 4268616.87181 0.03428 144.00 144.00 0.00 1-HR ALL
1ST POL1 18080303
731608.85089 4268620.08575 0.02675 144.00 144.00 0.00 1-HR ALL
1ST POL1 18080303
731628.00200 4268636.15544 0.01509 144.10 144.10 0.00 1-HR ALL
1ST POL1 18060703
731595.26205 4268608.23000 0.08538 143.80 143.80 0.00 1-HR ALL
1ST POL1 18120203

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731596.12808 4268608.73000       0.20264   143.90   143.90     0.00    1-HR  ALL
    1ST     POL1      18092105
731596.99410 4268609.23000       0.11300   143.80   143.80     0.00    1-HR  ALL
    1ST     POL1      18092105
731598.72615 4268610.23000       0.07579   143.80   143.80     0.00    1-HR  ALL
    1ST     POL1      18062002
731600.45820 4268611.23000       0.05858   143.80   143.80     0.00    1-HR  ALL
    1ST     POL1      18100404
731606.52038 4268614.73000       0.03246   143.90   143.90     0.00    1-HR  ALL
    1ST     POL1      18052620
731610.85051 4268617.23000       0.02687   143.90   143.90     0.00    1-HR  ALL
    1ST     POL1      18052620
731632.50114 4268629.73000       0.01521   144.10   144.10     0.00    1-HR  ALL
    1ST     POL1      18052620
731595.40939 4268607.91404       0.08023   143.80   143.80     0.00    1-HR  ALL
    1ST     POL1      18120216
731596.34908 4268608.25606       0.11360   143.80   143.80     0.00    1-HR  ALL
    1ST     POL1      18120216
731597.28877 4268608.59808       0.10679   143.80   143.80     0.00    1-HR  ALL
    1ST     POL1      18072006
731599.16816 4268609.28212       0.08065   143.80   143.80     0.00    1-HR  ALL
    1ST     POL1      18050919
731601.04754 4268609.96616       0.05921   143.80   143.80     0.00    1-HR  ALL
    1ST     POL1      18092518
731607.62539 4268612.36030       0.03134   143.80   143.80     0.00    1-HR  ALL
    1ST     POL1      18051019
731612.32385 4268614.07040       0.02586   143.80   143.80     0.00    1-HR  ALL
    1ST     POL1      18051019
731635.81617 4268622.62091       0.01575   144.00   144.00     0.00    1-HR  ALL
    1ST     POL1      18091719
731595.49962 4268607.57730       0.07702   143.80   143.80     0.00    1-HR  ALL
    1ST     POL1      18112519
731596.48442 4268607.75094       0.11378   143.80   143.80     0.00    1-HR  ALL
    1ST     POL1      18112519
731597.46923 4268607.92459       0.10539   143.80   143.80     0.00    1-HR  ALL
    1ST     POL1      18092106
731599.43885 4268608.27189       0.07274   143.80   143.80     0.00    1-HR  ALL
    1ST     POL1      18102807
731601.40846 4268608.61919       0.05455   143.80   143.80     0.00    1-HR  ALL
    1ST     POL1      18081624
731608.30212 4268609.83472       0.02829   143.70   143.70     0.00    1-HR  ALL
    1ST     POL1      18051501
731613.22616 4268610.70296       0.02371   143.70   143.70     0.00    1-HR  ALL
    1ST     POL1      18051501
731637.84635 4268615.04417       0.01533   143.90   143.90     0.00    1-HR  ALL
    1ST     POL1      18091722
731595.53000 4268607.23000       0.09499   143.80   143.80     0.00    1-HR  ALL
    1ST     POL1      18022423
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731596.53000 4268607.23000 0.10735 143.80 143.80 0.00 1-HR ALL
1ST POL1 18123117
731597.53000 4268607.23000 0.10038 143.80 143.80 0.00 1-HR ALL
1ST POL1 18042723
731599.53000 4268607.23000 0.07426 143.80 143.80 0.00 1-HR ALL
1ST POL1 18042723
731601.53000 4268607.23000 0.05528 143.80 143.80 0.00 1-HR ALL
1ST POL1 18061205
731608.53000 4268607.23000 0.02804 143.70 143.70 0.00 1-HR ALL
1ST POL1 18061205
731613.53000 4268607.23000 0.02449 143.70 143.70 0.00 1-HR ALL
1ST POL1 18091821
731638.53000 4268607.23000 0.01501 143.90 143.90 0.00 1-HR ALL
1ST POL1 18091823
731595.49962 4268606.88270 0.09814 143.80 143.80 0.00 1-HR ALL
1ST POL1 18022422
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731593.00906 4268610.18442 0.20886 143.90 143.90 0.00 1-HR ALL
1ST POL1 18050119
731592.83541 4268611.16923 0.15739 143.90 143.90 0.00 1-HR ALL
1ST POL1 18082621
731592.48811 4268613.13885 0.13272 144.10 144.10 0.00 1-HR ALL
1ST POL1 18061623
731592.14081 4268615.10846 0.09509 144.20 144.20 0.00 1-HR ALL
1ST POL1 18083122
731590.92528 4268622.00212 0.04996 144.60 144.60 0.00 1-HR ALL
1ST POL1 18090423
731590.05704 4268626.92616 0.03563 144.80 144.80 0.00 1-HR ALL
1ST POL1 18090423
731585.71583 4268651.54635 0.01528 143.80 143.80 0.00 1-HR ALL
1ST POL1 18090423
731593.53000 4268609.23000 0.08784 143.80 143.80 0.00 1-HR ALL
1ST POL1 18050120

731593.53000 4268610.23000 0.20669 143.90 143.90 0.00 1-HR ALL
1ST POL1 18082819
731593.53000 4268611.23000 0.16064 143.90 143.90 0.00 1-HR ALL
1ST POL1 18082819
731593.53000 4268613.23000 0.13428 144.10 144.10 0.00 1-HR ALL
1ST POL1 18061722
731593.53000 4268615.23000 0.09789 144.20 144.20 0.00 1-HR ALL
1ST POL1 18080320
731593.53000 4268622.23000 0.05030 144.70 144.70 0.00 1-HR ALL
1ST POL1 18051320
731593.53000 4268627.23000 0.03573 144.80 144.80 0.00 1-HR ALL
1ST POL1 18070922
731593.53000 4268652.23000 0.01523 143.80 143.80 0.00 1-HR ALL
1ST POL1 18070922

```
;- meta
version=2
; (That line must be the first non-comment and the value must be 2.)
;
; The following is not case sensitive.
;

;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- input parameters
;  ================
;
;- input for origin of coordinate system
;  =====================================
;
; There are three options for the model grid coordinate system:
;
; 1) X and Y are relative coordinates in meters: the UTM coordinates in
;    AERPLOT.inp should be set to the "zero origin" of that coordinate
;    system to show the plot in the right location within the browser.
;
; 2) X and Y parameters are absolute UTM coordinates: coordinates
;    in AERPLOT.inp should be set to zero.
;
; 3) X and Y are not relative to a real grographic location: UTM
;    coordinates in AERPLOT.inp can be used to select a neutral
;    background (e.g., the ocean, or a glacier field) for easy display.
;
;
; State where the coordinate system's origin is --
; either in "UTM" (in meters) or LatLong (in degrees, using decimal fractions).
origin=UTM
;origin=LL
;
;- FOR UTM
;  -------
;
; The four parameters below will be used for 'origin=UTM'.  (If origin=LL, they do
not matter.)
;
; easting
; northing
; utmZone
; inNorthernHemisphere
;
; The program converts UTM coordinates into latitude and longitude
; for display in Google Earth earth browser. Also note that UTM
; coordinates require the UTM "zone" to be set in AERPLOT.inp.
```

```
;
; PLEASE NOTE: If the whole UTM is in the .PLT file, then a UTM of (0,0) in the
;              correct zone is appropriate. But if you were to want to use
;              LatLong with such a file, you would want to specify the same
;              spot. To avoid having to look up the longitude of the center
;              of the different zones, please just stick to a UTM of (0,0).
easting=0
northing=0
utmZone=15
inNorthernHemisphere=true
;
; 'inNorthernHemisphere' needs to know if this run is in the Southern Hemisphere or
not.
; If right on the equator, set this to True.
;
;- FOR LL
;  ------
;
; These two parameters will be used for 'origin=LL'.  (If origin=UTM, they do not
matter.)
originLatitude =0.0
originLongitude=-84.0
; If southern hemisphere, originLatitude will be negative.
; If western  hemisphere, originLongitude will be negative.
;
; Note that all seven UTM+LL parameters must be set,
; but only five will be used for UTM, or three for LL will be used.
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- altitude parameters
;  ====================
;
; Receptors can be plotted relative to the ground,
; or at a specific height level above or below sea level.
; If the ZELEV field can be isolated, "flagpole" also can be used as
relativeToGround .
;
altitudeChoice = relativeToGround
; or
; altitudeChoice = absolute
; or
; altitudeChoice = flagpole
;
; The altitude of the receptors is offset from the height indicated in the .PLT
file.
; ( Note: Specify an expected altitude even if 'flagpole' is the altitudeChoice.
;         This parameter is part of the calculation for the height of the initial
```

```
viewpoint.)
altitude=0
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- the source data file
;  ====================
;  (output from aermod, presumably)
;
; The input file name, that is, the plotfile.
PlotFileName              =STL01_1hr.PLT

; If one wishes to plot the sources as well, set this to the aermod.inp file.
; If not, leave it empty.
SourceDisplayInputFileName=

;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- output parameters
;  =================
;
; The output file names.
;
; Pick a name for this run, and it will be applied to a number of files,
; plus the objects that may be manipulated within Google Earth.
;
OutputFileNameBase        =1hrStyrene
;
; The name that will be displayed in Google Earth for the dataset.
NameDisplayedInGoogleEarth=StyreneEmission1hrSite4
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- control parameters on the procedure
;  ===================================
;
; To assure the user that the program has not halted, progress
; meters are provided that show up in a text window.
;
sDisableProgressMeter              = false
;
;
; This parameter controls whether the program will
; automatically launch Google Earth after processing the
; .PLT file ("TRUE") or not ("FALSE").
;
```

```
sDisableEarthBrowser               = false
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- receptor display
;  ================
;
; This IconScale parameter "scales" the circles that are drawn in
; the Earth Browser for each receptor. If too big, the display can
; become so cramped that it becomes useless.
;
;             For Google Earth and ArcGIS,
;             The suggested icon scale default is 0.70 .
IconScale     = 0.40
;             (For the NASA "WorldWind" earth browser, a value of
;              IconScale = 1.99 may look better.)
;
; The sIconSetChoice color scheme for the concentration scale. The
; red and green is less preferred because a common color blindness
; won't see the difference; however, it is provided for use.
;
sIconSetChoice=redBlue
;sIconSetChoice=redGreen
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- concentration binning  (for receptors and contours)
;  =====================
;
; The user has the choice between a "Linear" or "Log" color scale. The user
; also can provide one of their own.
;
; There must, however, be eleven "levels" or thresholds that will
; define the ranges for the twelve bins.
minbin=data
maxbin=data
binningChoice = Linear
; or binningChoice = Linear
; or binningChoice = custom
;
;
; These examples could be realistic binning schemes.
customBinningElevenLevels=1,2,3,4,5,6,7,8,9,10,11
;customBinningElevenLevels=.0001,.0003,.0005,.0007,.001, .004,.008,.01,.02,.03,.05
;
; If custom binning is not used, one may prefer to supply this value, "na",
; to help indicate that custom binning is not used.
;customBinningElevenLevels=na
```

```
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- concentration legend   (for receptors and contours)
;  ====================
;
; The program will insert this line into the HTML used to create the legend.
;
; The following will not show up onscreen in the initial dump of variables.
contourLegendTitleHTML
=C O N C E N T R A T I O 
;N S
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- line mappings          (for contours and gradients)
;  =============
;
; To plot any of the lines, an evenly spaced grid needs to be constructed
; by means of a combination of interpolating the data and extending the
; data.
;
; For particularly large model domains, the "numberOfGridCols" and
; "numberOfGridRows" may need to be increased beyond the default
; values of 400.
;
numberOfGridCols                   = 400
numberOfGridRows                   = 400
;
;
; Normally, the 'numberOfTimesToSmoothContourSurface=' parameter
; should be set to one. One smoothing can make the contours much
; less chaotic, while a second one can result in moving the
; contours farther from their proper locations according to the
; receptor values. However, a setting greater than one may be
; beneficial when there is greater spacing between receptors.
;
numberOfTimesToSmoothContourSurface = 0
; Note that the smoothing applies to both the contour and the gradient.
;
; Note: although these last three parameters are not frequently
; used, they are required to be present.
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- contour parameters
```

```
;  ==================
;
; The parameter 'makeContours' enables ("TRUE") or disables
; ("FALSE") contours.
;
makeContours                        = true
;
;
; When drawing lines, each little bit of a line will only
; be drawn if both ends of the segment are within
; this many meters of one of the plot file's receptors.
;
; The contour lines seem less sensitive to the edge than the gradient.
; (If set to 0.0 or less, most lines won't be drawn.)
; (If set to 9999999, almost the diameter of the Earth, then all lines will be
drawn.)
;
contourExtension =  9999999
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;
;- gradient parameters
;  ===================
;
; The parameter 'makeGradients' enables ("TRUE") or disables
; ("FALSE") gradients.
;
makeGradients                       = false
;
;
; When drawing lines, each little bit of a line will only
; be drawn if both ends of the segment are within
; this many meters of one of the plot file's receptors.
gradientExtension=  9999999
; (If set to 0.0 or less, most lines won't be drawn.)
; (If set to 9999999, almost the diameter of the Earth, then all lines will be
drawn.)
;
;
;- gradient binning
;  ================
;
; While contour lines share binning with the receptors, gradient
; binning is done separately.
;
; The user has the choice between a "Linear" or "Log" color scale. The user
```

```
; also can provide one of their own.
;
; There must, however, be eleven "levels" or thresholds that will
; define the ranges for the twelve bins.
;
gradientMaxBin=.5e-9
gradientMinBin=.1e-11
gradientBinningChoice=Log
; or gradientBinningChoice = Linear
; or gradientBinningChoice = custom
;
; These examples could be realistic binning schemes.
customGradBinElevenLevels=1,2,3,4,5,6,7,8,9,10,11
;customGradBinElevenLevels=.0001,.0003,.0005,.0007,.001, .004,.008,.01,.02,.03,.05
;
; If custom binning is not used, one may prefer to supply this value, "na",
; to help indicate that custom binning is not used.
;customGradBinElevenLevels=na
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- gradient legend (not generated if gradients are not generated)
;  ===============
;
; The program will insert this line into the HTML used to create the legend.
;
; The following will not show up onscreen in the initial dump of variables.
gradientLegendTitleHTML=Gradient Magnitudes
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- hidden_grid
;  ===========
; For display of evenly spaced grid. Debugging purposes only.
;
; Warning: This will substantially increase the size of the
; resulting KMZ file. It is not an extrapolated grid.
;
provideEvenlySpacedInterpolatedGrid = false
;
; end
```

```
startend 01 2018 12 2018
ifwgroup y 09 26 2006

DATAFILE STARTING
1-MIN\64050KSTL201801.dat
1-MIN\64050KSTL201802.dat
1-MIN\64050KSTL201803.dat
1-MIN\64050KSTL201804.dat
1-MIN\64050KSTL201805.dat
1-MIN\64050KSTL201806.dat
1-MIN\64050KSTL201807.dat
1-MIN\64050KSTL201808.dat
1-MIN\64050KSTL201809.dat
1-MIN\64050KSTL201810.dat
1-MIN\64050KSTL201811.dat
1-MIN\64050KSTL201812.dat
1-MIN\64050KSTL201901.dat
DATAFILE FINISHED

SURFDATA STARTING
..\AERMET\SURFACE\724340-13994_18
SURFDATA FINISHED

OUTFILES STARTING
hourfile STL_01_1MIN_18.DAT
summfile STL_01_1MIN_18_SUMM.DAT
compfile STL_01_1MIN_18_COMP.DAT
OUTFILES FINISHED
```

```
 Generated by AERSURFACE, dated 13016                        07/11/2019 22:13

 Land Cover input file opened: missouri_NLCD_flat_072100.bin
 State Postal Code: MO
 AERMET-formatted output file opened: STL01_AERSURF.OUT
 Type of Coordinates Entered: LATLON
   Latitude (decimal degrees):     38.750000
   Longitude (decimal degrees):   -90.370000
   Datum: NAD83
 Study Radius for surface roughness (km):     1.0
 Is surface roughness varied by sector? Y
  # Sectors = 12
    Sector beginning directions:     0   30   60   90  120  150  180  210  240  270
300  330
 Temporal resolution (ANNUAL, MONTHLY, SEASONAL): MONTHLY
 Continuous snow cover for at least one month? N
 Reassign months to seasons? N
 Is site located at an airport? Y
 Is site considered an arid region? N
 Characterization of surface moisture at site: Average
 Log file opened: STL01_AERSURF.log


 Based on the following input coordinates, converted if needed to LATLON/NAD83:
    Latitude:     38.750000
    Longitude:   -90.370000

 The study center is located at
    Albers projection X-coordinate:    484441.
    Albers projection Y-coordinate:   1761243.
    Row in data file:    6763
    Column in data file:   15529

 Rotation of Albers grid to true North (deg):   -3.39434


 Land cover grid for Albedo and Bowen Ratio.
 These data are included in: albedo_bowen_domain.txt

    1766250. : 81 81 82 82 82 82 82 82 82 82 82 82 82 81 81 81 81 42 81 81 81 81 81
83 83 85 85 85 85 85 85 85 85 85 21 82 82 82 82 82 82 82 82 82 85 85 85 85 85 85 85
85 83 81 85 85 85 85 85 85 85 83 83 83 83 83 83 83 85 85 83 83 83 83 83 85 21 85 85
85 85 85 85 85 85 85 85 85 85 85 85 85 85 23 85 23 23 85 85 23 85 85 21 41 85 85 85
85 85 85 41 85 85 85 85 21 21 85 85 21 85 85 85 21 21 21 41 41 41 21 22 85 85 85 85
85 85 23 23 23 23 23 21 85 23 23 22 21 21 23 22 22 22 23 22 22 85 22 21 21 21 21 85
85 85 85 85 85 85 22 21 21 22 22 21 21 21 23 22 22 22 22 22 22 22 85 22 23 22 85 21
21 23 23 21 22 22 85 22 22 22 22 22 22 22 22 22 22 22 22 22 22 22 22 22 22 85 23 22 85
22 23 22 22 85 85 21 22 22 21 85 85 23 85 22 85 23 23 23 23 23 23 85 23 22 21 85 23
```

STL01_AMET_S1.INP

```
JOB
  REPORT      STL01_AMET_S1.RPT
  MESSAGES    STL01_AMET_S1.MSG


UPPERAIR
  DATA        UA\13995_STL_18.FSL  FSL
  EXTRACT     UAEXOUT_STL01.DSK
  XDATES      18/01/01 TO 19/01/01
  LOCATION    13995  32.47N  93.82W  6
  QAOUT       UAQAOUT_STL01.DSK
  AUDIT       UATT  UAWS  UALR  UAWD


SURFACE
  DATA        SURFACE\724340-13994_18 ISHD
  EXTRACT     SFEXOUT_STL01.DSK
  XDATES      18/01/01  TO  19/01/01
  LOCATION    13994 38.75N 90.37W 6 173.0
  QAOUT       SFQAOUT_STL01.DSK
  AUDIT       SLVP PRES CLHT TSKC PWTH ASKY HZVS DPTP RHUM
  NO_MISSING  PRES
```

STL01_AMET_S2.INP

```
JOB
  REPORT      STL01_AMET_S2.RPT
  MESSAGES    STL01_AMET_S2.MSG

UPPERAIR
  QAOUT       UAQAOUT_STL01.DSK

SURFACE
  QAOUT       SFQAOUT_STL01.DSK

ASOS1MIN      ..\AERMINUTE\STL_01_1MIN_18.DAT

MERGE
  OUTPUT      MERGE_STL01.DSK
  XDATES      18/01/01 18/12/31
```

STL01_AMET_S3.INP

```
JOB
  REPORT      STL01_AMET_S3.RPT
  MESSAGES    STL01_AMET_S3.MSG

METPREP
  DATA        MERGE_STL01.DSK
  METHOD      REFLEVEL SUBNWS
  METHOD      WIND_DIR RANDOM
  NWS_HGT     WIND     10.0
  METHOD      UASELECT SUNRISE
  AERSURF     ..\AERSURFACE\STL01_AERSURF.OUT
  OUTPUT      STL01_AMET.SFC
  PROFILE     STL01_AMET.PFL
```

```
CO STARTING
   TITLEONE Affton Athletic Practice Fields, Affton, MO, USA
   DATATYPE NED
   DATAFILE StLouis01.geotiff
   ANCHORXY 731593.5 4268607.2 731593.5 4268607.2 15 4
   DOMAINXY 731093.5 4268207.2 15 732093.5 4269007.2 15
   RUNORNOT RUN
CO FINISHED

SO STARTING
   LOCATION STACK1 POINT 731593.5 4268607.2
SO FINISHED

RE STARTING
RE GRIDPOLR POL1 STA
                ORIG  STACK1
                DIST  2. 3. 4. 6. 8. 15. 20. 45.
                GDIR  36 10 10
RE GRIDPOLR POL1 END
RE FINISHED

OU STARTING
   RECEPTOR STL01.RE
   SOURCLOC STL01.SO
OU FINISHED
```

```
'Affton Athletic Practice Fields, Affton, MO, USA'
'P'
'METERS' 1.0
'UTMN', 210.
0
1
'STACK01'  141.73  2.29     731593.53    4268607.23
```

Site 5 (St. Louis, MO)

```
CO STARTING
CO TITLEONE 5467 Highland Park Drive, St. Louis, MO, USA
CO TITLETWO Styrene Emission Modeling
CO MODELOPT DFAULT CONC
CO AVERTIME 1
CO POLLUTID STYRENE
CO RUNORNOT RUN
CO FINISHED

SO STARTING
SO EMISUNIT 215.21 GRAM/SEC PPM
**           EPN      TYPE    X(m)       Y(m)     Elev(m)
**          ---------------------------------------------
   LOCATION STACK01  POINT   736965.0 4278911.0   149.14
**
**             EPN    QS(g/s)   HS(m)  TS(K)  VS(m/s)  DS(m)
**          ----------------------------------------------
   SRCPARAM STACK01   0.05  2.1  353.71  30.4   0.046


SO BUILDHGT STACK01     0.00    0.00    6.10    6.10    6.10    6.10
SO BUILDHGT STACK01     6.10    6.10    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00   28.31   27.02   31.81   35.62
SO BUILDWID STACK01    38.25   40.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00   38.50   39.50   41.50   43.00
SO BUILDLEN STACK01    43.00   41.50    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00  -57.00  -60.00  -61.50  -61.50
SO XBADJ    STACK01   -59.75  -56.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00   15.28    8.60    1.84   -4.94
SO YBADJ    STACK01   -11.62  -17.75    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
```

```
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00

   SRCGROUP ALL

SO FINISHED

RE STARTING
RE ELEVUNIT METERS
RE GRIDPOLR POL1 STA
                ORIG  STACK01
                DIST  2. 3. 4. 6. 8. 15. 20. 45.
                GDIR  36 10 10
   GRIDPOLR POL1     ELEV    1    149.5    149.7    150.0    150.5    151.1    151.8
   GRIDPOLR POL1     ELEV    1    151.9    152.2
   GRIDPOLR POL1     ELEV    2    149.4    149.7    150.0    150.5    151.0    151.9
   GRIDPOLR POL1     ELEV    2    152.1    152.4
   GRIDPOLR POL1     ELEV    3    149.4    149.6    149.9    150.4    150.9    151.9
   GRIDPOLR POL1     ELEV    3    152.3    152.5
   GRIDPOLR POL1     ELEV    4    149.3    149.5    149.8    150.2    150.7    152.0
   GRIDPOLR POL1     ELEV    4    152.3    152.6
   GRIDPOLR POL1     ELEV    5    149.3    149.4    149.6    150.0    150.4    151.8
   GRIDPOLR POL1     ELEV    5    152.2    152.4
   GRIDPOLR POL1     ELEV    6    149.2    149.3    149.4    149.7    150.0    151.1
   GRIDPOLR POL1     ELEV    6    152.1    152.0
   GRIDPOLR POL1     ELEV    7    149.1    149.2    149.3    149.4    149.6    150.3
   GRIDPOLR POL1     ELEV    7    151.0    151.5
   GRIDPOLR POL1     ELEV    8    149.0    149.0    149.1    149.1    149.2    149.5
   GRIDPOLR POL1     ELEV    8    149.7    150.0
   GRIDPOLR POL1     ELEV    9    148.9    148.9    148.9    148.8    148.7    148.6
   GRIDPOLR POL1     ELEV    9    148.4    147.5
   GRIDPOLR POL1     ELEV   10    148.8    148.7    148.7    148.7    148.6    148.5
   GRIDPOLR POL1     ELEV   10    148.4    147.3
   GRIDPOLR POL1     ELEV   11    148.7    148.7    148.7    148.7    148.6    148.4
   GRIDPOLR POL1     ELEV   11    148.3    147.0
   GRIDPOLR POL1     ELEV   12    148.7    148.7    148.7    148.7    148.6    148.4
   GRIDPOLR POL1     ELEV   12    148.3    146.6
   GRIDPOLR POL1     ELEV   13    148.8    148.7    148.7    148.7    148.6    148.4
   GRIDPOLR POL1     ELEV   13    148.3    146.2
   GRIDPOLR POL1     ELEV   14    148.8    148.7    148.7    148.7    148.7    148.5
   GRIDPOLR POL1     ELEV   14    148.3    146.0
   GRIDPOLR POL1     ELEV   15    148.8    148.8    148.7    148.7    148.7    148.5
   GRIDPOLR POL1     ELEV   15    148.3    145.9
   GRIDPOLR POL1     ELEV   16    148.8    148.8    148.8    148.7    148.7    148.5
   GRIDPOLR POL1     ELEV   16    148.3    147.1
   GRIDPOLR POL1     ELEV   17    148.8    148.8    148.8    148.8    148.7    148.6
   GRIDPOLR POL1     ELEV   17    148.4    147.5
   GRIDPOLR POL1     ELEV   18    148.8    148.8    148.8    148.8    148.8    148.6
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GRIDPOLR POL1     ELEV   18    148.5    147.6
GRIDPOLR POL1     ELEV   19    148.8    148.8    148.8    148.8    148.8    148.7
GRIDPOLR POL1     ELEV   19    148.6    147.8
GRIDPOLR POL1     ELEV   20    148.8    148.8    148.8    148.8    148.9    148.8
GRIDPOLR POL1     ELEV   20    148.6    148.0
GRIDPOLR POL1     ELEV   21    148.8    148.8    148.8    148.9    148.9    148.8
GRIDPOLR POL1     ELEV   21    148.7    148.2
GRIDPOLR POL1     ELEV   22    148.8    148.8    148.8    148.9    148.9    148.9
GRIDPOLR POL1     ELEV   22    148.8    148.4
GRIDPOLR POL1     ELEV   23    148.8    148.8    148.8    148.9    148.9    149.0
GRIDPOLR POL1     ELEV   23    148.9    148.7
GRIDPOLR POL1     ELEV   24    148.8    148.8    148.9    148.9    148.9    149.0
GRIDPOLR POL1     ELEV   24    149.0    149.0
GRIDPOLR POL1     ELEV   25    148.8    148.8    148.9    148.9    148.9    149.0
GRIDPOLR POL1     ELEV   25    149.1    149.2
GRIDPOLR POL1     ELEV   26    148.9    148.9    148.9    148.9    149.0    149.1
GRIDPOLR POL1     ELEV   26    149.1    149.4
GRIDPOLR POL1     ELEV   27    149.0    149.0    149.0    149.0    149.1    149.1
GRIDPOLR POL1     ELEV   27    149.1    149.4
GRIDPOLR POL1     ELEV   28    149.1    149.1    149.2    149.2    149.2    149.1
GRIDPOLR POL1     ELEV   28    149.2    149.4
GRIDPOLR POL1     ELEV   29    149.2    149.3    149.3    149.4    149.4    149.2
GRIDPOLR POL1     ELEV   29    149.2    149.7
GRIDPOLR POL1     ELEV   30    149.2    149.4    149.5    149.6    149.6    149.2
GRIDPOLR POL1     ELEV   30    149.3    150.0
GRIDPOLR POL1     ELEV   31    149.3    149.5    149.7    149.8    149.9    149.3
GRIDPOLR POL1     ELEV   31    149.4    150.3
GRIDPOLR POL1     ELEV   32    149.4    149.6    149.8    150.1    150.2    149.8
GRIDPOLR POL1     ELEV   32    149.6    150.5
GRIDPOLR POL1     ELEV   33    149.4    149.7    149.9    150.3    150.6    150.5
GRIDPOLR POL1     ELEV   33    150.1    150.7
GRIDPOLR POL1     ELEV   34    149.5    149.7    150.0    150.4    150.9    151.1
GRIDPOLR POL1     ELEV   34    151.0    150.6
GRIDPOLR POL1     ELEV   35    149.5    149.7    150.0    150.5    151.0    151.6
GRIDPOLR POL1     ELEV   35    151.8    151.3
GRIDPOLR POL1     ELEV   36    149.5    149.8    150.0    150.6    151.1    151.7
GRIDPOLR POL1     ELEV   36    151.9    152.0
GRIDPOLR POL1     HILL    1    152.7    152.7    152.7    152.7    151.8    151.8
GRIDPOLR POL1     HILL    1    151.9    152.2
GRIDPOLR POL1     HILL    2    152.7    152.7    152.7    152.7    152.7    151.9
GRIDPOLR POL1     HILL    2    152.1    152.4
GRIDPOLR POL1     HILL    3    152.7    152.7    152.7    152.7    152.7    151.9
GRIDPOLR POL1     HILL    3    152.7    152.5
GRIDPOLR POL1     HILL    4    152.7    152.7    152.7    152.7    152.7    152.0
GRIDPOLR POL1     HILL    4    152.3    152.6
GRIDPOLR POL1     HILL    5    152.7    152.7    152.7    152.7    152.7    152.0
GRIDPOLR POL1     HILL    5    152.2    152.4
GRIDPOLR POL1     HILL    6    152.7    152.7    152.7    152.7    152.7    152.7
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GRIDPOLR POL1     HILL    6    152.1    152.0
GRIDPOLR POL1     HILL    7    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL    7    152.7    151.5
GRIDPOLR POL1     HILL    8    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL    8    152.7    152.5
GRIDPOLR POL1     HILL    9    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL    9    152.9    152.9
GRIDPOLR POL1     HILL   10    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   10    152.7    152.9
GRIDPOLR POL1     HILL   11    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   11    152.7    152.9
GRIDPOLR POL1     HILL   12    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   12    152.7    152.7
GRIDPOLR POL1     HILL   13    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   13    152.7    152.7
GRIDPOLR POL1     HILL   14    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   14    152.7    152.7
GRIDPOLR POL1     HILL   15    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   15    152.7    152.7
GRIDPOLR POL1     HILL   16    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   16    152.7    147.3
GRIDPOLR POL1     HILL   17    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   17    152.7    147.5
GRIDPOLR POL1     HILL   18    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   18    152.7    147.6
GRIDPOLR POL1     HILL   19    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   19    152.0    147.8
GRIDPOLR POL1     HILL   20    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   20    151.8    148.0
GRIDPOLR POL1     HILL   21    152.7    152.7    152.7    152.7    152.7    152.0
GRIDPOLR POL1     HILL   21    148.7    148.2
GRIDPOLR POL1     HILL   22    152.7    152.7    152.7    152.7    152.7    151.8
GRIDPOLR POL1     HILL   22    148.8    148.4
GRIDPOLR POL1     HILL   23    152.7    152.7    152.7    152.7    152.7    151.8
GRIDPOLR POL1     HILL   23    148.9    148.7
GRIDPOLR POL1     HILL   24    152.7    152.7    152.7    152.7    152.7    151.8
GRIDPOLR POL1     HILL   24    149.0    149.0
GRIDPOLR POL1     HILL   25    152.7    152.7    152.7    152.7    152.7    151.8
GRIDPOLR POL1     HILL   25    151.4    149.2
GRIDPOLR POL1     HILL   26    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   26    151.4    149.4
GRIDPOLR POL1     HILL   27    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   27    151.8    149.4
GRIDPOLR POL1     HILL   28    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   28    151.8    149.4
GRIDPOLR POL1     HILL   29    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   29    152.7    149.7
GRIDPOLR POL1     HILL   30    152.7    152.7    152.7    152.7    152.7    152.7
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   GRIDPOLR POL1     HILL   30    152.7    150.0
   GRIDPOLR POL1     HILL   31    152.7    152.7    152.7    152.7    152.7    152.7
   GRIDPOLR POL1     HILL   31    152.7    150.3
   GRIDPOLR POL1     HILL   32    152.7    152.7    152.7    152.7    152.7    152.7
   GRIDPOLR POL1     HILL   32    152.7    150.5
   GRIDPOLR POL1     HILL   33    152.7    152.7    152.7    152.7    151.8    152.7
   GRIDPOLR POL1     HILL   33    152.7    150.7
   GRIDPOLR POL1     HILL   34    152.7    152.7    152.7    152.7    151.8    151.8
   GRIDPOLR POL1     HILL   34    151.8    151.8
   GRIDPOLR POL1     HILL   35    152.7    152.7    152.7    152.7    151.8    151.6
   GRIDPOLR POL1     HILL   35    151.8    151.8
   GRIDPOLR POL1     HILL   36    152.7    152.7    152.7    152.7    151.8    151.7
   GRIDPOLR POL1     HILL   36    151.9    152.0
RE GRIDPOLR POL1 END
RE FINISHED

ME STARTING
   SURFFILE STL02_AMET.SFC
   PROFFILE STL02_AMET.PFL
   SURFDATA 13994 2018 ST. LOUIS,MO
   UAIRDATA 13995 2018 SRINGFIELD,MO
   PROFBASE 188.4
ME FINISHED

OU STARTING
   RECTABLE ALLAVE 1ST 8TH
   SUMMFILE STL02.SUM
   PLOTFILE 1 ALL 1ST STL02_1hr.PLT 31
OU FINISHED
```

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CO STARTING
CO TITLEONE 5467 Highland Park Drive, St. Louis, MO, USA
CO TITLETWO Styrene Emission Modeling
CO MODELOPT DFAULT CONC
CO AVERTIME 1
CO POLLUTID STYRENE
CO RUNORNOT RUN
CO FINISHED

SO STARTING
SO EMISUNIT 215.21 GRAM/SEC PPM
**           EPN      TYPE    X(m)       Y(m)     Elev(m)
**          ---------------------------------------------
   LOCATION STACK01  POINT   736965.0 4278911.0   149.14
**
**             EPN    QS(g/s)   HS(m)  TS(K)  VS(m/s)  DS(m)
**          ----------------------------------------------
   SRCPARAM STACK01   0.05  2.1  353.71  30.4   0.046


SO BUILDHGT STACK01     0.00    0.00    6.10    6.10    6.10    6.10
SO BUILDHGT STACK01     6.10    6.10    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00   28.31   27.02   31.81   35.62
SO BUILDWID STACK01    38.25   40.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00   38.50   39.50   41.50   43.00
SO BUILDLEN STACK01    43.00   41.50    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00  -57.00  -60.00  -61.50  -61.50
SO XBADJ    STACK01   -59.75  -56.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00   15.28    8.60    1.84   -4.94
SO YBADJ    STACK01   -11.62  -17.75    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
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SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00

   SRCGROUP ALL

SO FINISHED

RE STARTING
RE ELEVUNIT METERS
RE GRIDPOLR POL1 STA
                 ORIG  STACK01
                 DIST  2. 3. 4. 6. 8. 15. 20. 45.
                 GDIR  36 10 10
   GRIDPOLR POL1     ELEV    1    149.5    149.7    150.0    150.5    151.1    151.8
   GRIDPOLR POL1     ELEV    1    151.9    152.2
   GRIDPOLR POL1     ELEV    2    149.4    149.7    150.0    150.5    151.0    151.9
   GRIDPOLR POL1     ELEV    2    152.1    152.4
   GRIDPOLR POL1     ELEV    3    149.4    149.6    149.9    150.4    150.9    151.9
   GRIDPOLR POL1     ELEV    3    152.3    152.5
   GRIDPOLR POL1     ELEV    4    149.3    149.5    149.8    150.2    150.7    152.0
   GRIDPOLR POL1     ELEV    4    152.3    152.6
   GRIDPOLR POL1     ELEV    5    149.3    149.4    149.6    150.0    150.4    151.8
   GRIDPOLR POL1     ELEV    5    152.2    152.4
   GRIDPOLR POL1     ELEV    6    149.2    149.3    149.4    149.7    150.0    151.1
   GRIDPOLR POL1     ELEV    6    152.1    152.0
   GRIDPOLR POL1     ELEV    7    149.1    149.2    149.3    149.4    149.6    150.3
   GRIDPOLR POL1     ELEV    7    151.0    151.5
   GRIDPOLR POL1     ELEV    8    149.0    149.0    149.1    149.1    149.2    149.5
   GRIDPOLR POL1     ELEV    8    149.7    150.0
   GRIDPOLR POL1     ELEV    9    148.9    148.9    148.9    148.8    148.7    148.6
   GRIDPOLR POL1     ELEV    9    148.4    147.5
   GRIDPOLR POL1     ELEV   10    148.8    148.7    148.7    148.7    148.6    148.5
   GRIDPOLR POL1     ELEV   10    148.4    147.3
   GRIDPOLR POL1     ELEV   11    148.7    148.7    148.7    148.7    148.6    148.4
   GRIDPOLR POL1     ELEV   11    148.3    147.0
   GRIDPOLR POL1     ELEV   12    148.7    148.7    148.7    148.7    148.6    148.4
   GRIDPOLR POL1     ELEV   12    148.3    146.6
   GRIDPOLR POL1     ELEV   13    148.8    148.7    148.7    148.7    148.6    148.4
   GRIDPOLR POL1     ELEV   13    148.3    146.2
   GRIDPOLR POL1     ELEV   14    148.8    148.7    148.7    148.7    148.7    148.5
   GRIDPOLR POL1     ELEV   14    148.3    146.0
   GRIDPOLR POL1     ELEV   15    148.8    148.8    148.7    148.7    148.7    148.5
   GRIDPOLR POL1     ELEV   15    148.3    145.9
   GRIDPOLR POL1     ELEV   16    148.8    148.8    148.8    148.7    148.7    148.5
   GRIDPOLR POL1     ELEV   16    148.3    147.1
   GRIDPOLR POL1     ELEV   17    148.8    148.8    148.8    148.8    148.7    148.6
   GRIDPOLR POL1     ELEV   17    148.4    147.5
   GRIDPOLR POL1     ELEV   18    148.8    148.8    148.8    148.8    148.8    148.6
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GRIDPOLR POL1     ELEV   18    148.5    147.6
GRIDPOLR POL1     ELEV   19    148.8    148.8    148.8    148.8    148.8    148.7
GRIDPOLR POL1     ELEV   19    148.6    147.8
GRIDPOLR POL1     ELEV   20    148.8    148.8    148.8    148.8    148.9    148.8
GRIDPOLR POL1     ELEV   20    148.6    148.0
GRIDPOLR POL1     ELEV   21    148.8    148.8    148.8    148.9    148.9    148.8
GRIDPOLR POL1     ELEV   21    148.7    148.2
GRIDPOLR POL1     ELEV   22    148.8    148.8    148.8    148.9    148.9    148.9
GRIDPOLR POL1     ELEV   22    148.8    148.4
GRIDPOLR POL1     ELEV   23    148.8    148.8    148.8    148.9    148.9    149.0
GRIDPOLR POL1     ELEV   23    148.9    148.7
GRIDPOLR POL1     ELEV   24    148.8    148.8    148.9    148.9    148.9    149.0
GRIDPOLR POL1     ELEV   24    149.0    149.0
GRIDPOLR POL1     ELEV   25    148.8    148.8    148.9    148.9    148.9    149.0
GRIDPOLR POL1     ELEV   25    149.1    149.2
GRIDPOLR POL1     ELEV   26    148.9    148.9    148.9    148.9    149.0    149.1
GRIDPOLR POL1     ELEV   26    149.1    149.4
GRIDPOLR POL1     ELEV   27    149.0    149.0    149.0    149.0    149.1    149.1
GRIDPOLR POL1     ELEV   27    149.1    149.4
GRIDPOLR POL1     ELEV   28    149.1    149.1    149.2    149.2    149.2    149.1
GRIDPOLR POL1     ELEV   28    149.2    149.4
GRIDPOLR POL1     ELEV   29    149.2    149.3    149.3    149.4    149.4    149.2
GRIDPOLR POL1     ELEV   29    149.2    149.7
GRIDPOLR POL1     ELEV   30    149.2    149.4    149.5    149.6    149.6    149.2
GRIDPOLR POL1     ELEV   30    149.3    150.0
GRIDPOLR POL1     ELEV   31    149.3    149.5    149.7    149.8    149.9    149.3
GRIDPOLR POL1     ELEV   31    149.4    150.3
GRIDPOLR POL1     ELEV   32    149.4    149.6    149.8    150.1    150.2    149.8
GRIDPOLR POL1     ELEV   32    149.6    150.5
GRIDPOLR POL1     ELEV   33    149.4    149.7    149.9    150.3    150.6    150.5
GRIDPOLR POL1     ELEV   33    150.1    150.7
GRIDPOLR POL1     ELEV   34    149.5    149.7    150.0    150.4    150.9    151.1
GRIDPOLR POL1     ELEV   34    151.0    150.6
GRIDPOLR POL1     ELEV   35    149.5    149.7    150.0    150.5    151.0    151.6
GRIDPOLR POL1     ELEV   35    151.8    151.3
GRIDPOLR POL1     ELEV   36    149.5    149.8    150.0    150.6    151.1    151.7
GRIDPOLR POL1     ELEV   36    151.9    152.0
GRIDPOLR POL1     HILL    1    152.7    152.7    152.7    152.7    151.8    151.8
GRIDPOLR POL1     HILL    1    151.9    152.2
GRIDPOLR POL1     HILL    2    152.7    152.7    152.7    152.7    152.7    151.9
GRIDPOLR POL1     HILL    2    152.1    152.4
GRIDPOLR POL1     HILL    3    152.7    152.7    152.7    152.7    152.7    151.9
GRIDPOLR POL1     HILL    3    152.7    152.5
GRIDPOLR POL1     HILL    4    152.7    152.7    152.7    152.7    152.7    152.0
GRIDPOLR POL1     HILL    4    152.3    152.6
GRIDPOLR POL1     HILL    5    152.7    152.7    152.7    152.7    152.7    152.0
GRIDPOLR POL1     HILL    5    152.2    152.4
GRIDPOLR POL1     HILL    6    152.7    152.7    152.7    152.7    152.7    152.7
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GRIDPOLR POL1     HILL    6    152.1    152.0
GRIDPOLR POL1     HILL    7    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL    7    152.7    151.5
GRIDPOLR POL1     HILL    8    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL    8    152.7    152.5
GRIDPOLR POL1     HILL    9    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL    9    152.9    152.9
GRIDPOLR POL1     HILL   10    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   10    152.7    152.9
GRIDPOLR POL1     HILL   11    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   11    152.7    152.9
GRIDPOLR POL1     HILL   12    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   12    152.7    152.7
GRIDPOLR POL1     HILL   13    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   13    152.7    152.7
GRIDPOLR POL1     HILL   14    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   14    152.7    152.7
GRIDPOLR POL1     HILL   15    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   15    152.7    152.7
GRIDPOLR POL1     HILL   16    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   16    152.7    147.3
GRIDPOLR POL1     HILL   17    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   17    152.7    147.5
GRIDPOLR POL1     HILL   18    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   18    152.7    147.6
GRIDPOLR POL1     HILL   19    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   19    152.0    147.8
GRIDPOLR POL1     HILL   20    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   20    151.8    148.0
GRIDPOLR POL1     HILL   21    152.7    152.7    152.7    152.7    152.7    152.0
GRIDPOLR POL1     HILL   21    148.7    148.2
GRIDPOLR POL1     HILL   22    152.7    152.7    152.7    152.7    152.7    151.8
GRIDPOLR POL1     HILL   22    148.8    148.4
GRIDPOLR POL1     HILL   23    152.7    152.7    152.7    152.7    152.7    151.8
GRIDPOLR POL1     HILL   23    148.9    148.7
GRIDPOLR POL1     HILL   24    152.7    152.7    152.7    152.7    152.7    151.8
GRIDPOLR POL1     HILL   24    149.0    149.0
GRIDPOLR POL1     HILL   25    152.7    152.7    152.7    152.7    152.7    151.8
GRIDPOLR POL1     HILL   25    151.4    149.2
GRIDPOLR POL1     HILL   26    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   26    151.4    149.4
GRIDPOLR POL1     HILL   27    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   27    151.8    149.4
GRIDPOLR POL1     HILL   28    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   28    151.8    149.4
GRIDPOLR POL1     HILL   29    152.7    152.7    152.7    152.7    152.7    152.7
GRIDPOLR POL1     HILL   29    152.7    149.7
GRIDPOLR POL1     HILL   30    152.7    152.7    152.7    152.7    152.7    152.7
```

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   GRIDPOLR POL1     HILL   30    152.7    150.0
   GRIDPOLR POL1     HILL   31    152.7    152.7    152.7    152.7    152.7    152.7
   GRIDPOLR POL1     HILL   31    152.7    150.3
   GRIDPOLR POL1     HILL   32    152.7    152.7    152.7    152.7    152.7    152.7
   GRIDPOLR POL1     HILL   32    152.7    150.5
   GRIDPOLR POL1     HILL   33    152.7    152.7    152.7    152.7    151.8    152.7
   GRIDPOLR POL1     HILL   33    152.7    150.7
   GRIDPOLR POL1     HILL   34    152.7    152.7    152.7    152.7    151.8    151.8
   GRIDPOLR POL1     HILL   34    151.8    151.8
   GRIDPOLR POL1     HILL   35    152.7    152.7    152.7    152.7    151.8    151.6
   GRIDPOLR POL1     HILL   35    151.8    151.8
   GRIDPOLR POL1     HILL   36    152.7    152.7    152.7    152.7    151.8    151.7
   GRIDPOLR POL1     HILL   36    151.9    152.0
RE GRIDPOLR POL1 END
RE FINISHED

ME STARTING
   SURFFILE STL02_AMET.SFC
   PROFFILE STL02_AMET.PFL
   SURFDATA 13994 2018 ST. LOUIS,MO
   UAIRDATA 13995 2018 SRINGFIELD,MO
   PROFBASE 188.4
ME FINISHED

OU STARTING
   RECTABLE ALLAVE 1ST 8TH
   SUMMFILE STL02.SUM
   PLOTFILE 1 ALL 1ST STL02_1hr.PLT 31
OU FINISHED

 **********************************
 *** SETUP Finishes Successfully ***
 **********************************

 *** AERMOD - VERSION  18081 ***   *** 5467 Highland Park Drive, St. Louis, MO,
USA                          ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                         ***        17:08:03

                                   PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                             ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.
```

```
  --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.

 **Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  STYRENE

 **Model Calculates  1 Short Term Average(s) of:   1-HR

 **This Run Includes:      1 Source(s);       1 Source Group(s); and     288
Receptor(s)

                with:      1 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:      0 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  18081

 **Output Options Selected:
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
```

Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 188.40 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAM/SEC ;
Emission Rate Unit Factor = 215.21
Output Units = PPM

**Approximate Storage Requirements of Model = 3.6 MB of RAM.

**Input Runstream File: aermod.inp

**Output Print File: aermod.out

**File for Summary of Results: STL02.SUM

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (USER UNITS)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/ HOR VARY BY	EMIS RATE SCALAR
STACK01	0	0.50000E-01	736965.0	4278911.0	149.1	2.10	353.71	30.40	0.05	YES	NO	NO	

*** AERMOD - VERSION 18081 *** *** 5467 Highland Park Drive, St. Louis, MO, USA ***
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling ***
02/22/20
17:08:03

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	STACK01 ,

*** AERMOD - VERSION 18081 *** *** 5467 Highland Park Drive, St. Louis, MO, USA *** 02/22/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
*** 17:08:03

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** DIRECTION SPECIFIC BUILDING DIMENSIONS ***

SOURCE ID: STACK01

IFV	BH	BW	BL	XADJ	YADJ	IFV	BH	BW	BL	XADJ	YADJ
1	0.0,	0.0,	0.0,	0.0,	0.0,	2	0.0,	0.0,	0.0,	0.0,	0.0,
3	6.1,	28.3,	38.5,	-57.0,	15.3,	4	6.1,	27.0,	39.5,	-60.0,	8.6,
5	6.1,	31.8,	41.5,	-61.5,	1.8,	6	6.1,	35.6,	43.0,	-61.5,	-4.9,
7	6.1,	38.2,	43.0,	-59.8,	-11.6,	8	6.1,	40.0,	41.5,	-56.0,	-17.8,
9	0.0,	0.0,	0.0,	0.0,	0.0,	10	0.0,	0.0,	0.0,	0.0,	0.0,
11	0.0,	0.0,	0.0,	0.0,	0.0,	12	0.0,	0.0,	0.0,	0.0,	0.0,
13	0.0,	0.0,	0.0,	0.0,	0.0,	14	0.0,	0.0,	0.0,	0.0,	0.0,
15	0.0,	0.0,	0.0,	0.0,	0.0,	16	0.0,	0.0,	0.0,	0.0,	0.0,
17	0.0,	0.0,	0.0,	0.0,	0.0,	18	0.0,	0.0,	0.0,	0.0,	0.0,
19	0.0,	0.0,	0.0,	0.0,	0.0,	20	0.0,	0.0,	0.0,	0.0,	0.0,
21	0.0,	0.0,	0.0,	0.0,	0.0,	22	0.0,	0.0,	0.0,	0.0,	0.0,

0.0,
23 0.0, 0.0, 0.0, 0.0, 0.0, 24 0.0, 0.0, 0.0, 0.0,
0.0,
25 0.0, 0.0, 0.0, 0.0, 0.0, 26 0.0, 0.0, 0.0, 0.0,
0.0,
27 0.0, 0.0, 0.0, 0.0, 0.0, 28 0.0, 0.0, 0.0, 0.0,
0.0,
29 0.0, 0.0, 0.0, 0.0, 0.0, 30 0.0, 0.0, 0.0, 0.0,
0.0,
31 0.0, 0.0, 0.0, 0.0, 0.0, 32 0.0, 0.0, 0.0, 0.0,
0.0,
33 0.0, 0.0, 0.0, 0.0, 0.0, 34 0.0, 0.0, 0.0, 0.0,
0.0,
35 0.0, 0.0, 0.0, 0.0, 0.0, 36 0.0, 0.0, 0.0, 0.0,
0.0,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

*** ORIGIN FOR POLAR NETWORK ***
X-ORIG = 736965.00 ; Y-ORIG = 4278911.00 (METERS)

*** DISTANCE RANGES OF NETWORK ***
(METERS)

2.0, 3.0, 4.0, 6.0, 8.0, 15.0, 20.0,
45.0,

*** DIRECTION RADIALS OF NETWORK ***
(DEGREES)

10.0, 20.0, 30.0, 40.0, 50.0, 60.0, 70.0,
80.0, 90.0, 100.0,
110.0, 120.0, 130.0, 140.0, 150.0, 160.0, 170.0,
180.0, 190.0, 200.0,
210.0, 220.0, 230.0, 240.0, 250.0, 260.0, 270.0,
280.0, 290.0, 300.0,
310.0, 320.0, 330.0, 340.0, 350.0, 360.0,

*** AERMOD - VERSION 18081 *** *** 5467 Highland Park Drive, St. Louis, MO, USA
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
*** 17:08:03

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

* ELEVATION HEIGHTS IN METERS *

DIRECTION (DEGREES)	DISTANCE (METERS)								
	2.00	3.00	4.00	6.00	8.00	15.00	20.00	45.00	
10.00	149.50	149.70	150.00	150.50	151.10	151.80	151.90	152.20	
20.00	149.40	149.70	150.00	150.50	151.00	151.90	152.10	152.40	
30.00	149.40	149.60	149.90	150.40	150.90	151.90	152.30	152.50	
40.00	149.30	149.50	149.80	150.20	150.70	152.00	152.30	152.60	
50.00	149.30	149.40	149.60	150.00	150.40	151.80	152.20	152.40	
60.00	149.20	149.30	149.40	149.70	150.00	151.10	152.10	152.00	
70.00	149.10	149.20	149.30	149.40	149.60	150.30	151.00	151.50	
80.00	149.00	149.00	149.10	149.10	149.20	149.50	149.70	150.00	
90.00	148.90	148.90	148.90	148.80	148.70	148.60	148.40	147.50	
100.00	148.80	148.70	148.70	148.70	148.60	148.50	148.40	147.30	
110.00	148.70	148.70	148.70	148.70	148.60	148.40	148.30	147.00	
120.00	148.70	148.70	148.70	148.70	148.60	148.40	148.30	146.60	
130.00	148.80	148.70	148.70	148.70	148.60	148.40	148.30	146.20	
140.00	148.80	148.70	148.70	148.70	148.70	148.50	148.30	146.00	
150.00	148.80	148.80	148.70	148.70	148.70				

```
 148.50       148.30       145.90
     160.00 |        148.80       148.80       148.80       148.70       148.70
 148.50       148.30       147.10
     170.00 |        148.80       148.80       148.80       148.80       148.70
 148.60       148.40       147.50
     180.00 |        148.80       148.80       148.80       148.80       148.80
 148.60       148.50       147.60
     190.00 |        148.80       148.80       148.80       148.80       148.80
 148.70       148.60       147.80
     200.00 |        148.80       148.80       148.80       148.80       148.90
 148.80       148.60       148.00
     210.00 |        148.80       148.80       148.80       148.90       148.90
 148.80       148.70       148.20
     220.00 |        148.80       148.80       148.80       148.90       148.90
 148.90       148.80       148.40
     230.00 |        148.80       148.80       148.80       148.90       148.90
 149.00       148.90       148.70
     240.00 |        148.80       148.80       148.90       148.90       148.90
 149.00       149.00       149.00
     250.00 |        148.80       148.80       148.90       148.90       148.90
 149.00       149.10       149.20
     260.00 |        148.90       148.90       148.90       148.90       149.00
 149.10       149.10       149.40
     270.00 |        149.00       149.00       149.00       149.00       149.10
 149.10       149.10       149.40
     280.00 |        149.10       149.10       149.20       149.20       149.20
 149.10       149.20       149.40
     290.00 |        149.20       149.30       149.30       149.40       149.40
 149.20       149.20       149.70
     300.00 |        149.20       149.40       149.50       149.60       149.60
 149.20       149.30       150.00
     310.00 |        149.30       149.50       149.70       149.80       149.90
 149.30       149.40       150.30
     320.00 |        149.40       149.60       149.80       150.10       150.20
 149.80       149.60       150.50
     330.00 |        149.40       149.70       149.90       150.30       150.60
 150.50       150.10       150.70
     340.00 |        149.50       149.70       150.00       150.40       150.90
 151.10       151.00       150.60
     350.00 |        149.50       149.70       150.00       150.50       151.00
 151.60       151.80       151.30
     360.00 |        149.50       149.80       150.00       150.60       151.10
 151.70       151.90       152.00
 *** AERMOD - VERSION  18081 ***   *** 5467 Highland Park Drive, St. Louis, MO,
USA                          ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                          ***       17:08:03
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

* HILL HEIGHT SCALES IN METERS *

DIRECTION (DEGREES)	DISTANCE (METERS)								
	2.00	3.00	4.00	6.00	8.00	15.00	20.00	45.00	
10.00	152.70	152.70	152.70	152.70	151.80	151.80	151.90	152.20	
20.00	152.70	152.70	152.70	152.70	152.70	151.90	152.10	152.40	
30.00	152.70	152.70	152.70	152.70	152.70	151.90	152.70	152.50	
40.00	152.70	152.70	152.70	152.70	152.70	152.00	152.30	152.60	
50.00	152.70	152.70	152.70	152.70	152.70	152.00	152.20	152.40	
60.00	152.70	152.70	152.70	152.70	152.70	152.70	152.10	152.00	
70.00	152.70	152.70	152.70	152.70	152.70	152.70	152.70	151.50	
80.00	152.70	152.70	152.70	152.70	152.70	152.70	152.70	152.50	
90.00	152.70	152.70	152.70	152.70	152.70	152.70	152.90	152.90	
100.00	152.70	152.70	152.70	152.70	152.70	152.70	152.70	152.90	
110.00	152.70	152.70	152.70	152.70	152.70	152.70	152.70	152.90	
120.00	152.70	152.70	152.70	152.70	152.70	152.70	152.70	152.70	
130.00	152.70	152.70	152.70	152.70	152.70	152.70	152.70	152.70	
140.00	152.70	152.70	152.70	152.70	152.70	152.70	152.70	152.70	
150.00	152.70	152.70	152.70	152.70	152.70	152.70	152.70	152.70	
160.00	152.70	152.70	152.70	152.70	152.70	152.70	152.70	147.30	
170.00	152.70	152.70	152.70	152.70	152.70	152.70	152.70	147.50	

```
     180.00 |        152.70       152.70       152.70       152.70       152.70
  152.70       152.70       147.60
     190.00 |        152.70       152.70       152.70       152.70       152.70
  152.70       152.00       147.80
     200.00 |        152.70       152.70       152.70       152.70       152.70
  152.70       151.80       148.00
     210.00 |        152.70       152.70       152.70       152.70       152.70
  152.00       148.70       148.20
     220.00 |        152.70       152.70       152.70       152.70       152.70
  151.80       148.80       148.40
     230.00 |        152.70       152.70       152.70       152.70       152.70
  151.80       148.90       148.70
     240.00 |        152.70       152.70       152.70       152.70       152.70
  151.80       149.00       149.00
     250.00 |        152.70       152.70       152.70       152.70       152.70
  151.80       151.40       149.20
     260.00 |        152.70       152.70       152.70       152.70       152.70
  152.70       151.40       149.40
     270.00 |        152.70       152.70       152.70       152.70       152.70
  152.70       151.80       149.40
     280.00 |        152.70       152.70       152.70       152.70       152.70
  152.70       151.80       149.40
     290.00 |        152.70       152.70       152.70       152.70       152.70
  152.70       152.70       149.70
     300.00 |        152.70       152.70       152.70       152.70       152.70
  152.70       152.70       150.00
     310.00 |        152.70       152.70       152.70       152.70       152.70
  152.70       152.70       150.30
     320.00 |        152.70       152.70       152.70       152.70       152.70
  152.70       152.70       150.50
     330.00 |        152.70       152.70       152.70       152.70       151.80
  152.70       152.70       150.70
     340.00 |        152.70       152.70       152.70       152.70       151.80
  151.80       151.80       151.80
     350.00 |        152.70       152.70       152.70       152.70       151.80
  151.60       151.80       151.80
     360.00 |        152.70       152.70       152.70       152.70       151.80
  151.70       151.90       152.00
 *** AERMOD - VERSION  18081 ***   *** 5467 Highland Park Drive, St. Louis, MO,
USA                          ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                          ***       17:08:03

                                  PAGE   8
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                              *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
```

(1=YES; 0=NO)

```
          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 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
          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 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
          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 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
          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 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
          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 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
          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 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
          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 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
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

↑ *** AERMOD - VERSION 18081 *** *** 5467 Highland Park Drive, St. Louis, MO, USA *** 02/22/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling *** 17:08:03

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: STL02_AMET.SFC
Met Version: 18081
Profile file: STL02_AMET.PFL

Surface format: FREE

Profile format: FREE

Surface station no.: 13994 Upper air station no.: 13995
Name: ST. Name: SRINGFIELD,MO
Year: 2018 Year: 2018

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
18	01	01	1	01	-36.9	0.295	-9.000	-9.000	-999.	384.	62.9	0.03	1.09	1.00	4.95	316.	10.0	255.3	2.0
18	01	01	1	02	-42.6	0.339	-9.000	-9.000	-999.	474.	83.1	0.03	1.09	1.00	5.53	316.	10.0	254.8	2.0
18	01	01	1	03	-35.9	0.285	-9.000	-9.000	-999.	367.	58.6	0.03	1.09	1.00	4.83	315.	10.0	254.2	2.0
18	01	01	1	04	-35.0	0.277	-9.000	-9.000	-999.	350.	55.3	0.03	1.09	1.00	4.73	317.	10.0	253.8	2.0
18	01	01	1	05	-39.8	0.315	-9.000	-9.000	-999.	424.	71.0	0.03	1.09	1.00	5.21	320.	10.0	253.1	2.0
18	01	01	1	06	-41.2	0.322	-9.000	-9.000	-999.	439.	74.3	0.03	1.09	1.00	5.31	320.	10.0	252.5	2.0
18	01	01	1	07	-28.4	0.223	-9.000	-9.000	-999.	258.	35.6	0.03	1.09	1.00	4.09	316.	10.0	252.0	2.0
18	01	01	1	08	-23.8	0.188	-9.000	-9.000	-999.	196.	25.5	0.03	1.09	0.72	3.71	306.	10.0	252.5	2.0
18	01	01	1	09	-3.1	0.312	-9.000	-9.000	-999.	418.	881.6	0.05	1.09	0.39	4.12	298.	10.0	253.8	2.0
18	01	01	1	10	44.9	0.380	0.727	0.016	312.	561.	-110.7	0.05	1.09	0.28	4.71	293.	10.0	254.2	2.0
18	01	01	1	11	80.2	0.375	0.912	0.016	344.	550.	-59.6	0.05	1.09	0.23	4.51	294.	10.0	255.9	2.0
18	01	01	1	12	99.1	0.334	1.008	0.016	378.	465.	-34.5	0.03	1.09	0.22	4.46	303.	10.0	257.0	2.0
18	01	01	1	13	100.4	0.365	1.049	0.016	417.	528.	-43.8	0.05	1.09	0.22	4.31	293.	10.0	258.1	2.0
18	01	01	1	14	84.0	0.356	1.030	0.017	472.	510.	-48.8	0.05	1.09	0.23	4.24	299.	10.0	259.9	2.0
18	01	01	1	15	51.0	0.304	0.882	0.017	488.	403.	-49.7	0.03	1.09	0.27	4.14	304.	10.0	259.9	2.0
18	01	01	1	16	4.9	0.297	0.405	0.017	490.	389.	-487.5	0.05	1.09	0.36	3.83	293.	10.0	260.4	2.0
18	01	01	1	17	-27.7	0.235	-9.000	-9.000	-999.	275.	42.5	0.05	1.09	0.64	3.76	290.	10.0	258.8	2.0
18	01	01	1	18	-27.6	0.221	-9.000	-9.000	-999.	249.	35.7	0.05	1.09	1.00	3.66	291.	10.0	258.1	2.0
18	01	01	1	19	-19.3	0.155	-9.000	-9.000	-999.	148.	17.6	0.03	1.09	1.00	3.40	303.	10.0	258.1	2.0

```
 18 01 01   1 20  -11.9  0.101 -9.000 -9.000 -999.   78.      8.0  0.03   1.09
1.00    3.00  306.   10.0  257.5    2.0
 18 01 01   1 21   -7.3  0.079 -9.000 -9.000 -999.   54.      6.2  0.03   1.09
1.00    2.35  305.   10.0  257.5    2.0
 18 01 01   1 22   -8.2  0.084 -9.000 -9.000 -999.   59.      6.6  0.03   1.09
1.00    2.50  309.   10.0  256.4    2.0
 18 01 01   1 23   -6.4  0.074 -9.000 -9.000 -999.   49.      5.8  0.03   1.09
1.00    2.20  319.   10.0  257.0    2.0
 18 01 01   1 24   -5.7  0.070 -9.000 -9.000 -999.   45.      5.6  0.03   1.09
1.00    2.01  337.   10.0  255.9    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 18 01 01 01   10.0 1  316.    4.95   255.4   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                   INCLUDING SOURCE(S):     STACK01     ,

                                    *** NETWORK ID: POL1     ;  NETWORK TYPE:
GRIDPOLR ***

                                        ** CONC OF STYRENE  IN PPM
                   **

 DIRECTION |                                                 DISTANCE (METERS)
 (DEGREES) |            2.00                    3.00                    4.00
          6.00                    8.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - -

      10.0 |      0.00003 (18110303)      0.00006 (18110303)      0.00043 (18091109)
     0.05795 (18050222)      0.19367 (18082623)
      20.0 |      0.00003 (18101824)      0.00007 (18101824)      0.00043 (18091109)
     0.06048 (18051219)      0.16774 (18080601)
      30.0 |      0.00003 (18101824)      0.00007 (18101824)      0.00034 (18091109)
     0.03559 (18062822)      0.12671 (18082524)
      40.0 |      0.00004 (18121219)      0.00006 (18101824)      0.00027 (18091109)
```

```
0.00649 (18012219)      0.03930 (18021923)
 50.0 |      0.00005 (18121219)      0.00007 (18121219)      0.00018 (18091109)
0.00425 (18012218)      0.02447 (18012218)
 60.0 |      0.00006 (18121219)      0.00008 (18121219)      0.00013 (18091109)
0.00228 (18120203)      0.01539 (18120203)
 70.0 |      0.00006 (18121219)      0.00008 (18121219)      0.00012 (18091109)
0.00169 (18012215)      0.01166 (18012215)
 80.0 |      0.00005 (18121219)      0.00007 (18121219)      0.00010 (18091109)
0.00155 (18030613)      0.01042 (18030613)
 90.0 |      0.00004 (18121219)      0.00006 (18121219)      0.00009 (18091109)
0.00102 (18030613)      0.00656 (18030613)
100.0 |      0.00003 (18121219)      0.00004 (18121219)      0.00008 (18091109)
0.00081 (18091109)      0.00238 (18091109)
110.0 |      0.00003 (18121219)      0.00003 (18121219)      0.00008 (18091109)
0.00081 (18091109)      0.00238 (18091109)
120.0 |      0.00002 (18121219)      0.00002 (18030821)      0.00008 (18091109)
0.00081 (18091109)      0.00238 (18091109)
130.0 |      0.00001 (18030821)      0.00001 (18030821)      0.00008 (18091109)
0.00081 (18091109)      0.00238 (18091109)
140.0 |      0.00001 (18030821)      0.00001 (18051008)      0.00008 (18091109)
0.00081 (18091109)      0.00244 (18091109)
150.0 |      0.00000 (18030821)      0.00001 (18051008)      0.00008 (18091109)
0.00081 (18091109)      0.00244 (18091109)
160.0 |      0.00000 (18030821)      0.00001 (18051008)      0.00009 (18091109)
0.00081 (18091109)      0.00244 (18091109)
170.0 |      0.00000 (18091422)      0.00001 (18051008)      0.00009 (18091109)
0.00083 (18091109)      0.00244 (18091109)
180.0 |      0.00000 (18080904)      0.00001 (18051008)      0.00009 (18091109)
0.00083 (18091109)      0.00252 (18091109)
190.0 |      0.00000 (18080904)      0.00001 (18051008)      0.00009 (18091109)
0.00083 (18091109)      0.00252 (18091109)
200.0 |      0.00000 (18080904)      0.00001 (18051008)      0.00009 (18091109)
0.00083 (18091109)      0.00261 (18091109)
210.0 |      0.00000 (18080903)      0.00001 (18051008)      0.00009 (18091109)
0.00086 (18091109)      0.00261 (18091109)
220.0 |      0.00000 (18080903)      0.00001 (18051008)      0.00009 (18091109)
0.00086 (18091109)      0.00261 (18091109)
230.0 |      0.00000 (18080903)      0.00001 (18051008)      0.00009 (18091109)
0.00086 (18091109)      0.00261 (18091109)
240.0 |      0.00000 (18091305)      0.00001 (18051008)      0.00009 (18091109)
0.00086 (18091109)      0.00261 (18091109)
250.0 |      0.00000 (18091305)      0.00001 (18051008)      0.00009 (18091109)
0.00086 (18091109)      0.00261 (18091109)
260.0 |      0.00000 (18093006)      0.00001 (18051008)      0.00009 (18091109)
0.00086 (18091109)      0.00292 (18072807)
270.0 |      0.00000 (18093006)      0.00001 (18051008)      0.00009 (18091109)
0.00091 (18091109)      0.00317 (18112209)
280.0 |      0.00000 (18093006)      0.00001 (18051008)      0.00011 (18091109)
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     0.00102 (18091109)      0.00406 (18112209)
     290.0 |      0.00000 (18022604)      0.00002 (18051008)      0.00012 (18091109)
     0.00108 (18091109)      0.00316 (18112209)
     300.0 |      0.00000 (18022604)      0.00002 (18051008)      0.00015 (18091109)
     0.00121 (18091109)      0.00507 (18030508)
     310.0 |      0.00000 (18022604)      0.00003 (18051008)      0.00022 (18091109)
     0.00183 (18050819)      0.01351 (18050819)
     320.0 |      0.00000 (18022604)      0.00003 (18051008)      0.00028 (18081308)
     0.01083 (18082003)      0.03328 (18083121)
     330.0 |      0.00000 (18110303)      0.00005 (18051008)      0.00037 (18082307)
     0.02577 (18101002)      0.08517 (18090319)
     340.0 |      0.00001 (18110303)      0.00005 (18051008)      0.00047 (18082307)
     0.03965 (18080421)      0.14789 (18080620)
     350.0 |      0.00002 (18110303)      0.00005 (18051008)      0.00043 (18091109)
     0.05732 (18082621)      0.16955 (18063023)
     360.0 |      0.00002 (18110303)      0.00006 (18051008)      0.00043 (18091109)
     0.08149 (18082819)      0.19737 (18080320)
↑ *** AERMOD - VERSION  18081 ***   *** 5467 Highland Park Drive, St. Louis, MO,
USA                          ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                         ***        17:08:03

                                    PAGE  11
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                    INCLUDING SOURCE(S):     STACK01     ,

                                     *** NETWORK ID: POL1     ;  NETWORK TYPE:
GRIDPOLR ***

                                         ** CONC OF STYRENE  IN PPM
                    **

 DIRECTION |                                                 DISTANCE (METERS)
 (DEGREES) |           15.00                  20.00                  45.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - -

      10.0 |      0.14575 (18061602)      0.10362 (18061602)      0.05406 (18061603)
      20.0 |      0.14866 (18093024)      0.10939 (18093024)      0.05633 (18060901)
      30.0 |      0.11758 (18061803)      0.10273 (18080202)      0.08238 (18030823)
      40.0 |      0.08013 (18100102)      0.08866 (18100102)      0.09988 (18081124)
      50.0 |      0.07015 (18100203)      0.08579 (18071003)      0.09869 (18081223)
      60.0 |      0.05610 (18031422)      0.07779 (18011721)      0.09471 (18081305)
      70.0 |      0.04528 (18110420)      0.05939 (18092520)      0.09371 (18060503)
      80.0 |      0.04046 (18013116)      0.05162 (18091722)      0.08644 (18050502)
```

90.0	0.03241 (18061205)	0.04311 (18061205)	0.05501 (18091105)
100.0	0.03273 (18060306)	0.04588 (18051919)	0.03507 (18070120)
110.0	0.03088 (18081701)	0.04195 (18013117)	0.03456 (18081019)
120.0	0.02866 (18102817)	0.03713 (18060319)	0.03490 (18060406)
130.0	0.02389 (18062219)	0.03893 (18062219)	0.03327 (18062220)
140.0	0.01961 (18062219)	0.03515 (18100406)	0.03323 (18071701)
150.0	0.02312 (18092601)	0.03599 (18092607)	0.03433 (18082122)
160.0	0.02531 (18072206)	0.03733 (18103108)	0.03717 (18070606)
170.0	0.02730 (18072119)	0.03879 (18082123)	0.03370 (18072424)
180.0	0.02494 (18100407)	0.04155 (18051619)	0.03507 (18080819)
190.0	0.02467 (18090907)	0.03965 (18081819)	0.03862 (18071706)
200.0	0.02364 (18102317)	0.03870 (18102317)	0.03595 (18100624)
210.0	0.02394 (18092202)	0.03610 (18092202)	0.03670 (18100418)
220.0	0.02490 (18081119)	0.04217 (18081119)	0.03772 (18081120)
230.0	0.02495 (18090720)	0.03800 (18090619)	0.04394 (18052219)
240.0	0.02442 (18090721)	0.04021 (18070621)	0.04344 (18070220)
250.0	0.02003 (18042123)	0.04408 (18091518)	0.04421 (18070221)
260.0	0.02239 (18042119)	0.04046 (18072919)	0.04283 (18092218)
270.0	0.02329 (18071901)	0.04142 (18071901)	0.04460 (18100704)
280.0	0.02329 (18112209)	0.04612 (18052019)	0.04616 (18083020)
290.0	0.02717 (18081922)	0.04814 (18071906)	0.04582 (18083022)
300.0	0.03936 (18072906)	0.05577 (18071306)	0.04591 (18070321)
310.0	0.03920 (18081920)	0.05429 (18081421)	0.04189 (18101817)
320.0	0.04733 (18081923)	0.05454 (18102917)	0.04685 (18070401)
330.0	0.06986 (18061020)	0.05989 (18061020)	0.04662 (18090223)
340.0	0.09931 (18093019)	0.07788 (18093019)	0.04515 (18070921)
350.0	0.13435 (18090423)	0.10003 (18052424)	0.04700 (18072524)
360.0	0.13874 (18070922)	0.10692 (18091919)	0.05028 (18091919)

↑ *** AERMOD - VERSION 18081 *** *** 5467 Highland Park Drive, St. Louis, MO, USA *** 02/22/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
*** 17:08:03

PAGE 12

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 8TH HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STACK01 ,

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

** CONC OF STYRENE IN PPM **

DIRECTION (DEGREES)	DISTANCE (METERS) 2.00	3.00	4.00

```
       6.00                    8.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

     10.0 |      0.00001 (18092504)      0.00003 (18092504)      0.00019 (18080908)
    0.05567 (18050220)      0.18783 (18081620)
     20.0 |      0.00001 (18122203)      0.00004 (18091109)      0.00021 (18081309)
    0.05618 (18103021)      0.16372 (18051203)
     30.0 |      0.00002 (18091802)      0.00004 (18122203)      0.00015 (18012214)
    0.02795 (18021908)      0.11733 (18080506)
     40.0 |      0.00002 (18091622)      0.00004 (18091802)      0.00011 (18080908)
    0.00451 (18011816)      0.03353 (18012219)
     50.0 |      0.00003 (18030821)      0.00004 (18091622)      0.00009 (18121219)
    0.00252 (18021512)      0.01880 (18020911)
     60.0 |      0.00003 (18091803)      0.00004 (18022524)      0.00008 (18081308)
    0.00191 (18120119)      0.01363 (18012217)
     70.0 |      0.00002 (18091803)      0.00004 (18091803)      0.00008 (18102719)
    0.00131 (18012223)      0.01016 (18012223)
     80.0 |      0.00002 (18050524)      0.00003 (18030822)      0.00007 (18050502)
    0.00096 (18041513)      0.00786 (18041512)
     90.0 |      0.00001 (18030822)      0.00002 (18091101)      0.00006 (18092710)
    0.00063 (18012304)      0.00523 (18040314)
    100.0 |      0.00001 (18091101)      0.00002 (18091101)      0.00004 (18030821)
    0.00034 (18080908)      0.00187 (18101019)
    110.0 |      0.00001 (18091101)      0.00001 (18051008)      0.00003 (18081309)
    0.00030 (18091708)      0.00191 (18101021)
    120.0 |      0.00000 (18081205)      0.00001 (18091109)      0.00002 (18030821)
    0.00029 (18091009)      0.00177 (18040323)
    130.0 |      0.00000 (18081205)      0.00001 (18091802)      0.00001 (18091009)
    0.00029 (18091009)      0.00118 (18041711)
    140.0 |      0.00000 (18091106)      0.00000 (18121219)      0.00001 (18091009)
    0.00029 (18091009)      0.00117 (18080908)
    150.0 |      0.00000 (18091106)      0.00000 (18080908)      0.00001 (18091009)
    0.00029 (18091009)      0.00117 (18080908)
    160.0 |      0.00000 (18091402)      0.00000 (18091009)      0.00002 (18091009)
    0.00029 (18091009)      0.00117 (18080908)
    170.0 |      0.00000 (18091402)      0.00000 (18091422)      0.00002 (18091009)
    0.00030 (18091009)      0.00117 (18080908)
    180.0 |      0.00000 (18091109)      0.00000 (18091422)      0.00002 (18091009)
    0.00030 (18091009)      0.00121 (18080908)
    190.0 |      0.00000 (18091109)      0.00000 (18080904)      0.00002 (18091009)
    0.00030 (18091009)      0.00121 (18080908)
    200.0 |      0.00000 (18091422)      0.00000 (18080904)      0.00002 (18091009)
    0.00030 (18091009)      0.00129 (18041711)
    210.0 |      0.00000 (18091109)      0.00000 (18080903)      0.00002 (18091009)
    0.00036 (18052807)      0.00132 (18091108)
    220.0 |      0.00000 (18091109)      0.00000 (18080903)      0.00002 (18052807)
    0.00042 (18091108)      0.00150 (18091508)
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     230.0 |      0.00000 (18030903)      0.00000 (18080903)      0.00002 (18052807)
     0.00036 (18080908)      0.00164 (18081308)
     240.0 |      0.00000 (18080904)      0.00000 (18091305)      0.00002 (18101808)
     0.00036 (18080908)      0.00152 (18072807)
     250.0 |      0.00000 (18123008)      0.00000 (18101808)      0.00003 (18080908)
     0.00042 (18091108)      0.00150 (18091508)
     260.0 |      0.00000 (18080903)      0.00000 (18101808)      0.00003 (18080908)
     0.00042 (18091108)      0.00139 (18091108)
     270.0 |      0.00000 (18022604)      0.00000 (18093006)      0.00002 (18101808)
     0.00041 (18101808)      0.00181 (18101808)
     280.0 |      0.00000 (18040423)      0.00000 (18093006)      0.00003 (18112209)
     0.00044 (18080908)      0.00152 (18041711)
     290.0 |      0.00000 (18040503)      0.00000 (18022604)      0.00003 (18112209)
     0.00048 (18080908)      0.00158 (18041711)
     300.0 |      0.00000 (18091109)      0.00000 (18022604)      0.00003 (18041711)
     0.00057 (18030508)      0.00403 (18072906)
     310.0 |      0.00000 (18091621)      0.00001 (18080908)      0.00008 (18080908)
     0.00158 (18030502)      0.01268 (18030502)
     320.0 |      0.00000 (18110303)      0.00001 (18080908)      0.00011 (18080908)
     0.00938 (18110402)      0.03220 (18050822)
     330.0 |      0.00000 (18092504)      0.00002 (18080908)      0.00014 (18080908)
     0.02448 (18110405)      0.08036 (18052824)
     340.0 |      0.00000 (18121803)      0.00002 (18080908)      0.00021 (18081309)
     0.03658 (18062921)      0.13818 (18050903)
     350.0 |      0.00000 (18121803)      0.00002 (18091108)      0.00019 (18050119)
     0.05259 (18041120)      0.16424 (18061623)
     360.0 |      0.00001 (18121803)      0.00003 (18091108)      0.00019 (18080908)
     0.07748 (18050121)      0.18802 (18100518)
 *** AERMOD - VERSION  18081 ***   *** 5467 Highland Park Drive, St. Louis, MO,
USA                          ***        02/22/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                          ***        17:08:03

                                     PAGE  13
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                *** THE   8TH HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                     INCLUDING SOURCE(S):     STACK01     ,

                                      *** NETWORK ID: POL1     ;  NETWORK TYPE:
GRIDPOLR ***

                                           ** CONC OF STYRENE  IN PPM
                     **

 DIRECTION |                                                  DISTANCE (METERS)
 (DEGREES) |           15.00                    20.00                    45.00
```

10.0	0.13181 (18071404)	0.09408 (18061202)	0.04853 (18060820)
20.0	0.13333 (18080503)	0.09525 (18072601)	0.05281 (18120520)
30.0	0.10124 (18051101)	0.07790 (18071503)	0.06867 (18092504)
40.0	0.07522 (18051023)	0.08027 (18071002)	0.08548 (18010803)
50.0	0.06835 (18122401)	0.07589 (18041501)	0.08026 (18033021)
60.0	0.05346 (18052620)	0.07130 (18060105)	0.08546 (18121801)
70.0	0.04420 (18110417)	0.05647 (18053120)	0.08572 (18091102)
80.0	0.03952 (18041421)	0.04825 (18121608)	0.07630 (18040802)
90.0	0.02874 (18122811)	0.03859 (18022308)	0.04388 (18030821)
100.0	0.02779 (18111608)	0.03728 (18012324)	0.02934 (18121603)
110.0	0.02716 (18012318)	0.03884 (18031118)	0.03106 (18060419)
120.0	0.02653 (18030724)	0.03606 (18030801)	0.03123 (18060222)
130.0	0.01893 (18080702)	0.03147 (18120309)	0.03013 (18042520)
140.0	0.01833 (18101505)	0.03024 (18032118)	0.02996 (18050419)
150.0	0.02046 (18092607)	0.03219 (18103103)	0.02903 (18111207)
160.0	0.02199 (18072023)	0.03454 (18092602)	0.03000 (18120406)
170.0	0.02226 (18092604)	0.03512 (18092603)	0.03052 (18110718)
180.0	0.02185 (18032005)	0.03484 (18101423)	0.03124 (18072304)
190.0	0.02088 (18031921)	0.03255 (18111718)	0.03292 (18051620)
200.0	0.02053 (18102608)	0.03314 (18110723)	0.03318 (18120709)
210.0	0.02099 (18031922)	0.03460 (18090904)	0.03397 (18022207)
220.0	0.02131 (18090719)	0.03433 (18032422)	0.03569 (18051923)
230.0	0.02068 (18042219)	0.03610 (18071720)	0.03644 (18102604)
240.0	0.02082 (18071720)	0.03792 (18050906)	0.03968 (18112920)
250.0	0.01884 (18042122)	0.03806 (18031024)	0.04079 (18051719)
260.0	0.02073 (18102517)	0.03635 (18113017)	0.04049 (18040824)
270.0	0.01975 (18113020)	0.03744 (18113018)	0.03998 (18123104)
280.0	0.02025 (18071824)	0.03753 (18062506)	0.04093 (18061122)
290.0	0.02186 (18071822)	0.03899 (18102520)	0.04256 (18071903)
300.0	0.03333 (18052823)	0.04675 (18090406)	0.04009 (18040307)
310.0	0.03651 (18010916)	0.04940 (18021505)	0.03907 (18012102)
320.0	0.04512 (18082406)	0.05073 (18081919)	0.03808 (18112902)
330.0	0.06658 (18102918)	0.05669 (18102918)	0.04325 (18070405)
340.0	0.09489 (18090521)	0.07545 (18061201)	0.04135 (18093019)
350.0	0.12409 (18062924)	0.09273 (18072524)	0.04261 (18071521)
360.0	0.12934 (18091119)	0.09794 (18060921)	0.04705 (18070922)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF HIGHEST 1-HR

RESULTS ***

** CONC OF STYRENE IN PPM
**

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	NETWORK OF TYPE	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	0.19737	ON 18080320:	AT (736965.00, 4278919.00, 151.10, 151.80, 0.00)	GP POL1
	HIGH 8TH HIGH VALUE IS	0.18802	ON 18100518:	AT (736965.00, 4278919.00, 151.10, 151.80, 0.00)	GP POL1

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 0 Warning Message(s)
A Total of 22 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 10 Calm Hours Identified

A Total of 12 Missing Hours Identified (0.14 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

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********   WARNING MESSAGES   ********
           ***  NONE  ***


***********************************
*** AERMOD Finishes Successfully ***
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STL02_1hr.PLT

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* AERMOD ( 18081): 5467 Highland Park Drive, St. Louis, MO, USA
      02/22/20
* AERMET ( 18081): Styrene Emission Modeling
      17:08:03
* MODELING OPTIONS USED:   RegDFAULT  CONC  ELEV  RURAL
*         PLOT FILE OF  HIGH   1ST HIGH  1-HR VALUES FOR SOURCE GROUP: ALL
*         FOR A TOTAL OF   288 RECEPTORS.
*         FORMAT: (3(1X,F13.5),3(1X,F8.2),3X,A5,2X,A8,2X,A5,5X,A8,2X,I8)


*        X             Y      AVERAGE CONC    ZELEV    ZHILL    ZFLAG    AVE     GRP
      RANK     NET ID   DATE(CONC)
* ____________  ____________  ____________   ______   ______   ______  ______
________  ________  ________  ________
  736965.34730 4278912.96962       0.00003   149.50   152.70     0.00    1-HR  ALL
      1ST     POL1      18110303
  736965.52094 4278913.95442       0.00006   149.70   152.70     0.00    1-HR  ALL
      1ST     POL1      18110303
  736965.69459 4278914.93923       0.00043   150.00   152.70     0.00    1-HR  ALL
      1ST     POL1      18091109
  736966.04189 4278916.90885       0.05795   150.50   152.70     0.00    1-HR  ALL
      1ST     POL1      18050222
  736966.38919 4278918.87846       0.19367   151.10   151.80     0.00    1-HR  ALL
      1ST     POL1      18082623
  736967.60472 4278925.77212       0.14575   151.80   151.80     0.00    1-HR  ALL
      1ST     POL1      18061602
  736968.47296 4278930.69616       0.10362   151.90   151.90     0.00    1-HR  ALL
      1ST     POL1      18061602
  736972.81417 4278955.31635       0.05406   152.20   152.20     0.00    1-HR  ALL
      1ST     POL1      18061603
  736965.68404 4278912.87939       0.00003   149.40   152.70     0.00    1-HR  ALL
      1ST     POL1      18101824
  736966.02606 4278913.81908       0.00007   149.70   152.70     0.00    1-HR  ALL
      1ST     POL1      18101824
  736966.36808 4278914.75877       0.00043   150.00   152.70     0.00    1-HR  ALL
      1ST     POL1      18091109
  736967.05212 4278916.63816       0.06048   150.50   152.70     0.00    1-HR  ALL
      1ST     POL1      18051219
  736967.73616 4278918.51754       0.16774   151.00   152.70     0.00    1-HR  ALL
      1ST     POL1      18080601
  736970.13030 4278925.09539       0.14866   151.90   151.90     0.00    1-HR  ALL
      1ST     POL1      18093024
  736971.84040 4278929.79385       0.10939   152.10   152.10     0.00    1-HR  ALL
      1ST     POL1      18093024
  736980.39091 4278953.28617       0.05633   152.40   152.40     0.00    1-HR  ALL
      1ST     POL1      18060901
  736966.00000 4278912.73205       0.00003   149.40   152.70     0.00    1-HR  ALL
      1ST     POL1      18101824
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736966.50000 4278913.59808       0.00007   149.60   152.70     0.00    1-HR  ALL
    1ST     POL1      18101824
736967.00000 4278914.46410       0.00034   149.90   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736968.00000 4278916.19615       0.03559   150.40   152.70     0.00    1-HR  ALL
    1ST     POL1      18062822
736969.00000 4278917.92820       0.12671   150.90   152.70     0.00    1-HR  ALL
    1ST     POL1      18082524
736972.50000 4278923.99038       0.11758   151.90   151.90     0.00    1-HR  ALL
    1ST     POL1      18061803
736975.00000 4278928.32051       0.10273   152.30   152.70     0.00    1-HR  ALL
    1ST     POL1      18080202
736987.50000 4278949.97114       0.08238   152.50   152.50     0.00    1-HR  ALL
    1ST     POL1      18030823
736966.28558 4278912.53209       0.00004   149.30   152.70     0.00    1-HR  ALL
    1ST     POL1      18121219
736966.92836 4278913.29813       0.00006   149.50   152.70     0.00    1-HR  ALL
    1ST     POL1      18101824
736967.57115 4278914.06418       0.00027   149.80   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736968.85673 4278915.59627       0.00649   150.20   152.70     0.00    1-HR  ALL
    1ST     POL1      18012219
736970.14230 4278917.12836       0.03930   150.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18021923
736974.64181 4278922.49067       0.08013   152.00   152.00     0.00    1-HR  ALL
    1ST     POL1      18100102
736977.85575 4278926.32089       0.08866   152.30   152.30     0.00    1-HR  ALL
    1ST     POL1      18100102
736993.92544 4278945.47200       0.09988   152.60   152.60     0.00    1-HR  ALL
    1ST     POL1      18081124
736966.53209 4278912.28558       0.00005   149.30   152.70     0.00    1-HR  ALL
    1ST     POL1      18121219
736967.29813 4278912.92836       0.00007   149.40   152.70     0.00    1-HR  ALL
    1ST     POL1      18121219
736968.06418 4278913.57115       0.00018   149.60   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736969.59627 4278914.85673       0.00425   150.00   152.70     0.00    1-HR  ALL
    1ST     POL1      18012218
736971.12836 4278916.14230       0.02447   150.40   152.70     0.00    1-HR  ALL
    1ST     POL1      18012218
736976.49067 4278920.64181       0.07015   151.80   152.00     0.00    1-HR  ALL
    1ST     POL1      18100203
736980.32089 4278923.85575       0.08579   152.20   152.20     0.00    1-HR  ALL
    1ST     POL1      18071003
736999.47200 4278939.92544       0.09869   152.40   152.40     0.00    1-HR  ALL
    1ST     POL1      18081223
736966.73205 4278912.00000       0.00006   149.20   152.70     0.00    1-HR  ALL
    1ST     POL1      18121219
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736967.59808 4278912.50000       0.00008   149.30   152.70     0.00    1-HR  ALL
    1ST     POL1      18121219
736968.46410 4278913.00000       0.00013   149.40   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736970.19615 4278914.00000       0.00228   149.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18120203
736971.92820 4278915.00000       0.01539   150.00   152.70     0.00    1-HR  ALL
    1ST     POL1      18120203
736977.99038 4278918.50000       0.05610   151.10   152.70     0.00    1-HR  ALL
    1ST     POL1      18031422
736982.32051 4278921.00000       0.07779   152.10   152.10     0.00    1-HR  ALL
    1ST     POL1      18011721
737003.97114 4278933.50000       0.09471   152.00   152.00     0.00    1-HR  ALL
    1ST     POL1      18081305
736966.87939 4278911.68404       0.00006   149.10   152.70     0.00    1-HR  ALL
    1ST     POL1      18121219
736967.81908 4278912.02606       0.00008   149.20   152.70     0.00    1-HR  ALL
    1ST     POL1      18121219
736968.75877 4278912.36808       0.00012   149.30   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736970.63816 4278913.05212       0.00169   149.40   152.70     0.00    1-HR  ALL
    1ST     POL1      18012215
736972.51754 4278913.73616       0.01166   149.60   152.70     0.00    1-HR  ALL
    1ST     POL1      18012215
736979.09539 4278916.13030       0.04528   150.30   152.70     0.00    1-HR  ALL
    1ST     POL1      18110420
736983.79385 4278917.84040       0.05939   151.00   152.70     0.00    1-HR  ALL
    1ST     POL1      18092520
737007.28617 4278926.39091       0.09371   151.50   151.50     0.00    1-HR  ALL
    1ST     POL1      18060503
736966.96962 4278911.34730       0.00005   149.00   152.70     0.00    1-HR  ALL
    1ST     POL1      18121219
736967.95442 4278911.52094       0.00007   149.00   152.70     0.00    1-HR  ALL
    1ST     POL1      18121219
736968.93923 4278911.69459       0.00010   149.10   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736970.90885 4278912.04189       0.00155   149.10   152.70     0.00    1-HR  ALL
    1ST     POL1      18030613
736972.87846 4278912.38919       0.01042   149.20   152.70     0.00    1-HR  ALL
    1ST     POL1      18030613
736979.77212 4278913.60472       0.04046   149.50   152.70     0.00    1-HR  ALL
    1ST     POL1      18013116
736984.69616 4278914.47296       0.05162   149.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18091722
737009.31635 4278918.81417       0.08644   150.00   152.50     0.00    1-HR  ALL
    1ST     POL1      18050502
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    1ST     POL1      18121219
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736968.00000 4278911.00000       0.00006   148.90   152.70     0.00    1-HR  ALL
    1ST     POL1      18121219
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736971.00000 4278911.00000       0.00102   148.80   152.70     0.00    1-HR  ALL
    1ST     POL1      18030613
736973.00000 4278911.00000       0.00656   148.70   152.70     0.00    1-HR  ALL
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736980.00000 4278911.00000       0.03241   148.60   152.70     0.00    1-HR  ALL
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736985.00000 4278911.00000       0.04311   148.40   152.90     0.00    1-HR  ALL
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737010.00000 4278911.00000       0.05501   147.50   152.90     0.00    1-HR  ALL
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736966.96962 4278910.65270       0.00003   148.80   152.70     0.00    1-HR  ALL
    1ST     POL1      18121219
736967.95442 4278910.47906       0.00004   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18121219
736968.93923 4278910.30541       0.00008   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736970.90885 4278909.95811       0.00081   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736972.87846 4278909.61081       0.00238   148.60   152.70     0.00    1-HR  ALL
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736979.77212 4278908.39528       0.03273   148.50   152.70     0.00    1-HR  ALL
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736984.69616 4278907.52704       0.04588   148.40   152.70     0.00    1-HR  ALL
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737009.31635 4278903.18583       0.03507   147.30   152.90     0.00    1-HR  ALL
    1ST     POL1      18070120
736966.87939 4278910.31596       0.00003   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18121219
736967.81908 4278909.97394       0.00003   148.70   152.70     0.00    1-HR  ALL
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736968.75877 4278909.63192       0.00008   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736970.63816 4278908.94788       0.00081   148.70   152.70     0.00    1-HR  ALL
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736972.51754 4278908.26384       0.00238   148.60   152.70     0.00    1-HR  ALL
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736979.09539 4278905.86970       0.03088   148.40   152.70     0.00    1-HR  ALL
    1ST     POL1      18081701
736983.79385 4278904.15960       0.04195   148.30   152.70     0.00    1-HR  ALL
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737007.28617 4278895.60909       0.03456   147.00   152.90     0.00    1-HR  ALL
    1ST     POL1      18081019
736966.73205 4278910.00000       0.00002   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18121219
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736967.59808 4278909.50000       0.00002   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18030821
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    1ST     POL1      18091109
736970.19615 4278908.00000       0.00081   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736971.92820 4278907.00000       0.00238   148.60   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736977.99038 4278903.50000       0.02866   148.40   152.70     0.00    1-HR  ALL
    1ST     POL1      18102817
736982.32051 4278901.00000       0.03713   148.30   152.70     0.00    1-HR  ALL
    1ST     POL1      18060319
737003.97114 4278888.50000       0.03490   146.60   152.70     0.00    1-HR  ALL
    1ST     POL1      18060406
736966.53209 4278909.71442       0.00001   148.80   152.70     0.00    1-HR  ALL
    1ST     POL1      18030821
736967.29813 4278909.07164       0.00001   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18030821
736968.06418 4278908.42885       0.00008   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736969.59627 4278907.14327       0.00081   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736971.12836 4278905.85770       0.00238   148.60   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736976.49067 4278901.35819       0.02389   148.40   152.70     0.00    1-HR  ALL
    1ST     POL1      18062219
736980.32089 4278898.14425       0.03893   148.30   152.70     0.00    1-HR  ALL
    1ST     POL1      18062219
736999.47200 4278882.07456       0.03327   146.20   152.70     0.00    1-HR  ALL
    1ST     POL1      18062220
736966.28558 4278909.46791       0.00001   148.80   152.70     0.00    1-HR  ALL
    1ST     POL1      18030821
736966.92836 4278908.70187       0.00001   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18051008
736967.57115 4278907.93582       0.00008   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736968.85673 4278906.40373       0.00081   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736970.14230 4278904.87164       0.00244   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736974.64181 4278899.50933       0.01961   148.50   152.70     0.00    1-HR  ALL
    1ST     POL1      18062219
736977.85575 4278895.67911       0.03515   148.30   152.70     0.00    1-HR  ALL
    1ST     POL1      18100406
736993.92544 4278876.52800       0.03323   146.00   152.70     0.00    1-HR  ALL
    1ST     POL1      18071701
736966.00000 4278909.26795       0.00000   148.80   152.70     0.00    1-HR  ALL
    1ST     POL1      18030821
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736966.50000 4278908.40192       0.00001   148.80   152.70     0.00    1-HR  ALL
    1ST     POL1      18051008
736967.00000 4278907.53590       0.00008   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736968.00000 4278905.80385       0.00081   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736969.00000 4278904.07180       0.00244   148.70   152.70     0.00    1-HR  ALL
    1ST     POL1      18091109
736972.50000 4278898.00962       0.02312   148.50   152.70     0.00    1-HR  ALL
    1ST     POL1      18092601
736975.00000 4278893.67949       0.03599   148.30   152.70     0.00    1-HR  ALL
    1ST     POL1      18092607
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736967.05212 4278905.36184       0.00081   148.70   152.70     0.00    1-HR  ALL
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736967.73616 4278903.48246       0.00244   148.70   152.70     0.00    1-HR  ALL
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736971.84040 4278892.20615       0.03733   148.30   152.70     0.00    1-HR  ALL
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736965.00000 4278917.00000       0.08149   150.60   152.70     0.00    1-HR  ALL
    1ST     POL1      18082819
736965.00000 4278919.00000       0.19737   151.10   151.80     0.00    1-HR  ALL
    1ST     POL1      18080320
736965.00000 4278926.00000       0.13874   151.70   151.70     0.00    1-HR  ALL
    1ST     POL1      18070922
736965.00000 4278931.00000       0.10692   151.90   151.90     0.00    1-HR  ALL
    1ST     POL1      18091919
736965.00000 4278956.00000       0.05028   152.00   152.00     0.00    1-HR  ALL
    1ST     POL1      18091919
```

```
;- meta
version=2
; (That line must be the first non-comment and the value must be 2.)
;
; The following is not case sensitive.
;

;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- input parameters
;  ================
;
;- input for origin of coordinate system
;  =====================================
;
; There are three options for the model grid coordinate system:
;
; 1) X and Y are relative coordinates in meters: the UTM coordinates in
;    AERPLOT.inp should be set to the "zero origin" of that coordinate
;    system to show the plot in the right location within the browser.
;
; 2) X and Y parameters are absolute UTM coordinates: coordinates
;    in AERPLOT.inp should be set to zero.
;
; 3) X and Y are not relative to a real grographic location: UTM
;    coordinates in AERPLOT.inp can be used to select a neutral
;    background (e.g., the ocean, or a glacier field) for easy display.
;
;
; State where the coordinate system's origin is --
; either in "UTM" (in meters) or LatLong (in degrees, using decimal fractions).
origin=UTM
;origin=LL
;
;- FOR UTM
;  -------
;
; The four parameters below will be used for 'origin=UTM'.  (If origin=LL, they do
not matter.)
;
; easting
; northing
; utmZone
; inNorthernHemisphere
;
; The program converts UTM coordinates into latitude and longitude
; for display in Google Earth earth browser. Also note that UTM
; coordinates require the UTM "zone" to be set in AERPLOT.inp.
```

```
;
; PLEASE NOTE: If the whole UTM is in the .PLT file, then a UTM of (0,0) in the
;              correct zone is appropriate. But if you were to want to use
;              LatLong with such a file, you would want to specify the same
;              spot. To avoid having to look up the longitude of the center
;              of the different zones, please just stick to a UTM of (0,0).
easting=0
northing=0
utmZone=15
inNorthernHemisphere=true
;
; 'inNorthernHemisphere' needs to know if this run is in the Southern Hemisphere or
not.
; If right on the equator, set this to True.
;
;- FOR LL
;  ------
;
; These two parameters will be used for 'origin=LL'.  (If origin=UTM, they do not
matter.)
originLatitude =0.0
originLongitude=-84.0
; If southern hemisphere, originLatitude will be negative.
; If western  hemisphere, originLongitude will be negative.
;
; Note that all seven UTM+LL parameters must be set,
; but only five will be used for UTM, or three for LL will be used.
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- altitude parameters
;  ====================
;
; Receptors can be plotted relative to the ground,
; or at a specific height level above or below sea level.
; If the ZELEV field can be isolated, "flagpole" also can be used as
relativeToGround .
;
altitudeChoice = relativeToGround
; or
; altitudeChoice = absolute
; or
; altitudeChoice = flagpole
;
; The altitude of the receptors is offset from the height indicated in the .PLT
file.
; ( Note: Specify an expected altitude even if 'flagpole' is the altitudeChoice.
;         This parameter is part of the calculation for the height of the initial
```

```
viewpoint.)
altitude=0
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- the source data file
;  ====================
;  (output from aermod, presumably)
;
; The input file name, that is, the plotfile.
PlotFileName              =STL02_1hr.PLT

; If one wishes to plot the sources as well, set this to the aermod.inp file.
; If not, leave it empty.
SourceDisplayInputFileName=

;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- output parameters
;  =================
;
; The output file names.
;
; Pick a name for this run, and it will be applied to a number of files,
; plus the objects that may be manipulated within Google Earth.
;
OutputFileNameBase        =1hrStyrene
;
; The name that will be displayed in Google Earth for the dataset.
NameDisplayedInGoogleEarth=StyreneEmission1hrSite5
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- control parameters on the procedure
;  ===================================
;
; To assure the user that the program has not halted, progress
; meters are provided that show up in a text window.
;
sDisableProgressMeter              = false
;
;
; This parameter controls whether the program will
; automatically launch Google Earth after processing the
; .PLT file ("TRUE") or not ("FALSE").
;
```

```
sDisableEarthBrowser               = false
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- receptor display
;  ================
;
; This IconScale parameter "scales" the circles that are drawn in
; the Earth Browser for each receptor. If too big, the display can
; become so cramped that it becomes useless.
;
;            For Google Earth and ArcGIS,
;            The suggested icon scale default is 0.70 .
IconScale     = 0.40
;            (For the NASA "WorldWind" earth browser, a value of
;             IconScale = 1.99 may look better.)
;
; The sIconSetChoice color scheme for the concentration scale. The
; red and green is less preferred because a common color blindness
; won't see the difference; however, it is provided for use.
;
sIconSetChoice=redBlue
;sIconSetChoice=redGreen
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- concentration binning  (for receptors and contours)
;  =====================
;
; The user has the choice between a "Linear" or "Log" color scale. The user
; also can provide one of their own.
;
; There must, however, be eleven "levels" or thresholds that will
; define the ranges for the twelve bins.
minbin=data
maxbin=data
binningChoice = Linear
; or binningChoice = Linear
; or binningChoice = custom
;
;
; These examples could be realistic binning schemes.
customBinningElevenLevels=1,2,3,4,5,6,7,8,9,10,11
;customBinningElevenLevels=.0001,.0003,.0005,.0007,.001, .004,.008,.01,.02,.03,.05
;
; If custom binning is not used, one may prefer to supply this value, "na",
; to help indicate that custom binning is not used.
;customBinningElevenLevels=na
```

```
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- concentration legend   (for receptors and contours)
;  ====================
;
; The program will insert this line into the HTML used to create the legend.
;
; The following will not show up onscreen in the initial dump of variables.
contourLegendTitleHTML
=C O N C E N T R A T I O 
;N S
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- line mappings          (for contours and gradients)
;  =============
;
; To plot any of the lines, an evenly spaced grid needs to be constructed
; by means of a combination of interpolating the data and extending the
; data.
;
; For particularly large model domains, the "numberOfGridCols" and
; "numberOfGridRows" may need to be increased beyond the default
; values of 400.
;
numberOfGridCols                   = 400
numberOfGridRows                   = 400
;
;
; Normally, the 'numberOfTimesToSmoothContourSurface=' parameter
; should be set to one. One smoothing can make the contours much
; less chaotic, while a second one can result in moving the
; contours farther from their proper locations according to the
; receptor values. However, a setting greater than one may be
; beneficial when there is greater spacing between receptors.
;
numberOfTimesToSmoothContourSurface = 0
; Note that the smoothing applies to both the contour and the gradient.
;
; Note: although these last three parameters are not frequently
; used, they are required to be present.
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- contour parameters
```

```
;  ==================
;
; The parameter 'makeContours' enables ("TRUE") or disables
; ("FALSE") contours.
;
makeContours                        = true
;
;
; When drawing lines, each little bit of a line will only
; be drawn if both ends of the segment are within
; this many meters of one of the plot file's receptors.
;
; The contour lines seem less sensitive to the edge than the gradient.
; (If set to 0.0 or less, most lines won't be drawn.)
; (If set to 9999999, almost the diameter of the Earth, then all lines will be
drawn.)
;
contourExtension =  9999999
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;
;- gradient parameters
;  ===================
;
; The parameter 'makeGradients' enables ("TRUE") or disables
; ("FALSE") gradients.
;
makeGradients                       = false
;
;
; When drawing lines, each little bit of a line will only
; be drawn if both ends of the segment are within
; this many meters of one of the plot file's receptors.
gradientExtension=  9999999
; (If set to 0.0 or less, most lines won't be drawn.)
; (If set to 9999999, almost the diameter of the Earth, then all lines will be
drawn.)
;
;
;- gradient binning
;  ================
;
; While contour lines share binning with the receptors, gradient
; binning is done separately.
;
; The user has the choice between a "Linear" or "Log" color scale. The user
```

```
; also can provide one of their own.
;
; There must, however, be eleven "levels" or thresholds that will
; define the ranges for the twelve bins.
;
gradientMaxBin=.5e-9
gradientMinBin=.1e-11
gradientBinningChoice=Log
; or gradientBinningChoice = Linear
; or gradientBinningChoice = custom
;
; These examples could be realistic binning schemes.
customGradBinElevenLevels=1,2,3,4,5,6,7,8,9,10,11
;customGradBinElevenLevels=.0001,.0003,.0005,.0007,.001, .004,.008,.01,.02,.03,.05
;
; If custom binning is not used, one may prefer to supply this value, "na",
; to help indicate that custom binning is not used.
;customGradBinElevenLevels=na
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- gradient legend (not generated if gradients are not generated)
;  ===============
;
; The program will insert this line into the HTML used to create the legend.
;
; The following will not show up onscreen in the initial dump of variables.
gradientLegendTitleHTML=Gradient Magnitudes
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- hidden_grid
;  ===========
; For display of evenly spaced grid. Debugging purposes only.
;
; Warning: This will substantially increase the size of the
; resulting KMZ file. It is not an extrapolated grid.
;
provideEvenlySpacedInterpolatedGrid = false
;
; end
```

```
startend 01 2018 12 2018
ifwgroup y 09 26 2006

DATAFILE STARTING
1-MIN\64050KSTL201801.dat
1-MIN\64050KSTL201802.dat
1-MIN\64050KSTL201803.dat
1-MIN\64050KSTL201804.dat
1-MIN\64050KSTL201805.dat
1-MIN\64050KSTL201806.dat
1-MIN\64050KSTL201807.dat
1-MIN\64050KSTL201808.dat
1-MIN\64050KSTL201809.dat
1-MIN\64050KSTL201810.dat
1-MIN\64050KSTL201811.dat
1-MIN\64050KSTL201812.dat
1-MIN\64050KSTL201901.dat
DATAFILE FINISHED

SURFDATA STARTING
..\AERMET\SURFACE\724340-13994_18
SURFDATA FINISHED

OUTFILES STARTING
hourfile STL_02_1MIN_18.DAT
summfile STL_02_1MIN_18_SUMM.DAT
compfile STL_02_1MIN_18_COMP.DAT
OUTFILES FINISHED
```

```
 Generated by AERSURFACE, dated 13016                        07/11/2019 22:15

 Land Cover input file opened: missouri_NLCD_flat_072100.bin
 State Postal Code: MO
 AERMET-formatted output file opened: STL02_AERSURF.OUT
 Type of Coordinates Entered: LATLON
   Latitude (decimal degrees):     38.750000
   Longitude (decimal degrees):   -90.370000
   Datum: NAD83
 Study Radius for surface roughness (km):     1.0
 Is surface roughness varied by sector? Y
  # Sectors = 12
    Sector beginning directions:     0   30   60   90  120  150  180  210  240  270
300  330
 Temporal resolution (ANNUAL, MONTHLY, SEASONAL): MONTHLY
 Continuous snow cover for at least one month? N
 Reassign months to seasons? N
 Is site located at an airport? Y
 Is site considered an arid region? N
 Characterization of surface moisture at site: Average
 Log file opened: STL02_AERSURF.log


 Based on the following input coordinates, converted if needed to LATLON/NAD83:
    Latitude:     38.750000
    Longitude:   -90.370000

 The study center is located at
    Albers projection X-coordinate:    484441.
    Albers projection Y-coordinate:   1761243.
    Row in data file:    6763
    Column in data file:   15529

 Rotation of Albers grid to true North (deg):   -3.39434


 Land cover grid for Albedo and Bowen Ratio.
 These data are included in: albedo_bowen_domain.txt

    1766250. : 81 81 82 82 82 82 82 82 82 82 82 82 82 81 81 81 81 42 81 81 81 81 81
83 83 85 85 85 85 85 85 85 85 85 21 82 82 82 82 82 82 82 82 82 85 85 85 85 85 85 85
85 83 81 85 85 85 85 85 85 85 83 83 83 83 83 83 83 85 85 83 83 83 83 83 85 21 85 85
85 85 85 85 85 85 85 85 85 85 85 85 85 85 23 85 23 23 85 85 23 85 85 21 41 85 85 85
85 85 85 41 85 85 85 85 21 21 85 85 21 85 85 85 21 21 21 41 41 41 21 22 85 85 85 85
85 85 23 23 23 23 23 21 85 23 23 22 21 21 23 22 22 22 23 22 22 85 22 21 21 21 21 85
85 85 85 85 85 85 22 21 21 22 22 21 21 21 23 22 22 22 22 22 22 22 85 22 23 22 85 21
21 23 23 21 22 22 85 22 22 22 22 22 22 22 22 22 22 22 22 22 22 22 22 22 22 85 23 22 85
22 23 22 22 85 85 21 22 22 21 85 85 23 85 22 85 23 23 23 23 23 23 85 23 22 21 85 23
```

STL02_AMET_S1.INP

```
JOB
  REPORT      STL02_AMET_S1.RPT
  MESSAGES    STL02_AMET_S1.MSG


UPPERAIR
  DATA        UA\13995_STL_18.FSL  FSL
  EXTRACT     UAEXOUT_STL02.DSK
  XDATES      18/01/01 TO 19/01/01
  LOCATION    13995  32.47N  93.82W  6
  QAOUT       UAQAOUT_STL02.DSK
  AUDIT       UATT  UAWS  UALR  UAWD


SURFACE
  DATA        SURFACE\724340-13994_18 ISHD
  EXTRACT     SFEXOUT_STL02.DSK
  XDATES      18/01/01  TO  19/01/01
  LOCATION    13994 38.75N 90.37W 6 173.0
  QAOUT       SFQAOUT_STL02.DSK
  AUDIT       SLVP PRES CLHT TSKC PWTH ASKY HZVS DPTP RHUM
  NO_MISSING  PRES
```

STL02_AMET_S2.INP

```
JOB
  REPORT      STL02_AMET_S2.RPT
  MESSAGES    STL02_AMET_S2.MSG

UPPERAIR
  QAOUT       UAQAOUT_STL02.DSK

SURFACE
  QAOUT       SFQAOUT_STL02.DSK

ASOS1MIN      ..\AERMINUTE\STL_02_1MIN_18.DAT

MERGE
  OUTPUT      MERGE_STL02.DSK
  XDATES      18/01/01 18/12/31
```

STL02_AMET_S3.INP

```
JOB
  REPORT      STL02_AMET_S3.RPT
  MESSAGES    STL02_AMET_S3.MSG

METPREP
  DATA        MERGE_STL02.DSK
  METHOD      REFLEVEL SUBNWS
  METHOD      WIND_DIR RANDOM
  NWS_HGT     WIND     10.0
  METHOD      UASELECT SUNRISE
  AERSURF     ..\AERSURFACE\STL02_AERSURF.OUT
  OUTPUT      STL02_AMET.SFC
  PROFILE     STL02_AMET.PFL
```

```
CO STARTING
   TITLEONE 5467 Highland Park Drive, St. Louis, MO, USA
   DATATYPE NED
   DATAFILE StLouis02.geotiff
   ANCHORXY 736965.0 4278911.0 736965.0 4278911.0 15 4
   DOMAINXY 736465.0 4278511.0 15 737465.0 4279311.0 15
   RUNORNOT RUN
CO FINISHED

SO STARTING
   LOCATION STACK1 POINT 736965.0 4278911.0
SO FINISHED

RE STARTING
RE GRIDPOLR POL1 STA
                ORIG  STACK1
                DIST  2. 3. 4. 6. 8. 15. 20. 45.
                GDIR  36 10 10
RE GRIDPOLR POL1 END
RE FINISHED

OU STARTING
   RECEPTOR STL02.RE
   SOURCLOC STL02.SO
OU FINISHED
```

```
'5467 Highland Park Drive, St. Louis, MO, USA'
'P'
'METERS' 1.0
'UTMN', 210.
11
'BUILD01' 1 152.74
8 6.1
  736966.24 4278931.99
  736990.81 4278930.00
  736994.45 4278961.85
  736990.46 4278962.68
  736990.81 4278967.10
  736974.62 4278968.53
  736973.76 4278963.79
  736969.39 4278963.99
'BUILD02' 2 153.14
4 3.7
  736997.75 4278948.15
  737023.22 4278946.02
  737027.46 4278982.68
  737001.99 4278985.63
4 0.6
  736997.75 4278948.15
  737021.37 4278946.53
  737024.85 4278975.02
  737000.77 4278977.54
'BUILD03'  2  152.79
6 3.7
  737031.47 4278927.64
  737049.13 4278925.90
  737055.40 4278979.51
  737047.11 4278980.36
  737046.06 4278971.47
  737036.73 4278972.38
4 0.6
  737031.47 4278927.64
  737049.13 4278925.90
  737054.31 4278971.02
  737036.73 4278972.38
'BUILD04' 2 153.03
5 3.7
  737060.82 4278912.80
  737102.41 4278908.62
  737104.96 4278927.51
  737119.73 4278926.22
  737120.81 4278935.11
7 2.7
  737060.82 4278912.80
```

```
  737102.41 4278908.62
  737109.91 4278974.34
  737068.33 4278978.29
  737105.66 4278937.16
  737119.73 4278926.22
  737120.81 4278935.11
'BUILD05' 2 152.75
12 2.7
   736982.73 4279018.82
   737002.08 4279016.78
   737003.07 4279023.40
   737002.08 4279023.86
   737004.59 4279048.37
   737006.18 4279048.70
   737008.12 4279066.17
   736999.40 4279067.11
   736997.08 4279049.18
   736985.23 4279050.27
   736982.34 4279025.81
   736983.46 4279025.64
10 2.1
   737003.07 4279023.40
   737002.08 4279023.86
   737004.59 4279048.37
   737006.18 4279048.70
   737008.12 4279066.17
   736999.40 4279067.11
   736997.08 4279049.18
   736985.23 4279050.27
   736982.34 4279025.81
   736983.46 4279025.64
'BUILD06' 2 153.28
4 3.7
  737005.97 4279019.80
  737019.52 4279018.77
  737022.28 4279046.07
  737008.99 4279047.54
4 0.6
  737021.46 4279037.51
  737007.94 4279039.11
  737022.28 4279046.07
  737008.99 4279047.54
'BUILD07' 2 153.42
4 4.3
  737024.71 4279013.46
  737040.24 4279012.28
  737043.12 4279043.56
  737027.98 4279044.88
```

```
4 0.6
  737025.70 4279020.96
  737040.65 4279019.85
  737043.12 4279043.56
  737027.98 4279044.88
'BUILD08' 1 154.28
4 3.7
  737050.42 4279011.20
  737061.18 4279010.44
  737064.54 4279043.09
  737054.43 4279044.00
'BUILD09' 2 154.02
4 4.3
  737073.26 4279009.40
  737088.45 4279008.21
  737092.70 4279040.01
  737076.80 4279041.14
4 0.9
  737073.93 4279018.24
  737089.93 4279016.46
  737092.70 4279040.01
  737076.80 4279041.14
'BUILD10' 2 154.43
4 3.7
  737101.54 4279007.20
  737117.59 4279005.81
  737121.94 4279036.87
  737105.81 4279037.82
4 1.2
  737102.69 4279015.06
  737118.92 4279013.88
  737121.94 4279036.87
  737105.81 4279037.82
'BUILD11' 3 145.22
13 4.3
   737036.15 4278789.05
   737046.33 4278883.71
   737129.27 4278875.32
   737125.32 4278851.24
   737150.57 4278848.24
   737148.91 4278826.30
   737154.33 4278825.51
   737153.08 4278814.97
   737122.12 4278819.23
   737119.80 4278792.11
   737129.62 4278781.34
   737116.55 4278771.39
   737106.52 4278782.68
```

```
8 1.2
  737037.88 4278813.19
  737042.66 4278859.45
  737150.57 4278848.24
  737148.91 4278826.30
  737154.33 4278825.51
  737153.08 4278814.97
  737122.12 4278819.23
  737120.85 4278804.82
4 1.2
  737070.71 4278785.89
  737081.07 4278879.70
  737090.38 4278878.96
  737080.30 4278784.66
1
'STACK01'  149.14  2.04     736965.00    4278911.00
```

Site 6 (Aurora, Colorado)

```
CO STARTING
CO TITLEONE 5467 Highland Park Drive, St. Louis, MO, USA
CO TITLETWO Styrene Emission Modeling
CO MODELOPT DFAULT CONC
CO AVERTIME 1
CO POLLUTID STYRENE
CO RUNORNOT RUN
CO FINISHED

SO STARTING
SO EMISUNIT 215.21 GRAM/SEC PPM
**           EPN      TYPE    X(m)       Y(m)    Elev(m)
**          ----------------------------------------------
   LOCATION STACK01  POINT  517293.2  4399874.4  1644.1
**
**             EPN    QS(g/s)   HS(m)  TS(K)  VS(m/s)  DS(m)
**          ------------------------------------------------
   SRCPARAM STACK01  0.18  1.80   298.90  23.5   0.053


SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
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SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00

   SRCGROUP ALL

SO FINISHED

RE STARTING
RE GRIDPOLR POL1 STA
                ORIG  STACK01
                DIST  2. 3. 4. 6. 8. 15. 20. 45.
                GDIR  36 10 10
   GRIDPOLR POL1     ELEV    1   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
   GRIDPOLR POL1     ELEV    1   1645.3   1645.3
   GRIDPOLR POL1     ELEV    2   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
   GRIDPOLR POL1     ELEV    2   1645.3   1645.3
   GRIDPOLR POL1     ELEV    3   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
   GRIDPOLR POL1     ELEV    3   1645.3   1645.4
   GRIDPOLR POL1     ELEV    4   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
   GRIDPOLR POL1     ELEV    4   1645.3   1645.5
   GRIDPOLR POL1     ELEV    5   1645.3   1645.3   1645.3   1645.3   1645.4   1645.4
   GRIDPOLR POL1     ELEV    5   1645.4   1645.5
   GRIDPOLR POL1     ELEV    6   1645.3   1645.3   1645.3   1645.4   1645.4   1645.4
   GRIDPOLR POL1     ELEV    6   1645.4   1645.6
   GRIDPOLR POL1     ELEV    7   1645.3   1645.3   1645.3   1645.4   1645.4   1645.4
   GRIDPOLR POL1     ELEV    7   1645.4   1645.6
   GRIDPOLR POL1     ELEV    8   1645.3   1645.3   1645.3   1645.4   1645.4   1645.5
   GRIDPOLR POL1     ELEV    8   1645.4   1645.5
   GRIDPOLR POL1     ELEV    9   1645.3   1645.3   1645.3   1645.4   1645.4   1645.5
   GRIDPOLR POL1     ELEV    9   1645.5   1644.5
   GRIDPOLR POL1     ELEV   10   1645.3   1645.3   1645.3   1645.4   1645.4   1645.5
   GRIDPOLR POL1     ELEV   10   1645.5   1643.3
   GRIDPOLR POL1     ELEV   11   1645.3   1645.3   1645.3   1645.4   1645.4   1645.4
   GRIDPOLR POL1     ELEV   11   1645.0   1642.7
   GRIDPOLR POL1     ELEV   12   1645.3   1645.3   1645.3   1645.4   1645.4   1645.0
   GRIDPOLR POL1     ELEV   12   1644.5   1643.7
   GRIDPOLR POL1     ELEV   13   1645.3   1645.3   1645.3   1645.4   1645.3   1644.7
   GRIDPOLR POL1     ELEV   13   1644.1   1643.9
   GRIDPOLR POL1     ELEV   14   1645.3   1645.3   1645.3   1645.3   1645.2   1644.6
   GRIDPOLR POL1     ELEV   14   1643.8   1643.9
   GRIDPOLR POL1     ELEV   15   1645.3   1645.3   1645.3   1645.3   1645.2   1644.6
   GRIDPOLR POL1     ELEV   15   1643.7   1644.0
   GRIDPOLR POL1     ELEV   16   1645.3   1645.3   1645.3   1645.3   1645.2   1644.8
   GRIDPOLR POL1     ELEV   16   1643.6   1643.9
   GRIDPOLR POL1     ELEV   17   1645.3   1645.3   1645.3   1645.3   1645.2   1644.8
   GRIDPOLR POL1     ELEV   17   1643.6   1643.8
   GRIDPOLR POL1     ELEV   18   1645.3   1645.3   1645.3   1645.3   1645.3   1645.0
   GRIDPOLR POL1     ELEV   18   1643.7   1643.4
```

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GRIDPOLR POL1     ELEV   19   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     ELEV   19   1644.0   1642.8
GRIDPOLR POL1     ELEV   20   1645.3   1645.3   1645.3   1645.3   1645.3   1645.5
GRIDPOLR POL1     ELEV   20   1644.4   1642.6
GRIDPOLR POL1     ELEV   21   1645.3   1645.3   1645.3   1645.3   1645.3   1645.5
GRIDPOLR POL1     ELEV   21   1644.9   1642.7
GRIDPOLR POL1     ELEV   22   1645.3   1645.3   1645.3   1645.3   1645.3   1645.4
GRIDPOLR POL1     ELEV   22   1645.3   1642.8
GRIDPOLR POL1     ELEV   23   1645.3   1645.3   1645.3   1645.3   1645.3   1645.4
GRIDPOLR POL1     ELEV   23   1645.4   1644.2
GRIDPOLR POL1     ELEV   24   1645.3   1645.3   1645.3   1645.3   1645.3   1645.4
GRIDPOLR POL1     ELEV   24   1645.4   1645.0
GRIDPOLR POL1     ELEV   25   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     ELEV   25   1645.3   1645.1
GRIDPOLR POL1     ELEV   26   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     ELEV   26   1645.3   1645.2
GRIDPOLR POL1     ELEV   27   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     ELEV   27   1645.3   1645.1
GRIDPOLR POL1     ELEV   28   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     ELEV   28   1645.2   1645.1
GRIDPOLR POL1     ELEV   29   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     ELEV   29   1645.2   1645.1
GRIDPOLR POL1     ELEV   30   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     ELEV   30   1645.2   1645.1
GRIDPOLR POL1     ELEV   31   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     ELEV   31   1645.2   1645.1
GRIDPOLR POL1     ELEV   32   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     ELEV   32   1645.2   1645.0
GRIDPOLR POL1     ELEV   33   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     ELEV   33   1645.2   1645.1
GRIDPOLR POL1     ELEV   34   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     ELEV   34   1645.2   1645.1
GRIDPOLR POL1     ELEV   35   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     ELEV   35   1645.2   1645.2
GRIDPOLR POL1     ELEV   36   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     ELEV   36   1645.3   1645.2
GRIDPOLR POL1     HILL    1   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     HILL    1   1645.3   1645.3
GRIDPOLR POL1     HILL    2   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     HILL    2   1645.3   1645.3
GRIDPOLR POL1     HILL    3   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     HILL    3   1645.3   1645.4
GRIDPOLR POL1     HILL    4   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     HILL    4   1645.3   1645.5
GRIDPOLR POL1     HILL    5   1645.3   1645.3   1645.3   1645.3   1645.4   1645.4
GRIDPOLR POL1     HILL    5   1645.4   1645.5
GRIDPOLR POL1     HILL    6   1645.3   1645.3   1645.3   1645.4   1645.4   1645.4
GRIDPOLR POL1     HILL    6   1645.4   1645.6
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GRIDPOLR POL1     HILL    7   1645.3   1645.3   1645.3   1645.4   1645.4   1645.4
GRIDPOLR POL1     HILL    7   1645.4   1645.6
GRIDPOLR POL1     HILL    8   1645.3   1645.3   1645.3   1645.4   1645.4   1645.5
GRIDPOLR POL1     HILL    8   1645.4   1645.5
GRIDPOLR POL1     HILL    9   1645.3   1645.3   1645.3   1645.4   1645.4   1645.5
GRIDPOLR POL1     HILL    9   1645.5   1645.6
GRIDPOLR POL1     HILL   10   1645.3   1645.3   1645.3   1645.4   1645.4   1645.5
GRIDPOLR POL1     HILL   10   1645.5   1645.6
GRIDPOLR POL1     HILL   11   1645.3   1645.3   1645.3   1645.4   1645.4   1645.4
GRIDPOLR POL1     HILL   11   1645.5   1645.6
GRIDPOLR POL1     HILL   12   1645.3   1645.3   1645.3   1645.4   1645.4   1645.6
GRIDPOLR POL1     HILL   12   1645.6   1643.7
GRIDPOLR POL1     HILL   13   1645.3   1645.3   1645.3   1645.4   1645.3   1645.6
GRIDPOLR POL1     HILL   13   1645.6   1643.9
GRIDPOLR POL1     HILL   14   1645.3   1645.3   1645.3   1645.3   1645.2   1645.6
GRIDPOLR POL1     HILL   14   1645.6   1643.9
GRIDPOLR POL1     HILL   15   1645.3   1645.3   1645.3   1645.3   1645.2   1644.6
GRIDPOLR POL1     HILL   15   1645.6   1644.0
GRIDPOLR POL1     HILL   16   1645.3   1645.3   1645.3   1645.3   1645.2   1644.9
GRIDPOLR POL1     HILL   16   1645.6   1643.9
GRIDPOLR POL1     HILL   17   1645.3   1645.3   1645.3   1645.3   1645.2   1644.8
GRIDPOLR POL1     HILL   17   1645.6   1643.8
GRIDPOLR POL1     HILL   18   1645.3   1645.3   1645.3   1645.3   1645.3   1645.5
GRIDPOLR POL1     HILL   18   1645.5   1643.4
GRIDPOLR POL1     HILL   19   1645.3   1645.3   1645.3   1645.3   1645.3   1645.5
GRIDPOLR POL1     HILL   19   1645.5   1642.8
GRIDPOLR POL1     HILL   20   1645.3   1645.3   1645.3   1645.3   1645.3   1645.5
GRIDPOLR POL1     HILL   20   1645.5   1645.5
GRIDPOLR POL1     HILL   21   1645.3   1645.3   1645.3   1645.3   1645.3   1645.5
GRIDPOLR POL1     HILL   21   1645.5   1645.5
GRIDPOLR POL1     HILL   22   1645.3   1645.3   1645.3   1645.3   1645.3   1645.4
GRIDPOLR POL1     HILL   22   1645.5   1645.5
GRIDPOLR POL1     HILL   23   1645.3   1645.3   1645.3   1645.3   1645.3   1645.4
GRIDPOLR POL1     HILL   23   1645.4   1645.0
GRIDPOLR POL1     HILL   24   1645.3   1645.3   1645.3   1645.3   1645.3   1645.4
GRIDPOLR POL1     HILL   24   1645.4   1645.0
GRIDPOLR POL1     HILL   25   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     HILL   25   1645.3   1645.1
GRIDPOLR POL1     HILL   26   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     HILL   26   1645.3   1645.2
GRIDPOLR POL1     HILL   27   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     HILL   27   1645.3   1645.1
GRIDPOLR POL1     HILL   28   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     HILL   28   1645.2   1645.1
GRIDPOLR POL1     HILL   29   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     HILL   29   1645.2   1645.1
GRIDPOLR POL1     HILL   30   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     HILL   30   1645.2   1645.1
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   GRIDPOLR POL1     HILL   31   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
   GRIDPOLR POL1     HILL   31   1645.2   1645.1
   GRIDPOLR POL1     HILL   32   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
   GRIDPOLR POL1     HILL   32   1645.2   1645.0
   GRIDPOLR POL1     HILL   33   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
   GRIDPOLR POL1     HILL   33   1645.2   1645.1
   GRIDPOLR POL1     HILL   34   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
   GRIDPOLR POL1     HILL   34   1645.2   1645.1
   GRIDPOLR POL1     HILL   35   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
   GRIDPOLR POL1     HILL   35   1645.2   1645.2
   GRIDPOLR POL1     HILL   36   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
   GRIDPOLR POL1     HILL   36   1645.3   1645.2
RE GRIDPOLR POL1 END
RE FINISHED

ME STARTING
   SURFFILE DEN01_AMET.SFC
   PROFFILE DEN01_AMET.PFL
   SURFDATA 03017 2018 DENVER,CO
   UAIRDATA 23066 2018 GRAND JUNCTION,CO
   PROFBASE 1656.2
ME FINISHED

OU STARTING
   RECTABLE ALLAVE 1ST 8TH
   SUMMFILE DEN01.SUM
   PLOTFILE 1 ALL 1ST DEN01_1hr.PLT 31
OU FINISHED
```

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CO STARTING
CO TITLEONE 5467 Highland Park Drive, St. Louis, MO, USA
CO TITLETWO Styrene Emission Modeling
CO MODELOPT DFAULT CONC
CO AVERTIME 1
CO POLLUTID STYRENE
CO RUNORNOT RUN
CO FINISHED

SO STARTING
SO EMISUNIT 215.21 GRAM/SEC PPM
**           EPN      TYPE    X(m)       Y(m)    Elev(m)
**          ---------------------------------------------
   LOCATION STACK01  POINT  517293.2  4399874.4  1644.1
**
**             EPN    QS(g/s)   HS(m)  TS(K)  VS(m/s)  DS(m)
**          ----------------------------------------------
   SRCPARAM STACK01  0.18  1.80   298.90  23.5   0.053


SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
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SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    STACK01     0.00    0.00    0.00    0.00    0.00    0.00

   SRCGROUP ALL

SO FINISHED

RE STARTING
RE GRIDPOLR POL1 STA
                 ORIG  STACK01
                 DIST  2. 3. 4. 6. 8. 15. 20. 45.
                 GDIR  36 10 10
   GRIDPOLR POL1     ELEV    1   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
   GRIDPOLR POL1     ELEV    1   1645.3   1645.3
   GRIDPOLR POL1     ELEV    2   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
   GRIDPOLR POL1     ELEV    2   1645.3   1645.3
   GRIDPOLR POL1     ELEV    3   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
   GRIDPOLR POL1     ELEV    3   1645.3   1645.4
   GRIDPOLR POL1     ELEV    4   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
   GRIDPOLR POL1     ELEV    4   1645.3   1645.5
   GRIDPOLR POL1     ELEV    5   1645.3   1645.3   1645.3   1645.3   1645.4   1645.4
   GRIDPOLR POL1     ELEV    5   1645.4   1645.5
   GRIDPOLR POL1     ELEV    6   1645.3   1645.3   1645.3   1645.4   1645.4   1645.4
   GRIDPOLR POL1     ELEV    6   1645.4   1645.6
   GRIDPOLR POL1     ELEV    7   1645.3   1645.3   1645.3   1645.4   1645.4   1645.4
   GRIDPOLR POL1     ELEV    7   1645.4   1645.6
   GRIDPOLR POL1     ELEV    8   1645.3   1645.3   1645.3   1645.4   1645.4   1645.5
   GRIDPOLR POL1     ELEV    8   1645.4   1645.5
   GRIDPOLR POL1     ELEV    9   1645.3   1645.3   1645.3   1645.4   1645.4   1645.5
   GRIDPOLR POL1     ELEV    9   1645.5   1644.5
   GRIDPOLR POL1     ELEV   10   1645.3   1645.3   1645.3   1645.4   1645.4   1645.5
   GRIDPOLR POL1     ELEV   10   1645.5   1643.3
   GRIDPOLR POL1     ELEV   11   1645.3   1645.3   1645.3   1645.4   1645.4   1645.4
   GRIDPOLR POL1     ELEV   11   1645.0   1642.7
   GRIDPOLR POL1     ELEV   12   1645.3   1645.3   1645.3   1645.4   1645.4   1645.0
   GRIDPOLR POL1     ELEV   12   1644.5   1643.7
   GRIDPOLR POL1     ELEV   13   1645.3   1645.3   1645.3   1645.4   1645.3   1644.7
   GRIDPOLR POL1     ELEV   13   1644.1   1643.9
   GRIDPOLR POL1     ELEV   14   1645.3   1645.3   1645.3   1645.3   1645.2   1644.6
   GRIDPOLR POL1     ELEV   14   1643.8   1643.9
   GRIDPOLR POL1     ELEV   15   1645.3   1645.3   1645.3   1645.3   1645.2   1644.6
   GRIDPOLR POL1     ELEV   15   1643.7   1644.0
   GRIDPOLR POL1     ELEV   16   1645.3   1645.3   1645.3   1645.3   1645.2   1644.8
   GRIDPOLR POL1     ELEV   16   1643.6   1643.9
   GRIDPOLR POL1     ELEV   17   1645.3   1645.3   1645.3   1645.3   1645.2   1644.8
   GRIDPOLR POL1     ELEV   17   1643.6   1643.8
   GRIDPOLR POL1     ELEV   18   1645.3   1645.3   1645.3   1645.3   1645.3   1645.0
   GRIDPOLR POL1     ELEV   18   1643.7   1643.4
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GRIDPOLR POL1     ELEV   19   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     ELEV   19   1644.0   1642.8
GRIDPOLR POL1     ELEV   20   1645.3   1645.3   1645.3   1645.3   1645.3   1645.5
GRIDPOLR POL1     ELEV   20   1644.4   1642.6
GRIDPOLR POL1     ELEV   21   1645.3   1645.3   1645.3   1645.3   1645.3   1645.5
GRIDPOLR POL1     ELEV   21   1644.9   1642.7
GRIDPOLR POL1     ELEV   22   1645.3   1645.3   1645.3   1645.3   1645.3   1645.4
GRIDPOLR POL1     ELEV   22   1645.3   1642.8
GRIDPOLR POL1     ELEV   23   1645.3   1645.3   1645.3   1645.3   1645.3   1645.4
GRIDPOLR POL1     ELEV   23   1645.4   1644.2
GRIDPOLR POL1     ELEV   24   1645.3   1645.3   1645.3   1645.3   1645.3   1645.4
GRIDPOLR POL1     ELEV   24   1645.4   1645.0
GRIDPOLR POL1     ELEV   25   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     ELEV   25   1645.3   1645.1
GRIDPOLR POL1     ELEV   26   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     ELEV   26   1645.3   1645.2
GRIDPOLR POL1     ELEV   27   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     ELEV   27   1645.3   1645.1
GRIDPOLR POL1     ELEV   28   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     ELEV   28   1645.2   1645.1
GRIDPOLR POL1     ELEV   29   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     ELEV   29   1645.2   1645.1
GRIDPOLR POL1     ELEV   30   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     ELEV   30   1645.2   1645.1
GRIDPOLR POL1     ELEV   31   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     ELEV   31   1645.2   1645.1
GRIDPOLR POL1     ELEV   32   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     ELEV   32   1645.2   1645.0
GRIDPOLR POL1     ELEV   33   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     ELEV   33   1645.2   1645.1
GRIDPOLR POL1     ELEV   34   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     ELEV   34   1645.2   1645.1
GRIDPOLR POL1     ELEV   35   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     ELEV   35   1645.2   1645.2
GRIDPOLR POL1     ELEV   36   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     ELEV   36   1645.3   1645.2
GRIDPOLR POL1     HILL    1   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     HILL    1   1645.3   1645.3
GRIDPOLR POL1     HILL    2   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     HILL    2   1645.3   1645.3
GRIDPOLR POL1     HILL    3   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     HILL    3   1645.3   1645.4
GRIDPOLR POL1     HILL    4   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     HILL    4   1645.3   1645.5
GRIDPOLR POL1     HILL    5   1645.3   1645.3   1645.3   1645.3   1645.4   1645.4
GRIDPOLR POL1     HILL    5   1645.4   1645.5
GRIDPOLR POL1     HILL    6   1645.3   1645.3   1645.3   1645.4   1645.4   1645.4
GRIDPOLR POL1     HILL    6   1645.4   1645.6
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GRIDPOLR POL1     HILL     7   1645.3   1645.3   1645.3   1645.4   1645.4   1645.4
GRIDPOLR POL1     HILL     7   1645.4   1645.6
GRIDPOLR POL1     HILL     8   1645.3   1645.3   1645.3   1645.4   1645.4   1645.5
GRIDPOLR POL1     HILL     8   1645.4   1645.5
GRIDPOLR POL1     HILL     9   1645.3   1645.3   1645.3   1645.4   1645.4   1645.5
GRIDPOLR POL1     HILL     9   1645.5   1645.6
GRIDPOLR POL1     HILL    10   1645.3   1645.3   1645.3   1645.4   1645.4   1645.5
GRIDPOLR POL1     HILL    10   1645.5   1645.6
GRIDPOLR POL1     HILL    11   1645.3   1645.3   1645.3   1645.4   1645.4   1645.4
GRIDPOLR POL1     HILL    11   1645.5   1645.6
GRIDPOLR POL1     HILL    12   1645.3   1645.3   1645.3   1645.4   1645.4   1645.6
GRIDPOLR POL1     HILL    12   1645.6   1643.7
GRIDPOLR POL1     HILL    13   1645.3   1645.3   1645.3   1645.4   1645.3   1645.6
GRIDPOLR POL1     HILL    13   1645.6   1643.9
GRIDPOLR POL1     HILL    14   1645.3   1645.3   1645.3   1645.3   1645.2   1645.6
GRIDPOLR POL1     HILL    14   1645.6   1643.9
GRIDPOLR POL1     HILL    15   1645.3   1645.3   1645.3   1645.3   1645.2   1644.6
GRIDPOLR POL1     HILL    15   1645.6   1644.0
GRIDPOLR POL1     HILL    16   1645.3   1645.3   1645.3   1645.3   1645.2   1644.9
GRIDPOLR POL1     HILL    16   1645.6   1643.9
GRIDPOLR POL1     HILL    17   1645.3   1645.3   1645.3   1645.3   1645.2   1644.8
GRIDPOLR POL1     HILL    17   1645.6   1643.8
GRIDPOLR POL1     HILL    18   1645.3   1645.3   1645.3   1645.3   1645.3   1645.5
GRIDPOLR POL1     HILL    18   1645.5   1643.4
GRIDPOLR POL1     HILL    19   1645.3   1645.3   1645.3   1645.3   1645.3   1645.5
GRIDPOLR POL1     HILL    19   1645.5   1642.8
GRIDPOLR POL1     HILL    20   1645.3   1645.3   1645.3   1645.3   1645.3   1645.5
GRIDPOLR POL1     HILL    20   1645.5   1645.5
GRIDPOLR POL1     HILL    21   1645.3   1645.3   1645.3   1645.3   1645.3   1645.5
GRIDPOLR POL1     HILL    21   1645.5   1645.5
GRIDPOLR POL1     HILL    22   1645.3   1645.3   1645.3   1645.3   1645.3   1645.4
GRIDPOLR POL1     HILL    22   1645.5   1645.5
GRIDPOLR POL1     HILL    23   1645.3   1645.3   1645.3   1645.3   1645.3   1645.4
GRIDPOLR POL1     HILL    23   1645.4   1645.0
GRIDPOLR POL1     HILL    24   1645.3   1645.3   1645.3   1645.3   1645.3   1645.4
GRIDPOLR POL1     HILL    24   1645.4   1645.0
GRIDPOLR POL1     HILL    25   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     HILL    25   1645.3   1645.1
GRIDPOLR POL1     HILL    26   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     HILL    26   1645.3   1645.2
GRIDPOLR POL1     HILL    27   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
GRIDPOLR POL1     HILL    27   1645.3   1645.1
GRIDPOLR POL1     HILL    28   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     HILL    28   1645.2   1645.1
GRIDPOLR POL1     HILL    29   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     HILL    29   1645.2   1645.1
GRIDPOLR POL1     HILL    30   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
GRIDPOLR POL1     HILL    30   1645.2   1645.1
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   GRIDPOLR POL1     HILL   31   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
   GRIDPOLR POL1     HILL   31   1645.2   1645.1
   GRIDPOLR POL1     HILL   32   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
   GRIDPOLR POL1     HILL   32   1645.2   1645.0
   GRIDPOLR POL1     HILL   33   1645.3   1645.3   1645.3   1645.3   1645.3   1645.2
   GRIDPOLR POL1     HILL   33   1645.2   1645.1
   GRIDPOLR POL1     HILL   34   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
   GRIDPOLR POL1     HILL   34   1645.2   1645.1
   GRIDPOLR POL1     HILL   35   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
   GRIDPOLR POL1     HILL   35   1645.2   1645.2
   GRIDPOLR POL1     HILL   36   1645.3   1645.3   1645.3   1645.3   1645.3   1645.3
   GRIDPOLR POL1     HILL   36   1645.3   1645.2
RE GRIDPOLR POL1 END
RE FINISHED

ME STARTING
   SURFFILE DEN01_AMET.SFC
   PROFFILE DEN01_AMET.PFL
   SURFDATA 03017 2018 DENVER,CO
   UAIRDATA 23066 2018 GRAND JUNCTION,CO
   PROFBASE 1656.2
ME FINISHED

OU STARTING
   RECTABLE ALLAVE 1ST 8TH
   SUMMFILE DEN01.SUM
   PLOTFILE 1 ALL 1ST DEN01_1hr.PLT 31
OU FINISHED

 **********************************
 *** SETUP Finishes Successfully ***
 **********************************

 *** AERMOD - VERSION  18081 ***   *** 5467 Highland Park Drive, St. Louis, MO,
USA                          ***        02/23/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                         ***        09:55:50

                                    PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                              ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.
```

```
  --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.

 **Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  STYRENE

 **Model Calculates  1 Short Term Average(s) of:   1-HR

 **This Run Includes:      1 Source(s);       1 Source Group(s); and     288
Receptor(s)

               with:      1 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      0 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  18081

 **Output Options Selected:
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)
```

 **NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and
Missing Hours

 **Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1656.20 ; Decay
Coef. =   0.000   ; Rot. Angle =   0.0
                  Emission Units = GRAM/SEC   ;
Emission Rate Unit Factor =   215.21
                  Output Units   = PPM

 **Approximate Storage Requirements of Model =   3.6 MB of RAM.

 **Input Runstream File: aermod.inp

 **Output Print File: aermod.out

 **File for Summary of Results: DEN01.SUM

↟ *** AERMOD - VERSION 18081 ***   *** 5467 Highland Park Drive, St. Louis, MO,
USA   ***   02/23/20
 *** AERMET - VERSION 18081 ***   *** Styrene Emission Modeling
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 *** MODELOPTs: RegDFAULT CONC ELEV RURAL

                                                    *** POINT SOURCE DATA ***

               NUMBER EMISSION RATE   BASE   STACK   STACK
STACK   STACK   BLDG   URBAN CAP/ EMIS RATE
   SOURCE   PART. (USER UNITS)   X   Y   ELEV.   HEIGHT TEMP.   EXIT
VEL. DIAMETER EXISTS SOURCE HOR   SCALAR
     ID   CATS.   (METERS) (METERS) (METERS) (METERS) (DEG.K)
(M/SEC) (METERS)   VARY BY
 -
- -

 STACK01   0   0.18000E+00 517293.2 4399874.4 1644.1   1.80   298.90
23.50   0.05   NO   NO   NO
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USA   ***   02/23/20
 *** AERMET - VERSION 18081 ***   *** Styrene Emission Modeling
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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	STACK01 ,

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*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

*** ORIGIN FOR POLAR NETWORK ***
X-ORIG = 517293.20 ; Y-ORIG = 4399874.40 (METERS)

*** DISTANCE RANGES OF NETWORK ***
(METERS)

2.0, 3.0, 4.0, 6.0, 8.0, 15.0, 20.0, 45.0,

*** DIRECTION RADIALS OF NETWORK ***
(DEGREES)

10.0, 20.0, 30.0, 40.0, 50.0, 60.0, 70.0, 80.0, 90.0, 100.0,
110.0, 120.0, 130.0, 140.0, 150.0, 160.0, 170.0, 180.0, 190.0, 200.0,
210.0, 220.0, 230.0, 240.0, 250.0, 260.0, 270.0, 280.0, 290.0, 300.0,
310.0, 320.0, 330.0, 340.0, 350.0, 360.0,

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*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

* ELEVATION HEIGHTS IN METERS *

DIRECTION (DEGREES)	DISTANCE (METERS)								
	2.00	3.00	4.00	6.00	8.00	15.00	20.00	45.00	
10.00	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	
20.00	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	
30.00	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	1645.40	
40.00	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	1645.50	
50.00	1645.30	1645.30	1645.30	1645.30	1645.40	1645.40	1645.40	1645.50	
60.00	1645.30	1645.30	1645.30	1645.40	1645.40	1645.40	1645.40	1645.60	
70.00	1645.30	1645.30	1645.30	1645.40	1645.40	1645.40	1645.40	1645.60	
80.00	1645.30	1645.30	1645.30	1645.40	1645.40	1645.50	1645.40	1645.50	
90.00	1645.30	1645.30	1645.30	1645.40	1645.40	1645.50	1645.50	1644.50	
100.00	1645.30	1645.30	1645.30	1645.40	1645.40	1645.50	1645.50	1643.30	
110.00	1645.30	1645.30	1645.30	1645.40	1645.40	1645.40	1645.00	1642.70	
120.00	1645.30	1645.30	1645.30	1645.40	1645.40	1645.00	1644.50	1643.70	
130.00	1645.30	1645.30	1645.30	1645.40	1645.30	1644.70	1644.10	1643.90	
140.00	1645.30	1645.30	1645.30	1645.30	1645.20	1644.60	1643.80	1643.90	
150.00	1645.30	1645.30	1645.30	1645.30	1645.20	1644.60	1643.70	1644.00	
160.00	1645.30	1645.30	1645.30	1645.30	1645.20	1644.80	1643.60	1643.90	
170.00	1645.30	1645.30	1645.30	1645.30	1645.20	1644.80	1643.60	1643.80	

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     180.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.00      1643.70      1643.40
     190.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.20      1644.00      1642.80
     200.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.50      1644.40      1642.60
     210.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.50      1644.90      1642.70
     220.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.40      1645.30      1642.80
     230.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.40      1645.40      1644.20
     240.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.40      1645.40      1645.00
     250.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.30      1645.30      1645.10
     260.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.30      1645.30      1645.20
     270.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.30      1645.30      1645.10
     280.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.20      1645.20      1645.10
     290.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.20      1645.20      1645.10
     300.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.20      1645.20      1645.10
     310.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.20      1645.20      1645.10
     320.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.20      1645.20      1645.00
     330.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.20      1645.20      1645.10
     340.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.30      1645.20      1645.10
     350.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.30      1645.20      1645.20
     360.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.30      1645.30      1645.20
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 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                    *** NETWORK ID: POL1     ;  NETWORK TYPE: GRIDPOLR
***
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* HILL HEIGHT SCALES IN METERS *

DIRECTION (DEGREES)	DISTANCE (METERS)								
	2.00	3.00	4.00	6.00	8.00	15.00	20.00	45.00	
10.00	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	
20.00	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	
30.00	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	1645.40	
40.00	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	1645.30	1645.50	
50.00	1645.30	1645.30	1645.30	1645.30	1645.40	1645.40	1645.40	1645.50	
60.00	1645.30	1645.30	1645.30	1645.40	1645.40	1645.40	1645.40	1645.60	
70.00	1645.30	1645.30	1645.30	1645.40	1645.40	1645.40	1645.40	1645.60	
80.00	1645.30	1645.30	1645.30	1645.40	1645.40	1645.50	1645.40	1645.50	
90.00	1645.30	1645.30	1645.30	1645.40	1645.40	1645.50	1645.50	1645.60	
100.00	1645.30	1645.30	1645.30	1645.40	1645.40	1645.50	1645.50	1645.60	
110.00	1645.30	1645.30	1645.30	1645.40	1645.40	1645.40	1645.50	1645.60	
120.00	1645.30	1645.30	1645.30	1645.40	1645.40	1645.60	1645.60	1643.70	
130.00	1645.30	1645.30	1645.30	1645.40	1645.30	1645.60	1645.60	1643.90	
140.00	1645.30	1645.30	1645.30	1645.30	1645.20	1645.60	1645.60	1643.90	
150.00	1645.30	1645.30	1645.30	1645.30	1645.20	1644.60	1645.60	1644.00	
160.00	1645.30	1645.30	1645.30	1645.30	1645.20	1644.90	1645.60	1643.90	
170.00	1645.30	1645.30	1645.30	1645.30	1645.20	1644.80	1645.60	1643.80	
180.00	1645.30	1645.30	1645.30	1645.30	1645.30	1645.50	1645.50	1643.40	
190.00	1645.30	1645.30	1645.30	1645.30	1645.30	1645.50	1645.50	1642.80	
200.00	1645.30	1645.30	1645.30	1645.30	1645.30				

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 1645.50      1645.50      1645.50
     210.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.50      1645.50      1645.50
     220.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.40      1645.50      1645.50
     230.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.40      1645.40      1645.00
     240.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.40      1645.40      1645.00
     250.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.30      1645.30      1645.10
     260.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.30      1645.30      1645.20
     270.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.30      1645.30      1645.10
     280.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.20      1645.20      1645.10
     290.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.20      1645.20      1645.10
     300.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.20      1645.20      1645.10
     310.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.20      1645.20      1645.10
     320.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.20      1645.20      1645.00
     330.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.20      1645.20      1645.10
     340.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.30      1645.20      1645.10
     350.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.30      1645.20      1645.20
     360.00 |       1645.30      1645.30      1645.30      1645.30      1645.30
 1645.30      1645.30      1645.20
 *** AERMOD - VERSION  18081 ***   *** 5467 Highland Park Drive, St. Louis, MO,
USA                          ***        02/23/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                         ***        09:55:50

                                    PAGE   7
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                                *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
                                                                  (1=YES; 0=NO)

            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 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
            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 1 1 1 1 1   1 1 1
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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 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
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 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
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 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
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 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
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 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
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 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

↑ *** AERMOD - VERSION 18081 *** *** 5467 Highland Park Drive, St. Louis, MO, USA *** 02/23/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling *** 09:55:50

PAGE 8
*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: DEN01_AMET.SFC
Met Version: 18081
Profile file: DEN01_AMET.PFL

Surface format: FREE

Profile format: FREE

Surface station no.: 3017 Upper air station no.: 23066
Name: DENVER,CO Name: GRAND

Year: 2018 Year: 2018

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
18	01	01	1	01	-11.6	0.227	-9.000	-9.000	-999.	259.	75.8	0.06	2.37	1.00	3.27	140.	10.0	259.9	2.0
18	01	01	1	02	-8.6	0.169	-9.000	-9.000	-999.	168.	42.2	0.06	2.37	1.00	2.66	147.	10.0	260.4	2.0
18	01	01	1	03	-3.3	0.073	-9.000	-9.000	-999.	52.	8.8	0.06	2.37	1.00	1.86	148.	10.0	260.9	2.0
18	01	01	1	04	-5.5	0.082	-9.000	-9.000	-999.	56.	7.4	0.03	2.37	1.00	2.42	222.	10.0	260.9	2.0
18	01	01	1	05	-5.5	0.077	-9.000	-9.000	-999.	51.	6.2	0.03	2.37	1.00	2.28	215.	10.0	260.4	2.0
18	01	01	1	06	-8.4	0.096	-9.000	-9.000	-999.	71.	7.9	0.03	2.37	1.00	2.73	177.	10.0	257.5	2.0
18	01	01	1	07	-6.0	0.085	-9.000	-9.000	-999.	60.	7.6	0.06	2.37	1.00	2.20	115.	10.0	257.5	2.0
18	01	01	1	08	-7.9	0.114	-9.000	-9.000	-999.	92.	14.1	0.06	2.37	0.73	2.49	93.	10.0	258.1	2.0
18	01	01	1	09	6.6	0.232	0.223	0.005	50.	269.	-142.4	0.06	2.37	0.40	2.84	134.	10.0	262.5	2.0
18	01	01	1	10	54.4	0.200	0.607	0.006	123.	215.	-11.0	0.04	2.37	0.28	2.23	61.	10.0	264.9	2.0
18	01	01	1	11	73.7	0.253	0.809	0.005	215.	305.	-16.4	0.06	2.37	0.24	2.74	41.	10.0	265.4	2.0
18	01	01	1	12	109.1	0.223	1.191	0.006	463.	254.	-7.6	0.03	2.37	0.22	2.52	13.	10.0	267.0	2.0
18	01	01	1	13	109.7	0.142	1.338	0.007	651.	130.	-1.9	0.01	2.37	0.22	1.60	353.	10.0	268.8	2.0
18	01	01	1	14	75.3	0.141	1.240	0.007	755.	127.	-2.8	0.02	2.37	0.24	1.57	299.	10.0	270.4	2.0
18	01	01	1	15	57.3	0.245	1.165	0.007	822.	291.	-19.2	0.03	2.37	0.28	3.03	27.	10.0	268.8	2.0
18	01	01	1	16	9.7	0.311	0.648	0.007	831.	415.	-228.9	0.06	2.37	0.39	3.93	35.	10.0	268.1	2.0
18	01	01	1	17	-23.5	0.355	-9.000	-9.000	-999.	507.	142.1	0.06	2.37	0.69	4.93	41.	10.0	265.4	2.0
18	01	01	1	18	-16.4	0.217	-9.000	-9.000	-999.	255.	46.7	0.06	2.37	1.00	3.41	31.	10.0	263.8	2.0
18	01	01	1	19	-3.3	0.060	-9.000	-9.000	-999.	76.	4.8	0.01	2.37	1.00	1.96	337.	10.0	263.8	2.0
18	01	01	1	20	-1.2	0.037	-9.000	-9.000	-999.	19.	3.0	0.02	2.37	1.00	1.18	316.	10.0	263.8	2.0
18	01	01	1	21	-5.7	0.079	-9.000	-9.000	-999.	53.	6.4	0.03	2.37	1.00	2.32	256.	10.0	263.1	2.0
18	01	01	1	22	-15.1	0.158	-9.000	-9.000	-999.	151.	19.6	0.03	2.37						

```
1.00    3.34  263.   10.0  263.8    2.0
 18 01 01   1 23  -11.0  0.161 -9.000 -9.000 -999.  155.     28.4  0.02   2.37
1.00    3.23  271.   10.0  263.8    2.0
 18 01 01   1 24  -18.3  0.242 -9.000 -9.000 -999.  286.     58.1  0.02   2.37
1.00    4.42  302.   10.0  264.2    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 18 01 01 01   10.0 1  140.    3.27   259.9   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                               *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                  INCLUDING SOURCE(S):     STACK01     ,

                                   *** NETWORK ID: POL1     ;  NETWORK TYPE:
GRIDPOLR ***

                                        ** CONC OF STYRENE  IN PPM
                   **

 DIRECTION |                                                 DISTANCE (METERS)
 (DEGREES) |            2.00                    3.00                    4.00
          6.00                    8.00
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

      10.0 |      0.13548 (18062822)      0.55207 (18062822)      0.69699 (18061522)
     0.76401 (18061522)      0.65530 (18061522)
      20.0 |      0.11719 (18080221)      0.52137 (18061522)      0.95790 (18061522)
     1.03216 (18061522)      0.88863 (18061522)
      30.0 |      0.09354 (18080224)      0.46119 (18061521)      0.79380 (18072123)
     0.86291 (18072123)      0.75688 (18072123)
      40.0 |      0.10797 (18060520)      0.50422 (18060520)      0.70754 (18090821)
     0.74051 (18090821)      0.66239 (18071106)
      50.0 |      0.19983 (18060520)      0.82793 (18060520)      1.03308 (18060522)
     0.91300 (18060522)      0.81690 (18060522)
      60.0 |      0.18699 (18060520)      0.84222 (18060522)      1.14869 (18060522)
     1.17328 (18060522)      0.90555 (18060522)
```

70.0	0.14277 (18062820)	0.54541 (18082521)	0.76321 (18082521)	0.87464 (18071306)	0.73927 (18071306)
80.0	0.14207 (18062821)	0.52918 (18062821)	0.70253 (18072124)	0.85271 (18072124)	0.71203 (18051722)
90.0	0.08153 (18080323)	0.46579 (18072124)	0.78198 (18072124)	0.94130 (18072124)	0.75306 (18072124)
100.0	0.10429 (18060521)	0.51912 (18060521)	0.70831 (18071406)	0.88683 (18071406)	0.75119 (18083101)
110.0	0.10429 (18060521)	0.51912 (18060521)	0.73062 (18080305)	0.99500 (18082422)	1.05066 (18082422)
120.0	0.08724 (18082320)	0.43300 (18082320)	0.56848 (18082320)	1.60223 (18082422)	1.71384 (18082422)
130.0	0.05643 (18082320)	0.31788 (18072222)	0.49885 (18080601)	1.30963 (18082422)	1.03039 (18082422)
140.0	0.08148 (18082719)	0.50199 (18082719)	0.71152 (18082719)	0.64725 (18072304)	0.56041 (18072304)
150.0	0.08148 (18082719)	0.50199 (18082719)	0.71152 (18082719)	0.69997 (18071924)	0.54872 (18071924)
160.0	0.09164 (18061021)	0.59341 (18082720)	0.85974 (18082720)	0.77934 (18082720)	0.58746 (18082720)
170.0	0.10650 (18082720)	0.67249 (18082720)	0.96427 (18082720)	1.23751 (18072120)	0.90161 (18072120)
180.0	0.09336 (18061020)	0.48219 (18061020)	1.09941 (18072120)	1.75653 (18072120)	1.64156 (18072120)
190.0	0.09721 (18081319)	0.45637 (18081319)	1.05247 (18072120)	1.69144 (18072120)	1.58282 (18072120)
200.0	0.11939 (18081319)	0.53779 (18081319)	0.68274 (18081319)	1.09540 (18072120)	1.04135 (18072120)
210.0	0.10549 (18062720)	0.52881 (18070320)	0.78811 (18070320)	0.73470 (18070320)	0.70961 (18071923)
220.0	0.11615 (18091720)	0.68793 (18091720)	1.04452 (18091719)	1.06483 (18072121)	1.18598 (18072121)
230.0	0.13562 (18091720)	0.93226 (18091719)	1.46016 (18091719)	1.39838 (18091719)	1.46565 (18072121)
240.0	0.07511 (18091719)	0.64915 (18091719)	1.04452 (18091719)	1.14993 (18061420)	0.99152 (18061420)
250.0	0.05059 (18062722)	0.53391 (18061420)	1.26920 (18061420)	1.63394 (18061420)	1.40561 (18061420)
260.0	0.09032 (18083019)	0.64728 (18083019)	0.97425 (18083019)	0.96077 (18061420)	0.82949 (18061420)
270.0	0.13375 (18083019)	0.88631 (18083019)	1.30038 (18083019)	1.20001 (18083019)	1.00226 (18083019)
280.0	0.14802 (18071821)	0.70223 (18071821)	0.97425 (18083019)	0.90919 (18083019)	0.75483 (18083019)
290.0	0.17441 (18080919)	0.67177 (18080919)	0.80801 (18080919)	0.73184 (18091420)	0.66396 (18091420)
300.0	0.29698 (18080220)	1.06252 (18080220)	1.25304 (18080220)	1.02893 (18080220)	0.86485 (18080220)

310.0	0.32764 (18081619)	1.06252 (18080220)	1.25304 (18080220)	1.02893 (18080220)	0.86485 (18080220)
320.0	0.31925 (18071920)	0.85412 (18081619)	0.91498 (18081619)	0.98366 (18061421)	0.96368 (18061421)
330.0	0.26706 (18071820)	0.90127 (18071820)	1.12212 (18072122)	1.04290 (18072122)	0.87042 (18072122)
340.0	0.23019 (18072020)	1.02584 (18072122)	1.48417 (18072122)	1.36724 (18072122)	1.14988 (18072122)
350.0	0.24720 (18082420)	0.97126 (18082420)	1.18164 (18082420)	1.04290 (18072122)	0.87042 (18072122)
360.0	0.19592 (18082519)	0.71784 (18082420)	0.89546 (18082420)	0.78914 (18071620)	0.72848 (18071620)

↟ *** AERMOD - VERSION 18081 *** *** 5467 Highland Park Drive, St. Louis, MO, USA *** 02/23/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
*** 09:55:50

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STACK01 ,

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

** CONC OF STYRENE IN PPM **

DIRECTION (DEGREES)	DISTANCE (METERS) 15.00	20.00	45.00
10.0	0.54801 (18071521)	0.49761 (18071521)	0.31379 (18071522)
20.0	0.61787 (18061522)	0.48047 (18061522)	0.23484 (18070403)
30.0	0.53246 (18090304)	0.43585 (18051606)	0.27522 (18052302)
40.0	0.55454 (18071523)	0.48687 (18071523)	0.31618 (18060321)
50.0	0.63218 (18091707)	0.49369 (18091707)	0.31618 (18060321)
60.0	0.63762 (18091706)	0.57110 (18091706)	0.34840 (18050721)
70.0	0.55056 (18080124)	0.47149 (18081603)	0.28561 (18071303)
80.0	0.51597 (18080806)	0.41081 (18050802)	0.31447 (18050802)
90.0	0.62619 (18060320)	0.59268 (18060320)	0.37105 (18060320)
100.0	0.61193 (18083101)	0.50066 (18083101)	0.24360 (18062224)
110.0	0.68355 (18082422)	0.43902 (18082422)	0.18745 (18052102)
120.0	0.80485 (18082422)	0.64894 (18082422)	0.54831 (18082422)
130.0	0.51045 (18080306)	0.45747 (18080306)	0.38666 (18082422)

140.0	0.45699 (18072304)	0.39718 (18072820)	0.21768 (18072923)
150.0	0.43486 (18071805)	0.36630 (18080123)	0.22126 (18051103)
160.0	0.43484 (18071901)	0.34542 (18083023)	0.31004 (18083023)
170.0	0.48926 (18072120)	0.34542 (18083023)	0.30440 (18083023)
180.0	0.86573 (18072120)	0.51653 (18072120)	0.38673 (18072120)
190.0	0.97417 (18072120)	0.57363 (18072120)	0.33764 (18072120)
200.0	0.74916 (18072120)	0.51628 (18072306)	0.26290 (18083024)
210.0	0.58829 (18071923)	0.45364 (18071923)	0.21484 (18090623)
220.0	0.94557 (18072121)	0.74701 (18072121)	0.30573 (18082421)
230.0	1.19484 (18072121)	0.99252 (18072121)	0.51795 (18072121)
240.0	0.71655 (18082421)	0.60660 (18090919)	0.38215 (18090919)
250.0	0.92377 (18061420)	0.74572 (18061420)	0.30859 (18061420)
260.0	0.56924 (18071221)	0.56217 (18090920)	0.40952 (18090920)
270.0	0.66880 (18083019)	0.52411 (18081522)	0.26024 (18080605)
280.0	0.58646 (18071222)	0.53842 (18071606)	0.24988 (18010517)
290.0	0.54082 (18072402)	0.49211 (18072402)	0.23694 (18010619)
300.0	0.54608 (18080220)	0.42948 (18052022)	0.26320 (18102619)
310.0	0.58081 (18090921)	0.44866 (18090921)	0.29227 (18061524)
320.0	0.74832 (18061421)	0.62499 (18061421)	0.32185 (18061524)
330.0	0.65518 (18061421)	0.54418 (18061421)	0.28387 (18072802)
340.0	0.77441 (18072122)	0.59302 (18072122)	0.27782 (18081524)
350.0	0.59998 (18070401)	0.53714 (18070401)	0.28796 (18071520)
360.0	0.53204 (18071620)	0.46086 (18081806)	0.28796 (18071520)

↟ *** AERMOD - VERSION 18081 *** *** 5467 Highland Park Drive, St. Louis, MO, USA *** 02/23/20
*** AERMET - VERSION 18081 *** *** Styrene Emission Modeling
*** 09:55:50

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 8TH HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STACK01 ,

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

** CONC OF STYRENE IN PPM **

DIRECTION (DEGREES)	DISTANCE (METERS) 2.00	3.00	4.00	6.00	8.00
10.0	0.08611 (18062624)	0.42308 (18070822)	0.57005 (18072103)		

```
0.58172 (18070705)      0.52078 (18082122)
 20.0 |      0.07707 (18072202)      0.41985 (18061424)      0.60881 (18060523)
0.63916 (18092421)      0.56476 (18071006)
 30.0 |      0.08337 (18080424)      0.40809 (18062904)      0.59914 (18062904)
0.61959 (18090304)      0.56065 (18080201)
 40.0 |      0.08487 (18082623)      0.42159 (18080319)      0.61458 (18062905)
0.63297 (18080706)      0.59462 (18080706)
 50.0 |      0.08297 (18080320)      0.42173 (18070301)      0.59651 (18060924)
0.61485 (18082401)      0.64716 (18090904)
 60.0 |      0.07671 (18071803)      0.40723 (18072506)      0.59354 (18081803)
0.77170 (18080105)      0.66630 (18071305)
 70.0 |      0.08578 (18060522)      0.42416 (18060520)      0.61890 (18071906)
0.78921 (18091324)      0.67940 (18072924)
 80.0 |      0.08116 (18082705)      0.38561 (18092418)      0.59616 (18082521)
0.75572 (18080504)      0.63485 (18072320)
 90.0 |      0.05494 (18110218)      0.33204 (18071406)      0.56916 (18071505)
0.77834 (18091804)      0.66152 (18051722)
100.0 |      0.04422 (18082323)      0.31240 (18082319)      0.53091 (18072321)
0.74540 (18083101)      0.60326 (18052402)
110.0 |      0.05208 (18080304)      0.33259 (18102717)      0.51524 (18071224)
0.70510 (18080306)      0.63281 (18080306)
120.0 |      0.04422 (18082323)      0.26451 (18072405)      0.48941 (18061702)
0.73195 (18071302)      0.59951 (18061701)
130.0 |      0.02616 (18061022)      0.22840 (18072602)      0.41253 (18062423)
0.67941 (18080601)      0.50602 (18091805)
140.0 |      0.02651 (18061622)      0.25751 (18102919)      0.46475 (18071924)
0.56056 (18061703)      0.47305 (18061703)
150.0 |      0.03411 (18092724)      0.29576 (18061021)      0.51204 (18061101)
0.60281 (18061706)      0.49213 (18061706)
160.0 |      0.04372 (18062924)      0.29673 (18061020)      0.49776 (18061102)
0.61630 (18071704)      0.50008 (18071703)
170.0 |      0.04514 (18061023)      0.29483 (18061024)      0.51084 (18061620)
0.55294 (18051721)      0.44728 (18082805)
180.0 |      0.05179 (18082721)      0.31528 (18061620)      0.52188 (18102617)
0.56116 (18102618)      0.51093 (18072224)
190.0 |      0.05256 (18062720)      0.33329 (18081320)      0.53539 (18080524)
0.56962 (18052320)      0.53696 (18072804)
200.0 |      0.05256 (18062322)      0.32839 (18092019)      0.49568 (18092019)
0.57239 (18081319)      0.54337 (18071705)
210.0 |      0.05295 (18090419)      0.31409 (18080521)      0.47824 (18081319)
0.53541 (18072906)      0.49711 (18061803)
220.0 |      0.05064 (18080120)      0.34176 (18062020)      0.52167 (18090419)
0.60220 (18101917)      0.57592 (18050519)
230.0 |      0.04587 (18060121)      0.34630 (18080120)      0.52352 (18062221)
0.61370 (18071823)      0.58659 (18071603)
240.0 |      0.03478 (18083020)      0.31157 (18061220)      0.56411 (18071823)
0.66403 (18052919)      0.61863 (18071823)
250.0 |      0.02880 (18061220)      0.25495 (18081321)      0.51687 (18092321)
```

0.57688 (18071601)	0.58939 (18091121)			
260.0 |	0.04730 (18073119)	0.31085 (18052519)	0.44687 (18072603)	
0.54718 (18083022)	0.54009 (18100418)			
270.0 |	0.07213 (18082019)	0.39492 (18062320)	0.57549 (18052519)	
0.62227 (18073120)	0.57917 (18090421)			
280.0 |	0.09032 (18083019)	0.44097 (18091722)	0.61055 (18060420)	
0.62302 (18072324)	0.59298 (18080604)			
290.0 |	0.12592 (18091618)	0.48610 (18060920)	0.61938 (18070120)	
0.63700 (18061602)	0.57044 (18092006)			
300.0 |	0.17468 (18070220)	0.55759 (18070920)	0.67230 (18081619)	
0.63957 (18090720)	0.58492 (18072901)			
310.0 |	0.19426 (18091619)	0.57180 (18091619)	0.68860 (18062520)	
0.65554 (18032218)	0.59223 (18090220)			
320.0 |	0.18557 (18091518)	0.54807 (18071021)	0.66455 (18102817)	
0.66609 (18080220)	0.57928 (18091421)			
330.0 |	0.17235 (18071021)	0.54564 (18081620)	0.66759 (18070820)	
0.61482 (18091122)	0.56615 (18102118)			
340.0 |	0.14024 (18071422)	0.52929 (18072024)	0.68465 (18070821)	
0.63302 (18072020)	0.58163 (18100221)			
350.0 |	0.15868 (18071120)	0.53339 (18082219)	0.65135 (18083120)	
0.66808 (18071621)	0.58996 (18081823)			
360.0 |	0.13372 (18060720)	0.47066 (18071622)	0.64862 (18071620)	
0.61919 (18082523)	0.56381 (18072403)			

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 8TH HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STACK01 ,

*** NETWORK ID: POL1 ; NETWORK TYPE: GRIDPOLR ***

** CONC OF STYRENE IN PPM **

DIRECTION (DEGREES) |	DISTANCE (METERS) 15.00	20.00	45.00
10.0 |	0.45730 (18111008)	0.38882 (18111008)	0.21907 (18082304)
20.0 |	0.46111 (18062503)	0.38882 (18050824)	0.21177 (18052305)

30.0	0.46884 (18062003)	0.40344 (18072701)	0.20438 (18120901)
40.0	0.51272 (18090305)	0.42277 (18071104)	0.22092 (18020207)
50.0	0.49085 (18081305)	0.39886 (18071104)	0.21702 (18100124)
60.0	0.48212 (18080105)	0.40356 (18100124)	0.23474 (18052405)
70.0	0.49022 (18052021)	0.42883 (18090806)	0.22285 (18122518)
80.0	0.46148 (18091802)	0.36815 (18091806)	0.21377 (18052104)
90.0	0.48110 (18072003)	0.38842 (18033019)	0.19728 (18110604)
100.0	0.45243 (18013018)	0.37499 (18060320)	0.16631 (18013018)
110.0	0.44398 (18080306)	0.35229 (18072301)	0.15845 (18120416)
120.0	0.38982 (18051821)	0.34350 (18100102)	0.18954 (18103103)
130.0	0.35003 (18091805)	0.34060 (18100102)	0.18139 (18111823)
140.0	0.36296 (18060906)	0.30106 (18110803)	0.16810 (18072304)
150.0	0.39558 (18071205)	0.29440 (18110306)	0.17141 (18022118)
160.0	0.40544 (18082720)	0.30118 (18071205)	0.18890 (18031024)
170.0	0.35599 (18100218)	0.27255 (18041119)	0.17375 (18021220)
180.0	0.35839 (18072306)	0.27527 (18102618)	0.14562 (18110724)
190.0	0.43184 (18093004)	0.33714 (18101517)	0.16253 (18051820)
200.0	0.47410 (18102520)	0.36092 (18071923)	0.16629 (18093005)
210.0	0.44712 (18090623)	0.34965 (18010917)	0.16040 (18051922)
220.0	0.46137 (18071603)	0.38079 (18042422)	0.16492 (18010917)
230.0	0.51533 (18091720)	0.44659 (18061724)	0.21391 (18110417)
240.0	0.51446 (18050520)	0.41694 (18061724)	0.20599 (18010617)
250.0	0.48505 (18052222)	0.41745 (18093007)	0.23888 (18062220)
260.0	0.48990 (18052421)	0.41673 (18052421)	0.19764 (18020417)
270.0	0.46120 (18100324)	0.38939 (18100823)	0.20569 (18071222)
280.0	0.46452 (18072324)	0.40518 (18040521)	0.21268 (18081522)
290.0	0.44760 (18072521)	0.37357 (18091420)	0.19043 (18042202)
300.0	0.42595 (18042620)	0.38024 (18102417)	0.18398 (18111817)
310.0	0.42634 (18110422)	0.36040 (18101104)	0.20990 (18021201)
320.0	0.43999 (18072721)	0.35881 (18123101)	0.23473 (18063024)
330.0	0.41186 (18043002)	0.34311 (18040106)	0.18526 (18020619)
340.0	0.43251 (18082420)	0.35300 (18092906)	0.19258 (18101520)
350.0	0.44867 (18092003)	0.36848 (18060305)	0.17837 (18051105)
360.0	0.43153 (18051506)	0.36987 (18080606)	0.19948 (18090201)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF STYRENE IN PPM **

```
                                                                  DATE
                                                    NETWORK
GROUP ID                         AVERAGE CONC     (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       1.75653  ON 18072120: AT (  517293.20,
4399868.40,  1645.30,  1645.30,    0.00)  GP  POL1
         HIGH   8TH HIGH VALUE IS       0.78921  ON 18091324: AT (  517298.84,
4399876.45,  1645.40,  1645.40,    0.00)  GP  POL1


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION  18081 ***   *** 5467 Highland Park Drive, St. Louis, MO,
USA                          ***        02/23/20
 *** AERMET - VERSION  18081 ***   *** Styrene Emission Modeling
                       ***        09:55:50

                                  PAGE  14
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of           68 Informational Message(s)

 A Total of         8760 Hours Were Processed

 A Total of           30 Calm Hours Identified

 A Total of           38 Missing Hours Identified (  0.43 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
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**********************************
*** AERMOD Finishes Successfully ***
**********************************
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* AERMOD ( 18081): 5467 Highland Park Drive, St. Louis, MO, USA
      02/23/20
* AERMET ( 18081): Styrene Emission Modeling
      09:55:50
* MODELING OPTIONS USED:   RegDFAULT  CONC  ELEV  RURAL
*         PLOT FILE OF  HIGH   1ST HIGH  1-HR VALUES FOR SOURCE GROUP: ALL
*         FOR A TOTAL OF   288 RECEPTORS.
*         FORMAT: (3(1X,F13.5),3(1X,F8.2),3X,A5,2X,A8,2X,A5,5X,A8,2X,I8)


*        X             Y      AVERAGE CONC    ZELEV    ZHILL    ZFLAG    AVE     GRP
      RANK     NET ID   DATE(CONC)
* ______________  ______________  ______________   _______   _______   _______  _______
_________  _________  _________  _________
  517293.54730 4399876.36962       0.13548  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18062822
  517293.72094 4399877.35442       0.55207  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18062822
  517293.89459 4399878.33923       0.69699  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18061522
  517294.24189 4399880.30885       0.76401  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18061522
  517294.58919 4399882.27846       0.65530  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18061522
  517295.80472 4399889.17212       0.54801  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18071521
  517296.67296 4399894.09616       0.49761  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18071521
  517301.01417 4399918.71635       0.31379  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18071522
  517293.88404 4399876.27939       0.11719  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18080221
  517294.22606 4399877.21908       0.52137  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18061522
  517294.56808 4399878.15877       0.95790  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18061522
  517295.25212 4399880.03816       1.03216  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18061522
  517295.93616 4399881.91754       0.88863  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18061522
  517298.33030 4399888.49539       0.61787  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18061522
  517300.04040 4399893.19385       0.48047  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18061522
  517308.59091 4399916.68617       0.23484  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18070403
  517294.20000 4399876.13205       0.09354  1645.30  1645.30     0.00    1-HR  ALL
      1ST     POL1      18080224
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517294.70000 4399876.99808       0.46119  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18061521
517295.20000 4399877.86410       0.79380  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072123
517296.20000 4399879.59615       0.86291  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072123
517297.20000 4399881.32820       0.75688  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072123
517300.70000 4399887.39038       0.53246  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18090304
517303.20000 4399891.72051       0.43585  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18051606
517315.70000 4399913.37114       0.27522  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18052302
517294.48558 4399875.93209       0.10797  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18060520
517295.12836 4399876.69813       0.50422  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18060520
517295.77115 4399877.46418       0.70754  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18090821
517297.05673 4399878.99627       0.74051  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18090821
517298.34230 4399880.52836       0.66239  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18071106
517302.84181 4399885.89067       0.55454  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18071523
517306.05575 4399889.72089       0.48687  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18071523
517322.12544 4399908.87200       0.31618  1645.50  1645.50     0.00    1-HR  ALL
    1ST     POL1      18060321
517294.73209 4399875.68558       0.19983  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18060520
517295.49813 4399876.32836       0.82793  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18060520
517296.26418 4399876.97115       1.03308  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18060522
517297.79627 4399878.25673       0.91300  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18060522
517299.32836 4399879.54230       0.81690  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18060522
517304.69067 4399884.04181       0.63218  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18091707
517308.52089 4399887.25575       0.49369  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18091707
517327.67200 4399903.32544       0.31618  1645.50  1645.50     0.00    1-HR  ALL
    1ST     POL1      18060321
517294.93205 4399875.40000       0.18699  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18060520
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517295.79808 4399875.90000       0.84222  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18060522
517296.66410 4399876.40000       1.14869  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18060522
517298.39615 4399877.40000       1.17328  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18060522
517300.12820 4399878.40000       0.90555  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18060522
517306.19038 4399881.90000       0.63762  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18091706
517310.52051 4399884.40000       0.57110  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18091706
517332.17114 4399896.90000       0.34840  1645.60  1645.60     0.00    1-HR  ALL
    1ST     POL1      18050721
517295.07939 4399875.08404       0.14277  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18062820
517296.01908 4399875.42606       0.54541  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18082521
517296.95877 4399875.76808       0.76321  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18082521
517298.83816 4399876.45212       0.87464  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18071306
517300.71754 4399877.13616       0.73927  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18071306
517307.29539 4399879.53030       0.55056  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18080124
517311.99385 4399881.24040       0.47149  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18081603
517335.48617 4399889.79091       0.28561  1645.60  1645.60     0.00    1-HR  ALL
    1ST     POL1      18071303
517295.16962 4399874.74730       0.14207  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18062821
517296.15442 4399874.92094       0.52918  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18062821
517297.13923 4399875.09459       0.70253  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072124
517299.10885 4399875.44189       0.85271  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18072124
517301.07846 4399875.78919       0.71203  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18051722
517307.97212 4399877.00472       0.51597  1645.50  1645.50     0.00    1-HR  ALL
    1ST     POL1      18080806
517312.89616 4399877.87296       0.41081  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18050802
517337.51635 4399882.21417       0.31447  1645.50  1645.50     0.00    1-HR  ALL
    1ST     POL1      18050802
517295.20000 4399874.40000       0.08153  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18080323
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517296.20000 4399874.40000       0.46579  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072124
517297.20000 4399874.40000       0.78198  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072124
517299.20000 4399874.40000       0.94130  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18072124
517301.20000 4399874.40000       0.75306  1645.40  1645.40     0.00    1-HR  ALL
    1ST     POL1      18072124
517308.20000 4399874.40000       0.62619  1645.50  1645.50     0.00    1-HR  ALL
    1ST     POL1      18060320
517313.20000 4399874.40000       0.59268  1645.50  1645.50     0.00    1-HR  ALL
    1ST     POL1      18060320
517338.20000 4399874.40000       0.37105  1644.50  1645.60     0.00    1-HR  ALL
    1ST     POL1      18060320
517295.16962 4399874.05270       0.10429  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18060521
517296.15442 4399873.87906       0.51912  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18060521
517297.13923 4399873.70541       0.70831  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18071406
517299.10885 4399873.35811       0.88683  1645.40  1645.40     0.00    1-HR  ALL
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517292.17394 4399871.58092       0.53779  1645.30  1645.30     0.00    1-HR  ALL
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517291.14788 4399868.76184       1.09540  1645.30  1645.30     0.00    1-HR  ALL
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517277.80909 4399832.11383       0.26290  1642.60  1645.50     0.00    1-HR  ALL
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517289.73590 4399876.40000       1.25304  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18080220
517288.00385 4399877.40000       1.02893  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18080220
517286.27180 4399878.40000       0.86485  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18080220
517280.20962 4399881.90000       0.54608  1645.20  1645.20     0.00    1-HR  ALL
    1ST     POL1      18080220
517275.87949 4399884.40000       0.42948  1645.20  1645.20     0.00    1-HR  ALL
    1ST     POL1      18052022
517254.22886 4399896.90000       0.26320  1645.10  1645.10     0.00    1-HR  ALL
    1ST     POL1      18102619
517291.66791 4399875.68558       0.32764  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18081619
517290.90187 4399876.32836       1.06252  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18080220
517290.13582 4399876.97115       1.25304  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18080220
517288.60373 4399878.25673       1.02893  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18080220
517287.07164 4399879.54230       0.86485  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18080220
517281.70933 4399884.04181       0.58081  1645.20  1645.20     0.00    1-HR  ALL
    1ST     POL1      18090921
517277.87911 4399887.25575       0.44866  1645.20  1645.20     0.00    1-HR  ALL
    1ST     POL1      18090921
517258.72800 4399903.32544       0.29227  1645.10  1645.10     0.00    1-HR  ALL
    1ST     POL1      18061524
517291.91442 4399875.93209       0.31925  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18071920
517291.27164 4399876.69813       0.85412  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18081619
517290.62885 4399877.46418       0.91498  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18081619
517289.34327 4399878.99627       0.98366  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18061421
517288.05770 4399880.52836       0.96368  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18061421
517283.55819 4399885.89067       0.74832  1645.20  1645.20     0.00    1-HR  ALL
    1ST     POL1      18061421
517280.34425 4399889.72089       0.62499  1645.20  1645.20     0.00    1-HR  ALL
    1ST     POL1      18061421
517264.27456 4399908.87200       0.32185  1645.00  1645.00     0.00    1-HR  ALL
    1ST     POL1      18061524
517292.20000 4399876.13205       0.26706  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18071820
```

```
517291.70000 4399876.99808       0.90127  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18071820
517291.20000 4399877.86410       1.12212  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072122
517290.20000 4399879.59615       1.04290  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072122
517289.20000 4399881.32820       0.87042  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072122
517285.70000 4399887.39038       0.65518  1645.20  1645.20     0.00    1-HR  ALL
    1ST     POL1      18061421
517283.20000 4399891.72051       0.54418  1645.20  1645.20     0.00    1-HR  ALL
    1ST     POL1      18061421
517270.70000 4399913.37114       0.28387  1645.10  1645.10     0.00    1-HR  ALL
    1ST     POL1      18072802
517292.51596 4399876.27939       0.23019  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072020
517292.17394 4399877.21908       1.02584  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072122
517291.83192 4399878.15877       1.48417  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072122
517291.14788 4399880.03816       1.36724  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072122
517290.46384 4399881.91754       1.14988  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072122
517288.06970 4399888.49539       0.77441  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072122
517286.35960 4399893.19385       0.59302  1645.20  1645.20     0.00    1-HR  ALL
    1ST     POL1      18072122
517277.80909 4399916.68617       0.27782  1645.10  1645.10     0.00    1-HR  ALL
    1ST     POL1      18081524
517292.85270 4399876.36962       0.24720  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18082420
517292.67906 4399877.35442       0.97126  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18082420
517292.50541 4399878.33923       1.18164  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18082420
517292.15811 4399880.30885       1.04290  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072122
517291.81081 4399882.27846       0.87042  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18072122
517290.59528 4399889.17212       0.59998  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18070401
517289.72704 4399894.09616       0.53714  1645.20  1645.20     0.00    1-HR  ALL
    1ST     POL1      18070401
517285.38583 4399918.71635       0.28796  1645.20  1645.20     0.00    1-HR  ALL
    1ST     POL1      18071520
517293.20000 4399876.40000       0.19592  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18082519
```

```
517293.20000 4399877.40000       0.71784  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18082420
517293.20000 4399878.40000       0.89546  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18082420
517293.20000 4399880.40000       0.78914  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18071620
517293.20000 4399882.40000       0.72848  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18071620
517293.20000 4399889.40000       0.53204  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18071620
517293.20000 4399894.40000       0.46086  1645.30  1645.30     0.00    1-HR  ALL
    1ST     POL1      18081806
517293.20000 4399919.40000       0.28796  1645.20  1645.20     0.00    1-HR  ALL
    1ST     POL1      18071520
```

```
;- meta
version=2
; (That line must be the first non-comment and the value must be 2.)
;
; The following is not case sensitive.
;

;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- input parameters
;  ================
;
;- input for origin of coordinate system
;  =====================================
;
; There are three options for the model grid coordinate system:
;
; 1) X and Y are relative coordinates in meters: the UTM coordinates in
;    AERPLOT.inp should be set to the "zero origin" of that coordinate
;    system to show the plot in the right location within the browser.
;
; 2) X and Y parameters are absolute UTM coordinates: coordinates
;    in AERPLOT.inp should be set to zero.
;
; 3) X and Y are not relative to a real grographic location: UTM
;    coordinates in AERPLOT.inp can be used to select a neutral
;    background (e.g., the ocean, or a glacier field) for easy display.
;
;
; State where the coordinate system's origin is --
; either in "UTM" (in meters) or LatLong (in degrees, using decimal fractions).
origin=UTM
;origin=LL
;
;- FOR UTM
;  -------
;
; The four parameters below will be used for 'origin=UTM'.  (If origin=LL, they do
not matter.)
;
; easting
; northing
; utmZone
; inNorthernHemisphere
;
; The program converts UTM coordinates into latitude and longitude
; for display in Google Earth earth browser. Also note that UTM
; coordinates require the UTM "zone" to be set in AERPLOT.inp.
```

```
;
; PLEASE NOTE: If the whole UTM is in the .PLT file, then a UTM of (0,0) in the
;              correct zone is appropriate. But if you were to want to use
;              LatLong with such a file, you would want to specify the same
;              spot. To avoid having to look up the longitude of the center
;              of the different zones, please just stick to a UTM of (0,0).
easting=0
northing=0
utmZone=13
inNorthernHemisphere=true
;
; 'inNorthernHemisphere' needs to know if this run is in the Southern Hemisphere or
not.
; If right on the equator, set this to True.
;
;- FOR LL
;  ------
;
; These two parameters will be used for 'origin=LL'.  (If origin=UTM, they do not
matter.)
originLatitude =0.0
originLongitude=-84.0
; If southern hemisphere, originLatitude will be negative.
; If western  hemisphere, originLongitude will be negative.
;
; Note that all seven UTM+LL parameters must be set,
; but only five will be used for UTM, or three for LL will be used.
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- altitude parameters
;  ==================
;
; Receptors can be plotted relative to the ground,
; or at a specific height level above or below sea level.
; If the ZELEV field can be isolated, "flagpole" also can be used as
relativeToGround .
;
altitudeChoice = relativeToGround
; or
; altitudeChoice = absolute
; or
; altitudeChoice = flagpole
;
; The altitude of the receptors is offset from the height indicated in the .PLT
file.
; ( Note: Specify an expected altitude even if 'flagpole' is the altitudeChoice.
;         This parameter is part of the calculation for the height of the initial
```

```
viewpoint.)
altitude=0
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- the source data file
;  ===================
;  (output from aermod, presumably)
;
; The input file name, that is, the plotfile.
PlotFileName              =DEN01_1hr.PLT

; If one wishes to plot the sources as well, set this to the aermod.inp file.
; If not, leave it empty.
SourceDisplayInputFileName=

;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- output parameters
;  =================
;
; The output file names.
;
; Pick a name for this run, and it will be applied to a number of files,
; plus the objects that may be manipulated within Google Earth.
;
OutputFileNameBase        =1hrStyreneppm
;
; The name that will be displayed in Google Earth for the dataset.
NameDisplayedInGoogleEarth=StyreneEmission1hrPPM
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- control parameters on the procedure
;  ===================================
;
; To assure the user that the program has not halted, progress
; meters are provided that show up in a text window.
;
sDisableProgressMeter              = false
;
;
; This parameter controls whether the program will
; automatically launch Google Earth after processing the
; .PLT file ("TRUE") or not ("FALSE").
;
```

```
sDisableEarthBrowser               = false
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- receptor display
;  ================
;
; This IconScale parameter "scales" the circles that are drawn in
; the Earth Browser for each receptor. If too big, the display can
; become so cramped that it becomes useless.
;
;             For Google Earth and ArcGIS,
;             The suggested icon scale default is 0.70 .
IconScale     = 0.40
;             (For the NASA "WorldWind" earth browser, a value of
;              IconScale = 1.99 may look better.)
;
; The sIconSetChoice color scheme for the concentration scale. The
; red and green is less preferred because a common color blindness
; won't see the difference; however, it is provided for use.
;
sIconSetChoice=redBlue
;sIconSetChoice=redGreen
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- concentration binning  (for receptors and contours)
;  =====================
;
; The user has the choice between a "Linear" or "Log" color scale. The user
; also can provide one of their own.
;
; There must, however, be eleven "levels" or thresholds that will
; define the ranges for the twelve bins.
minbin=data
maxbin=data
binningChoice = Linear
; or binningChoice = Linear
; or binningChoice = custom
;
;
; These examples could be realistic binning schemes.
customBinningElevenLevels=1,2,3,4,5,6,7,8,9,10,11
;customBinningElevenLevels=.0001,.0003,.0005,.0007,.001, .004,.008,.01,.02,.03,.05
;
; If custom binning is not used, one may prefer to supply this value, "na",
; to help indicate that custom binning is not used.
;customBinningElevenLevels=na
```

```
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- concentration legend   (for receptors and contours)
;  ====================
;
; The program will insert this line into the HTML used to create the legend.
;
; The following will not show up onscreen in the initial dump of variables.
contourLegendTitleHTML
=C O N C E N T R A T I O 
;N S
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- line mappings          (for contours and gradients)
;  =============
;
; To plot any of the lines, an evenly spaced grid needs to be constructed
; by means of a combination of interpolating the data and extending the
; data.
;
; For particularly large model domains, the "numberOfGridCols" and
; "numberOfGridRows" may need to be increased beyond the default
; values of 400.
;
numberOfGridCols                   = 400
numberOfGridRows                   = 400
;
;
; Normally, the 'numberOfTimesToSmoothContourSurface=' parameter
; should be set to one. One smoothing can make the contours much
; less chaotic, while a second one can result in moving the
; contours farther from their proper locations according to the
; receptor values. However, a setting greater than one may be
; beneficial when there is greater spacing between receptors.
;
numberOfTimesToSmoothContourSurface = 0
; Note that the smoothing applies to both the contour and the gradient.
;
; Note: although these last three parameters are not frequently
; used, they are required to be present.
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- contour parameters
```

```
;  ==================
;
; The parameter 'makeContours' enables ("TRUE") or disables
; ("FALSE") contours.
;
makeContours                        = true
;
;
; When drawing lines, each little bit of a line will only
; be drawn if both ends of the segment are within
; this many meters of one of the plot file's receptors.
;
; The contour lines seem less sensitive to the edge than the gradient.
; (If set to 0.0 or less, most lines won't be drawn.)
; (If set to 9999999, almost the diameter of the Earth, then all lines will be
drawn.)
;
contourExtension =  9999999
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;
;- gradient parameters
;  ===================
;
; The parameter 'makeGradients' enables ("TRUE") or disables
; ("FALSE") gradients.
;
makeGradients                       = false
;
;
; When drawing lines, each little bit of a line will only
; be drawn if both ends of the segment are within
; this many meters of one of the plot file's receptors.
gradientExtension=  9999999
; (If set to 0.0 or less, most lines won't be drawn.)
; (If set to 9999999, almost the diameter of the Earth, then all lines will be
drawn.)
;
;
;- gradient binning
;  ================
;
; While contour lines share binning with the receptors, gradient
; binning is done separately.
;
; The user has the choice between a "Linear" or "Log" color scale. The user
```

```
; also can provide one of their own.
;
; There must, however, be eleven "levels" or thresholds that will
; define the ranges for the twelve bins.
;
gradientMaxBin=.5e-9
gradientMinBin=.1e-11
gradientBinningChoice=Log
; or gradientBinningChoice = Linear
; or gradientBinningChoice = custom
;
; These examples could be realistic binning schemes.
;customGradBinElevenLevels=1,2,3,4,5,6,7,8,9,10,11
customGradBinElevenLevels=.0001,.0003,.0005,.0007,.001,
.004,.008,.01,.02,.03,.05,0.1,0.5,1,2,3,4,5,6,7,8,9,10
;
; If custom binning is not used, one may prefer to supply this value, "na",
; to help indicate that custom binning is not used.
;customGradBinElevenLevels=na
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- gradient legend (not generated if gradients are not generated)
;  ===============
;
; The program will insert this line into the HTML used to create the legend.
;
; The following will not show up onscreen in the initial dump of variables.
gradientLegendTitleHTML=Gradient Magnitudes
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
;- hidden_grid
;  ===========
; For display of evenly spaced grid. Debugging purposes only.
;
; Warning: This will substantially increase the size of the
; resulting KMZ file. It is not an extrapolated grid.
;
provideEvenlySpacedInterpolatedGrid = false
;
; end
```

```
startend 01 2018 12 2018
ifwgroup y 09 12 2005

DATAFILE STARTING
1-MIN\64050KDEN201801.dat
1-MIN\64050KDEN201802.dat
1-MIN\64050KDEN201803.dat
1-MIN\64050KDEN201804.dat
1-MIN\64050KDEN201805.dat
1-MIN\64050KDEN201806.dat
1-MIN\64050KDEN201807.dat
1-MIN\64050KDEN201808.dat
1-MIN\64050KDEN201809.dat
1-MIN\64050KDEN201810.dat
1-MIN\64050KDEN201811.dat
1-MIN\64050KDEN201812.dat
1-MIN\64050KDEN201901.dat
DATAFILE FINISHED

SURFDATA STARTING
..\AERMET\SURFACE\725650-03017_18
SURFDATA FINISHED

OUTFILES STARTING
hourfile DEN_01_1MIN_18.DAT
summfile DEN_01_1MIN_18_SUMM.DAT
compfile DEN_01_1MIN_18_COMP.DAT
OUTFILES FINISHED
```

```
 Generated by AERSURFACE, dated 13016                        07/11/2019 22:18

 Land Cover input file opened: DEN01_NLCD.bin
 State Postal Code: CO
 AERMET-formatted output file opened: DEN01_AERSURF.OUT
 Type of Coordinates Entered: LATLON
   Latitude (decimal degrees):     39.770000
   Longitude (decimal degrees):  -104.870000
   Datum: NAD83
 Study Radius for surface roughness (km):     1.0
 Is surface roughness varied by sector? Y
  # Sectors = 12
    Sector beginning directions:     0   30   60   90  120  150  180  210  240  270
300  330
 Temporal resolution (ANNUAL, MONTHLY, SEASONAL): MONTHLY
 Continuous snow cover for at least one month? N
 Reassign months to seasons? N
 Is site located at an airport? Y
 Is site considered an arid region? N
 Characterization of surface moisture at site: Dry
 Log file opened: DEN01_AERSURF.log


 Based on the following input coordinates, converted if needed to LATLON/NAD83:
    Latitude:     39.770000
    Longitude:  -104.870000

 The study center is located at
    Albers projection X-coordinate:   -751915.
    Albers projection Y-coordinate:   1896321.
    Row in data file:    5924
    Column in data file:   13164

 Rotation of Albers grid to true North (deg):    5.34775


 Land cover grid for Albedo and Bowen Ratio.
 These data are included in: albedo_bowen_domain.txt

    1901340. : 23 23 23 23 23 23 23 23 21 23 23 71 71 21 71 85 71 71 23 23 23 23 23
23 23 23 23 23 23 23 23 23 71 21 71 71 71 22 22 22 22 23 23 31 23 31 23 22 21 21 21
71 71 21 21 21 22 22 22 22 22 22 21 21 21 21 21 21 21 21 81 81 81 81 85 85 21 21 22
22 22 21 21 21 21 21 21 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71
71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71
71 71 23 23 84 71 71 23 23 21 23 71 71 21 21 71 71 71 71 71 71 71 71 71 71 71 71 71
71 84 71 71 71 71 71 71 71 84 23 23 84 71 71 71 71 71 71 71 23 84 84 71 71 71 71 71
71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71
71 11 11 11 11 51 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71 71
```

DEN01_AMET_S1.INP

```
JOB
  REPORT      DEN01_AMET_S1.RPT
  MESSAGES    DEN01_AMET_S1.MSG


UPPERAIR
  DATA        UA\23066_DEN_18.FSL  FSL
  EXTRACT     UAEXOUT_DEN01.DSK
  XDATES      18/01/01 TO 19/01/01
  LOCATION    23066  39.12N  108.53W  7
  QAOUT       UAQAOUT_DEN01.DSK
  AUDIT       UATT  UAWS  UALR  UAWD


SURFACE
  DATA        SURFACE\725650-03017_18 ISHD
  EXTRACT     SFEXOUT_DEN01.DSK
  XDATES      18/01/01  TO  19/01/01
  LOCATION    03017 39.816N 104.650W 7 1657.1
  QAOUT       SFQAOUT_DEN01.DSK
  AUDIT       SLVP PRES CLHT TSKC PWTH ASKY HZVS DPTP RHUM
  NO_MISSING  PRES
```

DEN01_AMET_S2.INP

```
JOB
  REPORT      DEN01_AMET_S2.RPT
  MESSAGES    DEN01_AMET_S2.MSG

UPPERAIR
  QAOUT       UAQAOUT_DEN01.DSK

SURFACE
  QAOUT       SFQAOUT_DEN01.DSK

ASOS1MIN      ..\AERMINUTE\DEN_01_1MIN_18.DAT

MERGE
  OUTPUT      MERGE_DEN01.DSK
  XDATES      18/01/01 18/12/31
```

DEN01_AMET_S3.INP

```
JOB
  REPORT      DEN01_AMET_S3.RPT
  MESSAGES    DEN01_AMET_S3.MSG

METPREP
  DATA        MERGE_DEN01.DSK
  METHOD      REFLEVEL SUBNWS
  METHOD      WIND_DIR RANDOM
  NWS_HGT     WIND     10.0
  METHOD      UASELECT SUNRISE
  AERSURF     ..\AERSURFACE\DEN01_AERSURF.OUT
  OUTPUT      DEN01_AMET.SFC
  PROFILE     DEN01_AMET.PFL
```

```
CO STARTING
   TITLEONE AURORA-DENVER SITE
   DATATYPE NED
   DATAFILE DEN01.geotiff
   ANCHORXY 517293.2 4399874.3 517293.2 4399874.3 13 4
   DOMAINXY 516893.2 4399474.3 13 517793.2 4400274.3 13
   RUNORNOT RUN
CO FINISHED

SO STARTING
   LOCATION STACK1 POINT 517293.2 4399874.3
SO FINISHED

RE STARTING
RE GRIDPOLR POL1 STA
                ORIG  STACK1
                DIST  2. 3. 4. 6. 8. 15. 20. 45.
                GDIR  36 10 10
RE GRIDPOLR POL1 END
RE FINISHED

OU STARTING
   RECEPTOR DEN01.RE
   SOURCLOC DEN01.SO
OU FINISHED
```

```
'Star K Ranch, 16002 E Smith Rd, Aurora, CO, USA'
'P'
'METERS' 1.0
'UTMN', 210.
0
1
'STACK01' 1644.1 1.80     517293.22    4399874.36
```